STUDENT ENGAGEMENT IN E-LEARNING: AN INVESTIGATION OF UNDERGRADUATES IN UTAR DURING COVID-19 PANDEMIC

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APPROVAL SHEET

This research paper attached hereto, entitled “Student Engagement In E-Learning: An Investigation of Undergraduates in UTAR During Covid-19 Pandemic” prepared and submitted by Wu, Jiawen in partial fulfilment of the requirements for the Bachelor of Arts (Hons) English Education is hereby accepted.

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ABSTRACT

In the last two years, the pandemic of COVID-19 exerts considerable influence over the learning and teaching mode in a global context. Schools around the world must go on lockdown in response to government policies for safety reasons. Meanwhile, students and teachers have to isolate themselves at home. As a result, online classes seemingly become the only viable solution to tackle the problem faced by all stakeholders in the education system. Malaysia is one of the countries that conducted and staged the lockdown policies, called Movement Control Order (MCO). All higher education institutions followed the relevant instructions and started the E-learning classes across the nation. This study aims to investigate student engagement in E-learning classes under the context of the COVID-19 pandemic. Specifically, two aspects are expected to be answered, which are the level of engagement and undergraduates' perception of engagement regarding the context mentioned above. The present study is conducted online by applying Young and Bruce's (2011) self-reported questionnaire. With the sample of 100 undergraduates in FAS of UTAR Kampar campus, this research found a moderately high level of engagement exits and there remain both negative and positive attitudes towards E-learning among the students

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LIST OF ABBREVIATIONS

COVID-19	Coronavirus Disease of 2019
MCO	Movement Control Order
COI	Community of Inquiry
NSSE	National Survey of Student Engagement
SCEQ	Student Course Engagement Questionnaire
CLASSE	Classroom Survey of Student Engagement
FAS	Faculty of Arts and Social Science
UTAR	Universiti Tunku Abdul Rahman
SPSS	Statistical Package for the Social Sciences
RQ	Research Question
SD	Standard Deviation
EFL	English as the Foreign Language

CHAPTER I

INTRODUCTION

1.1 Background of the Study

There has been much ink spilt over about investigating student engagement within the setting of traditional education for a long time (Humber, 2018), but then few have put it in an E-learning environment until the outbreak of COVID-19 (Mucundanyi, 2019). Bryan et al. (2018) emphasized that the notion of student engagement deserves more attention from the researchers, not only in literature officially recognized but also in the context of distance learning (as cited in Mucundanyi, 2019). Coincidentally, the major mode of teaching and learning has undergone a change from traditional physical classes to online classes due to the recent pandemic of COVID-19. The past two years have seen rapid expansion regarding the utilization of this education pattern. Thus, there has been regenerated interest in discussing about E-learning.

1.1.1 Scope of the terminologies

When it comes to E-learning, the terminologies such as online learning and distance learning are frequently used to interchange with one another as the same meaning (Moore et al., 2011; Ally, 2004). Therefore, one thing that needs to be noted is that understanding the commonness and/or specificity amongst online learning, E-learning, and distance learning will contribute to exploring this topic by rule and line. Moore et al. (2011) claimed that the alternate use of these terminologies without delimiting may lead to difficulties when evaluating and understanding the specific characteristics of similar learning environments. With regards to this issue, Online Learning Environment can be regarded as the common term for describing their respective learning environments in which the learning occurs in the online area (Moore

et al., 2011). Next, the following content will specify the traits of these three terms underlying the required context.

Rosenblit (2005) emphasized that distance learning and E-learning cover the same part of some areas in certain circumstances, distance learning, however, is slightly dissimilar to E-learning in terms of its remoteness and proximity, relevant target populations, and cost considerations. Namely, distance learning is a concept that is unnecessarily associated with the use of computers or networks, but it is required to involve interaction between learners and instructors at a distance, which enables the latter to react to their learners' feedback (Tsai & Machado, 2002). Whereas, Tsai and Machado (2002) added that the usage of interactive computers and the internet are indispensable and play essential roles in the process of E-learning.

Likewise, the same interchange to E-learning happens on another term, online learning, as many researchers seemed to acquiesce in such double replacement (Ally, 2004). In particular, Gedik et al. (2013) believed that both E-learning and online learning are courses conducted via the internet in either a synchronous or asynchronous way (as cited in Lister, 2014). Nonetheless, Anohina (2005) argued that online learning is also not suggested to be the perfect substitute to fully overlap E-learning in terms of their dissimilarities in the scope of application. Online learning is related to the access of various learning materials prepared and organized on networks primarily, referring to the notions of online assistance, online references, and internet-based services (Tsai & Machado, 2002). In other words, the association with an accessible network is a prerequisite when the learner is carrying out online learning. Anohina (2005) explicated that E-learning, however, can occur in any mode or instrument along with electronic support as in varied forms, such as websites, programs, software, objects and so on (Moore et al., 2011). Essentially, E-learning addresses the pedagogical practices on a larger scale based on the usage of diverse platforms on the internet, including colleges and universities, K-12

schools, large business companies, state offices, and some other public fields (NurHaiza & NurNaddia, 2020).

Considering the features of online learning, E-learning, and distance learning illustrated above, it can be naturally concluded that there is a relation of inclusion (*Figure 1*) interconnecting them (Anohina, 2005). According to Evan and Haase (2001), online learning exists as a reformative sector of distance learning (as cited in, Bartley & Golek, 2004). Meanwhile, it is also encompassed by E-learning along with Web-based learning, Internet-based learning, and automated distribution of learning due to the common medium they occur (NurHaiza & NurNaddia, 2020). Nonetheless, E-learning is not conclusive enough to summarise all related terminologies. Anohina (2005) pointed out distance learning is the one that belongs to the outermost space of these several concentric circles, which means it covers a wider range of terms including E-learning as well. Above all, both online learning and E-learning will be applied and interchanged with each other as the objects of the discussion since their extensive coverage fulfils the required contexts and situations in this study.

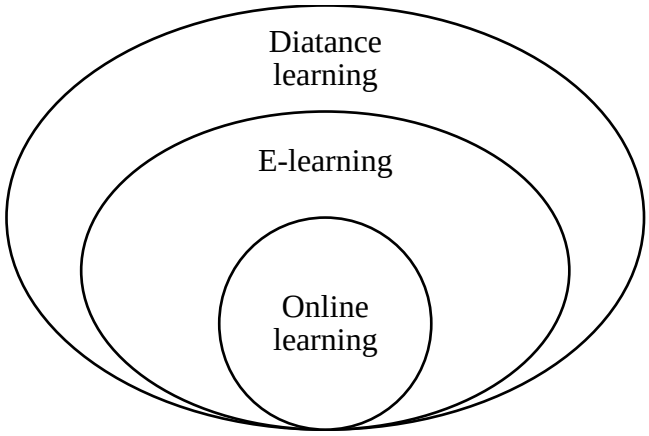


Figure 1. *The relation of inclusion exists in the three terminologies*.

1.1.2 Context of the Case

As what most educational institutions are going through at present, the outbreak of COVID-19 compelled widespread closure of the global campuses for the sake of safety, which had a

tremendous impact on the worldwide education system (Radha et al., 2020). When the whole world is fighting together against this invisible hazard, the people in Malaysia are also continuously going through the Malaysia Movement Control Order (MCO) declared by the government stage by stage (Al-Kumaim et al., 2021). In the meantime, the Higher Education Ministry in Malaysia consequently expounded the arrangements on how the education sector should react to the current crisis: All students studying in higher education institutions are consented to conduct their learning activities at home via E-learning, namely online distance learning (ODL) (Al-Kumaim et al., 2021). Looking at the significance of this issue, Almaiah et al. (2020) addressed those online digital systems that can provide realistic solutions to dispose of some negative repercussions that happened on the students' learning due to the epidemic including disrupted learning. Hence, it is true that offering multiple and accessible ways of learning, especially E-learning, has become an imperative act of responding to this campaign (Almaiah et al., 2020).

Major (2015) stated that student engagement involves deliberate mental efforts such as motivation, concentration, participation, and brain involvement. As one means of conducting E-learning, online learning classes enable students and teachers to properly cope with the emergent challenges during MCO (NurHaiza & NurNaddia, 2020). However, unlike the usual online classes conducted before the pandemic of COVID-19, the present case is that there is a variety of departures from the formal situation regarding the course design, evaluation means, and most importantly, teaching approaches (Affouneh et al., 2020, as cited in Khlaif et al., 2021). As a result, as the experiencers of this emergency education mode, seemingly many relevant individuals, both inside and outside the education system, are unprepared to confront this unplanned shift considering their worries about the changes (Khlaif et al., 2021), which touches on the issue of student engagement in E-learning (Hossain & Wood, 2021).

Eventually, E-learning has inevitably been greeted with scepticism in terms of its effectiveness in preserving student engagement compared to conventional education (Hossain & Wood, 2021). Oraif and Elyas (2021) illustrated that the learners' engagement during online classes is to some extent negative in the face of the epidemic in Saudi Arabia, with many resistances against the change so that they failed to efficiently engage with E-learning. According to the latest research, poor network connection, lack of digital devices, critical financial status, etc, will severely threaten classroom interaction, which has led to a general decline of learners' engagement in emergency E-learning under the pandemic of COVID-19 (Abou-Khalil et al., 2021).

1.2 Problem statement

Research in this area mostly tended to identify whether online learning is as effective as learning in traditional settings (Axelson & Flick, 2010). With regards to student engagement in E-learning, the previous studies focus more on evaluating students' academic outcomes to determine the effectiveness of online learning (Fredrickson, 2015). Hence, Robinson and Hullinger (2008) emphasized that researchers should concern the quality of the learning experience rather than the objective judgement of their learning outcomes when examining classroom interaction. According to Bucy (2003, as cited in Robinson & Hullinger, 2008), he argued another issue that the researchers are not supposed to determine is whether the content that students learn via online courses is the same as in conventional classes. Furthermore, students' perspectives in terms of their engagement in an E-learning environment were rarely involved in relevant research (Humber, 2018), which prompted me to take it into consideration when I evaluate student engagement.

Despite these insightful considerations, now the background and causality of initiating a virtual learning environment have changed. Within the current context of conducting

emergency E-learning in Malaysia, it would be needful to identify if the factors influencing online student engagement have transformed after the epidemic (Dixson, 2015). Since the present problem that prompted the need for this study emerged from an abrupt and unavoidable mode of education during the COVID-19 period, which means that E-learning, at least in Malaysia, has become the main as well as the only way of conducting higher education (Selvanathan et al., 2020). In this case, it will be hard to comprehensively assess traditional learning like other researchers on account of such a condition, which suggests that the comparison with former face-to-face classes will not be addressed in this research. Indeed, the emphasis in this study will be the period of implementing E-learning after the COVID-19 outbreak.

1.3 Research objectives

This research investigates student engagement in E-learning classes during the COVID-19 pandemic. Therefore, the objectives of this research are:

1. To investigate the level of engagement in E-learning classes among undergraduates during the COVID-19 pandemic.
2. To evaluate undergraduates' perception regarding engagement in E-learning classes during the COVID-19 pandemic.

1.4 Research questions

This research aims to provide answers to the following questions.:

1. What is the level of engagement in E-learning classes among undergraduates during the COVID-19 pandemic?
2. How do undergraduates perceive engagement in E-learning classes during the COVID-19 pandemic?

1.5 Significance of the study

This is a study following the current event that is being experienced by the sector of higher education in Malaysia. Due to the unpredictability of this epidemic, there are few studies in related areas to chiefly discuss the student engagement in E-learning under the pandemic of COVID-19. Therefore, the finding put in an expectation that it can be served as guidance or reference involved in online teaching practice at present and even in the long term of MCO. Specifically, this study is expected to provide the E-learning instructors with an impactful resource to help them effectively engage students in any non-face-to-face circumstances. In the meantime, comprehending students' perspectives regarding their attitudes towards E-learning will be considered as a prospect of facilitating effective classroom interaction which is obviously affected by the pandemic. With regards to what will benefit the online learners is that they may raise their consciousness of being involved in the E-learning environment reminded by the further discussion of this study. Moreover, the information discovered by this research is valuable to provide a certain reference basis for other research in relevant fields.

CHAPTER II

LITERATURE REVIEW

In the second chapter, a review of relevant literature is expounded in two different sections. In the first section, some fundamental rationales that are associated with online student engagement will be analysed in a corresponding context. In the second section, I will review a few pieces of research about how student engagement was defined within and out the E-learning environment, and some existing measurements as well as factors of engagement.

2.1 Theoretical framework

2.1.1 Social Constructivist Theories

The theories of social constructivism were established and developed from the rationale of various fundamental literature, such as the works of Vygotsky (1978), Piaget (1972), and Bandura et al. (1963, as cited in Dixson, 2015). Social constructivists suggest that individual subjects and their background knowledge regarding social society have a great impact on learners' outcomes (Woo & Reeves, 2007; McMahon & Zyngier, 2009). Therefore, what was highlighted by researchers is that social interaction provides students with aid to acquire and shape knowledge in the mind (Vygotsky, 1978; Dixson, 2015; Bruner, 1986). Vygotsky (1978) defined the distance between the level of students before interacting with people (zone of actual development) and the level that students can solve problems independently after social interaction, as Zone of Proximal Development (ZPD).

Nonetheless, Ally (2004) mentioned constructivism that learners are supposed to be active in learning. Putting social constructivism in the context of E-learning, Dixson (2015) and Ally (2004) reckon that some effects and results can be paralleled in similar situations that are feasible in traditional education: collaborative learning is encouraged, and learners are allowed to structure their understandings from what they learned.

2.1.2 Community of Inquiry Model

To have a better understanding regarding online learning, Garrison et al. (1999) established a Community of Inquiry (COI) model by referring to social constructivism (Humber, 2018). This model is made up of three major components: social presence, cognitive presence, and teaching presence, which provides an insightful framework for researchers to explore student engagement in E-learning (Dixson, 2015; Humber, 2018; Mucundanyi, 2019).

The three elements are categorised in different facets of a learning community with diverse indicators (Garrison et al., 1999).

Social Presence. Accordingly, while social presence was revealed little influence on learning (Aykol & Garrison, 2008), it is regarded as the core component of student engagement (Dixson, 2015). Social presence is described as "the ability of individuals in the COI to project their personal qualities into the community, portraying themselves as "actual persons" to the other participants" (Garrison et al., 1999). When social presence is involved in online classes, students will feel they have communications and interactions with real people rather than being alone during the process of learning (Dixson, 2015). However, Dow (2008) highlighted that student engagement entails more than just social presence.

***Cognitive Presence*.** With regards to cognitive presence, Garrison and Akyol (2008) analysed it into four phases (triggering event, exploration, integration, and resolution), defining it as a significant component of stimulating students' critical thinking, which includes the practical inquiry model. Learner-content interaction (Moore, 1989) occurs so that students can obtain new knowledge before "triggering event". By applying the new knowledge, students explore and integrate the event to authentic tasks, which is implied as to the phase of "resolution" (Akyol & Garrison, 2008; Mucundanyi, 2019). According to the research, cognitive presence has the greatest impact on students' learning (Akyol & Garrison, 2011).

***Teaching Presence*.** Compared to cognitive presence, teaching presence is less influential regarding students' learning (Akyol & Garrison, 2008). As stated in its name, the instructor plays the primary role in teaching presence, which consists of the performance of each participant within the learning community (Garrison, 1999). Two functions were emphasised in the COI framework: 1) course design, the preparation of the course content; 2) facilitation,

the contribution devoted by each participant. Above all, teaching presence is the supporting means of the social and cognitive presence (Garrison, 1999).

2.2 Previous Studies

2.2.1 Defining Student Engagement

Student engagement, a term supported by many powerful theories, is not undefinable, but it is hard to define perfectly (Dixson, 2015). Humber (2018) explained the reason is that defining student engagement requires discussion regarding individual differences that are complicated and mutable. According to Axelson and Flick (2010), student engagement is related to how deep the students get involved in or interested in the learning process, and how they form the relationship to relate to the courses. Major (2015) stated that student engagement involves deliberate mental efforts such as motivation, concentration, participation, and brain involvement. Putting student engagement into discussion within the classroom, some remarkable measurements focus on both affective and behavioural aspects, such as in Handelsman et al.'s SCEQ (2005). A similar discovery was shared by Lam et al. (2012): they believed that the process of learners engaging the class should involve behaviour engagement, affection of being satisfied, and learning cognition (as cited in Yang et al., 2021). Nonetheless, a further illustration about student engagement in an online learning environment has been clarified afterwards based on the previous studies conducted for the traditional classrooms: Student engagement means that the learner devotes time and energy to acquire skills, having meaningful interactions with other people of the class so as to emotionally participated in the learning process (Dixson, 2015).

2.2.2 Existing approaches

With regards to measuring student engagement, Richards (2011) clarified that it is inadvisable and unachievable to measure this theoretical term directly. Therefore, four classical

approaches (*Table 1*) reviewed here that are viable in assessing student engagement (Richards, 2009; Dixson, 2015): 1) survey approach, which is represented by Kuh's (2004) National Survey of Student Engagement (NSSE), Handelsman et al.'s (2005) Student Course Engagement Questionnaire (SCEQ), and Ouimet and Smallwood's (2005) Classroom Survey of Student Engagement (CLASSE); 2) analytics approach, represented by learning analytics (Ma et al., 2011).

Most of the existing measurements are based on the survey approach (Mandernach, 2015). Indeed, they can be classified into two different levels following the research scale (Handelsman et al., 2005; Mandernach, 2015; Savory et al., 2012): the first one is institutional level (macro-level), such as NSSE (Kuh, 2004); the second one is classroom level (micro-level), such as CLASSE (Ouimet & Smallwood, 2005) and SCEQ (Handelsman et al., 2005).

Survey Approach. Through designing the NSSE, Kuh (2004) firstly introduced the way of collecting student engagement data is to assess a series of proxies within a self-reported questionnaire. He illustrated more details about the survey instrument that the information collection was established on the following structure (Kuh, 2009): 1) students' behaviours regarding their educational activities; 2) students' cognition about institutional requirements; 3) students' reaction about their college, including how it corresponds to their achievement, satisfaction, supports, and so on; 4) students' personal background information; 5) students' perception regarding their general acquirement from institution and estimation for their future development. Kuh (2009) has implemented the NSSE over eight years within around 772 American campuses of higher education, which revealed a global quality (Handelsman et al., 2005).

At the micro-level, SCEQ and CLASSE focus on individual courses (Handelsman et al., 2005; Savory et al., 2012). In SCEQ, the assessment was conducted in a traditional class

environment to associate student engagement with the other three measures that are self-reported, self-theories, and motivational goals (Handelsman et al., 2005). The aim is to examine four different factors of engagement: 1) skills engagement; 2) participation/interaction engagement; 3) emotional engagement; 4) performance engagement (Handelsman et al., 2005). Nonetheless, Nasir et al. (2020) adapted the previous SCEQ and adopted it in the online learning environment to conduct an exploratory factor analysis (EFA). After the modification, the analysis surveyed online student engagement in another four scales, including applied engagement, goal-oriented engagement, self-discipline engagement, and interactive engagement. The results from both studies show the consistency and correlation between different dimensions of engagement (Nasir et al., 2020; Handelsman et al., 2005).

With regards to CLASSE, NSSE is the predecessor that established its fundamental instruments (Savory, 2012). The subjects of the survey not only contain students' self-report regarding their behaviours in a specific class but also involve a version from the instructor or faculty (Ouimet & Smallwood, 2005). The two parts of the survey offered a comparison between student responses and the instructor perception regarding what areas are the values (Ouimet & Smallwood, 2005).

Judging from what has been mentioned above, something true is that the survey approach is the most common way of measuring student engagement (Richards, 2009). In addition to the above survey measurements, there are a few updated research exploring the same topic, such as Young and Bruce's (2011) study. By adapting the scales used in the previous survey research (e.g., Handelsman et al., 2005), researchers devised a self-reporting survey to measure online student engagement on three factors: the interactions between the learner and the1) instructor, 2) classmates, and 3) learning content (Young & Bruce, 2011).

Analytics Approach. Unlike the survey approach, the analytics approach was conducted by using techniques such as data mining to monitor the usage of online learning (Richards, 2009). For example, Ma et al (2015) applied learning analytics in China to measure online student engagement in a Learning Management system (LMS), an educational tool in distance learning (Humber, 2018), named Tsinghua Education Online (THEOL). In the study from Ma et al. (2015), 16 variables about the instructor and learners were analysed in terms of the frequency of they carry out certain online activities, such as the number of students responding to the teacher's questions in the discussion forum. Within the ten benchmarks of students' activities, the researchers measured student engagement by focusing on learners' involvement in the learning process, learning outcomes, and interaction with the teacher and classmates. This study proved that teacher presence regarding course design and class activities plays an essential role in improving online student engagement (Ma et al., 2015). According to Richards (2009), the analytics approach can be used to conduct a wide range of data analyses and to acquire information of interaction among individuals or learning processes.

Approaches	**Examples of the measurement**	**Scale**	**Merits**
Survey approach	NSSE	Institutional (macro) level	Global quality
	SCEQ	Classroom (micro) level	Focus on individual courses
	CLASSE	Classroom (micro) level	Involve the instructor's perception
Analytic approach	Learning analytics	Usage of online learning (multiple variables)	A wide range of data analyses can be carried out

Table 1. *Different approaches of measuring student engagement*

2.2.3 Factors of online student engagement

With regards to the factors that support the assessment of online student engagement, a wide range of benchmarks were given in different studies (Kuh, 2009; Dixson, 2015; Handelsman et al., 2005; Humber, 2018; Savory, 2012). As mentioned, for instance, NSSE made contributions to enhancing student engagement at the college level, which was implemented based on five variables, including level of academic challenge (LAC), active and collaborative learning (ACL), enriching educational experience (EEE), student-faculty interaction (SFI), and supportive campus environment (Kuh, 2004; Kuh; 2009; Robinson & Hullinger, 2008). Furthermore, Humber (2018) referenced four distinct factors of student engagement in E-learning that are motivation, attention-related factors, involvement and active learning, and level of academic challenge and intellectual effort. Some elements were repeated in a great variety of studies to become requisite benchmarks of measuring student engagement in the non-face-to-face learning environment: motivation, interactions between learners, instructors and content, active learning, and students' effort (Beer et al., 2010; Dixson, 2010; Robinson & Hullinger, 2008). In this section, two main factors will be referred to link with student engagement in the condition of E-learning: learning attitude and interactions.

Learning Attitude. The traits of attitude prevail many researchers to deem that individual attitude is strongly associated with student engagement and E-learning system and involve it into their discussion (Bertea, 2009; Dixson, 2015; Dookhan, 2018; Ismaili, 2021). Both Syyeda (2016) and Lam et al. (2012, as cited in Yang et al. 2021)) decoded the term "attitude" in multiple facets that are affected (emotions, beliefs, and vision), cognition (perception of the usefulness of the subject), and conative (behaviour that refers to intention and performance). Some concepts are also consistent with other studies like the research conducted by Dookhan (2018) who suggested a link between perception and learners' attitude

by examining students' intention of being in the E-learning environment and their perception of usefulness.

Learners would be apt to admit E-learning into their daily class and engage themselves in it if their optimistic attitude emerged (Dookhan, 2018). Bertea (2009) explained in one of her case studies that learners' attitude towards E-learning depends largely on whether the new educational system is an adaptive strategy to conduct teaching and learning activities. Dookhan (2018) added that learners' attitude varies from different learning systems, which depends on the degree of familiarity of applying the particular mode. Hence, in accordance with Yurdagül and ÖZ (2018), the attitude discussed in mobile learning refers to the degree of intention that the technology users show towards a specific educational tool.

In the previous research from Omar et al. (2012), learners' attitude is one of the most essential components of engaging class effectively, because E-learning classes are student-centred and students have a flexible schedule (Bertea, 2009), which means more active behaviours from students are required to organise their own time and programs for learning (Omar et al., 2012). As what was indicated in a related study, some characteristics are needed to become a worthful and voluntary learner, such as self-motivation, self-discipline, tolerance, and being proficient in techniques and tools for information exchange as well as time control, which may affect learners' attitude towards E-learning (Dookhan, 2018). Thus, students who learn via E-learning must apply themselves to interact and communicate with classmates and instructors on their own initiative so as to promote academic performance (Bertea, 2009; Dookhan, 2018). Additionally, learners' attitudes are easily be influenced by teachers' behaviours and the online technologies they apply during E-learning, which means the instructors who perform a positive attitude and employ appropriate technologies during online teaching have an instrumental impact on learners' attitude and behaviour (Male et al., 2020).

In general, Yang et al. (2021) revealed true reciprocity between student engagement and learning attitude that there is a mutual relationship to generate better progress of learning: not only will enthusiasm stimulate learning, but more active learning engagement will also foster a positive learning attitude (Yang et al., 2021).

***Interaction*.** According to Martin and Bollinger (2018), interaction is not only valuable to facilitate engagement in online classrooms, but also it can be an interchangeable term of engagement. For the purpose of comprehending online student engagement in a systematic way, Martin and Bolliger (2018) constructed a conceptual framework (*Figure 2*) for three types of interactions on the basis of Michael Moore's (1989) research, which are learner-content interaction, learner-instructor interaction, and learner-learner interaction. The finding shows that online learning has exposed many concerns on student engagement, especially on student-instructor interaction.

In addition, there are more instruments were adopted to delve into other types of interaction in teaching and learning. Mucundanyi (2019) focused more on the reciprocal actions of the same three types of interactions to explore the incentives promoting student engagement in the scale of an online classroom community. What is agreed by Muncundanyi (2019) is that engaging online students is crucial and challenging for instructors who conduct E-learning. In addition to the above-mentioned study, Lear et al. (2010) developed the Interactivity/Community Process Model (*Figure* 3) to display freshmen's engagement in online classes along with the factors that affect the quality of interaction within the community.

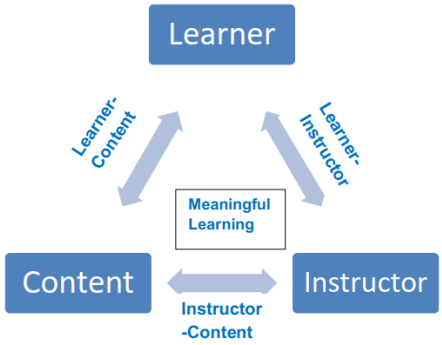


Figure 2. *Guiding framework about three types of interactions (Martin & Bolliger, 2018)*

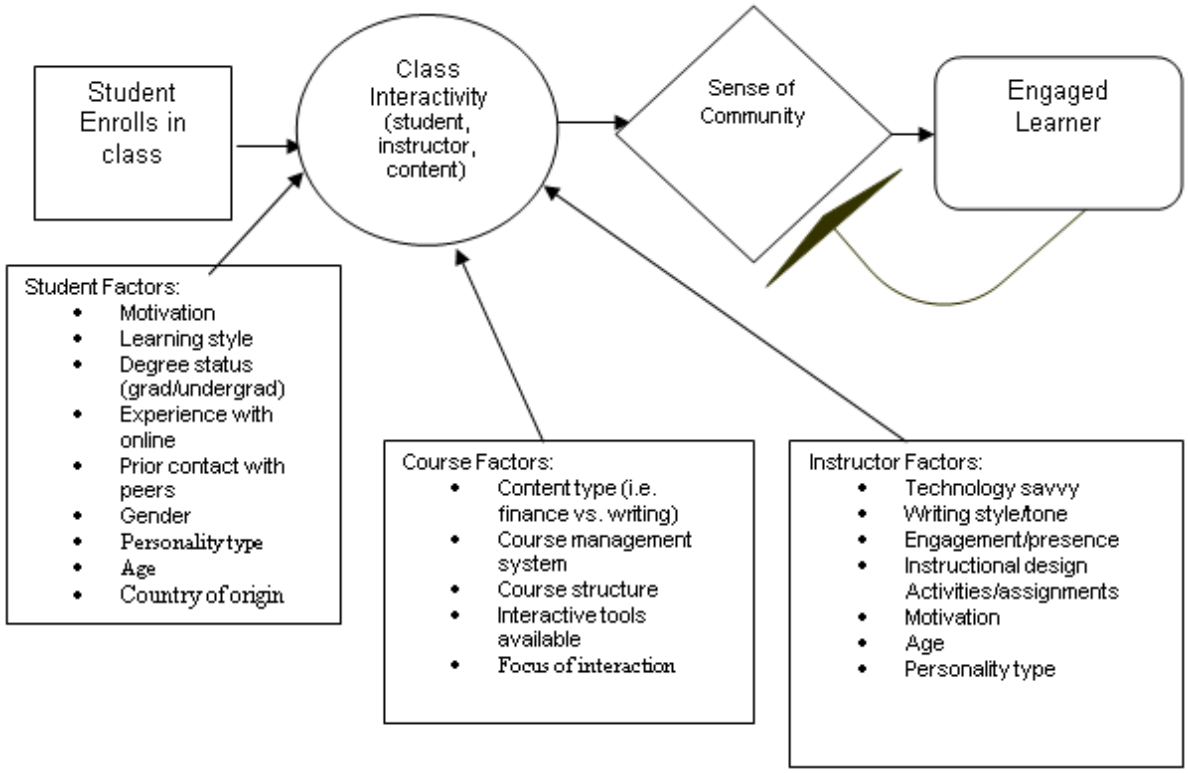


Figure 3*. Interactivity/Community Process Model in online education (Lear et al., 2010)*

1) Learner-learner interaction.

Specifically, the first type of interaction is the interactivity amongst the learners within a class or subject (Moore, 1989). The role of learner-learner interaction is irreplaceable in E-learning (Moore, 1989; Young & Bruce, 2011; Martin & Bollinger, 2018). According to Mucundanyi (2019), the factors affecting learner-learner interaction should be identified. For

example, Young and Bruce (2011) found that working with classmates cooperatively, seeking help and helping others, exposing personal concerns, and partaking and interacting actively, would influence engagement and interactions of learners. Therefore, to enhance online student engagement, a variety of activities should be employed as a technique to establish classroom connections between one student and other ones, which is beneficial to avoiding isolation and creating group dynamics (Martin & Bolliger, 2018). Humber (2018) and Banna et al. (2015) listed a series of methods, or activities, assisting students to engage in E-learning classes and generate interactivity of a class community, such as discussion boards, emails, blogs, wikis, chat rooms, group assessment, and so on.

2) Learner-instructor interaction.

The second type of interaction is learner-instructor interaction, an essential part of an effective lesson, which is especially meaningful for educators (Moore, 1989). By modifying their learning attitudes or implicating certain skills, the common aim for the instructors is to maintain and increase learners' interests in learning so that the students can achieve ideal outcomes (Moore, 1989; Dixson, 2010). Ma et al. (2015) devised a model for measuring teaching and learning interaction activities, which proved the authenticity of their hypothesis: instructor's course preparation, teaching assistance, and online guidance play essential roles in students' behaviours for learning activities. The research found that the presence of the teacher can be regarded as the chief factor of learner-instructor interaction in the online learning environment (Ma et al., 2015). Hence, instant feedback, high-quality teaching, and group activity are required for promoting cohesiveness and interactivity in the E-learning environment to help learners participate in the classes (Martin & Bolliger, 2018).

3) Learner-content interaction.

The third type of interaction is the decisive trait of the teaching and learning process, occurring between the learner and the specific learning content (Moore, 1989). Through this interactive process, the student has a cognitive understanding of specific information or an idea (Moore, 1989), especially when the student has content-based interaction with text, videos, multimedia, and so on (Abrami, 2011, as cited in Martin & Bolliger, 2018). Achieving effective interaction with the content, the learner should exert multifaceted capabilities, including accessing, controlling shrewdly, and communicating intentionally the teaching content (Banna et al., 2015). According to Martin and Bolliger (2018), not only should students take their initiative, more importantly, the instructors also need to prepare enough authentic activities and relevant materials to assist students in engaging courses.

CHAPTER III

METHODOLOGY

In this chapter, the study's research methods will be discussed in detail. The following content introduces the methodology of how to conduct this research along with the reasons why the approaches would be applied. Chief among the substances is an introduction in terms of the research design, followed by an explanation regarding the participants and the sampling method. The proposed means of data collection, which is another conspicuous substance in this chapter, will be discussed along with the illustration of data analysis.

3.1 Research design

In response to the purpose of the study to investigate 1) the level of engagement in E-learning classes under the crisis and 2) how undergraduates perceive engagement in E-learning

classes during the COVID-19 pandemic, the researcher employs the quantitative methods research. Quantitative description can obtain a deeper understanding regarding the perception of a target population with a certain scale (Loeb et al., 2017).

With regards to the participants, data are collected from 100 students majoring in different courses in E-learning mode. All of them are selected from the same higher education institution in Malaysia under the crisis of COVID-19. The current phenomenon is that the major mode of teaching and learning in Malaysia has undergone a change from traditional physical class to E-learning class due to the recent pandemic of COVID-19. This research is conducted during the lockdown period when the students and teachers have experienced over 18 months of E-learning.

When it comes to the technique of implementing this study, the online survey questionnaire is the major one, which relies on a quantitative approach. This survey questionnaire (*Appendix I*) is adapted from another self-reported survey in Young and Bruce's (2011) research. To verify the correctness, validity, and dependability of the collected data, authentic reflections are recorded and taken to provide sufficient evidence.

3.2 Participants and sampling method

As mentioned, the participants are selected from the same faculty of one particular institution in Malaysia, which is the Faculty of Arts and Social Science (FAS) in Universiti Tunku Abdul Rahman (UTAR) Kampar campus. The targeted participants will be 100 undergraduates majoring in different courses, including English Education, English Language, Advertising, Psychology, and Public Relations. Their E-learning subjects including course activities were delivered by online platforms, such as Microsoft Teams and/or Zoom. To ensure the diversity and representativeness of the results, simple random sampling is adopted as the major sampling method, which means the 100 participants have equal opportunities of being

selected. Sharma (2017) illustrated simple random sampling that it is a conspicuous technique to avoid bias and enhance the representativeness of the study results, which is a crucial aspect of research conclusion.

3.3 Instrumentation

Through utilizing the quantitative method, the level of engagement in E-learning classes and students' perception regarding engagement of E-learning is measured by applying an adapted self-reporting survey questionnaire.

3.3.1 Self-reporting survey

According to Creswell (2009), survey research is one of the quantitative research strategies, which provides a numeric description of the tendency, perception, or opinions of a sample group. Explaining from what has been mentioned above, the online survey of this study is developed on the basis of Young and Bruce's (2011) instrument. In the initial version, the self-reporting survey was established upon the evaluation regarding 23 scale items on three main factors: factor 1 correlates to learner-instructor interaction; factor 2 indicates learner-learner interaction; factor 3 is learner-content interaction. In this research, all the above 23 scale items are adopted and appropriately revised to meet the characteristics of the experimental sample. Furthermore, the original version of this survey includes six demographic questions, which are *gender, age, student level, number of online courses taken, college for course, and expected course grade*. Nonetheless, on account of the current research design, only five questions will be asked in my online survey excluding *number of online courses taken*. Additionally, two more survey questions are added to ensure the second research question can be answered. Hence, there will be a total of 25 items in this survey questionnaire.

The structure of the self-reporting survey is formed by six sections. In section 1, a consent form is provided on account of ethical considerations. As regards the section 2, some

demographical questions are inquired. In section 3 (learner-instructor interaction), 4 (learner-learner interaction) and 5 (learner-content interaction), the participants are instructed to complete 23 items presented as classified statements on a Likert scale, which provides 5 categories of scales ranging from “Very true”, “True”, “Moderately true”, “Slightly true”, and “Not true at all”. In the last section, there are two questions only, which are a multiple-choice question and an open-ended question. Specifically, the open-ended question is to ask students’ perception regarding engagement in E-learning classes. They are required to give their reasons in accordance with their responses of “Satisfied”, “Somewhat satisfied”, or “Dissatisfied”.

3.4 Data collection

Specifically, the adapted self-reporting survey is conducted fully online via Google Form. Before the survey officially begins, participants are subject to fill up a consent form on the first page of the survey. It includes some clarifications such as the academic purpose of the study and the inquiry of whether the participants are willing to take part in the survey. The Google Form link is released attached with some invitation words, which will be sent by applying the “Snowballing techniques (Oraif & Elyas, 2021)” via both emails and Microsoft Teams chats. Besides some basic demographical information, their names and student ID will not be recorded to guarantee the spontaneity of the response and their privacy. Subsequently, participants’ responses will be recorded automatically by Google Form and analyzed comprehensively by the researcher to understand the individual differences regarding students’ perception of E-learning so as to determine their interactions between the teacher, their classmates and the learning content, also known as the level of engagement. It is supported by Mucundanyi (2019) that the self-reporting survey is a viable strategy to understand individual learning experiences.

The process of collecting survey responses will last for a maximum of 2 weeks since the beginning of the October trimester of 2021 when the respondents have engaged in the E-learning courses for over 18 months. The non-respondents will be informed to complete the survey in the second week by receiving at most two reminder emails. Neither the non-target population nor the non-responding samples are recorded in the final data.

3.5 Data analysis

With regards to the digital tools of data screening, Microsoft Office Excel and SPSS program are planned to use. Cross-tabulation is the major contributing mode of presenting the results of demographic details. The other results will be filtered into different subgroups according to the first three main sections of the self-reporting survey. Further, due to the 23 scale items (independent variables) being grouped into three factors, the data will be analyzed separately by utilising descriptive analysis. Regardless of the goals of using descriptive analysis, the descriptions have always contributed greatly to scientific exploration as a whole and educational fields in particular (Loeb et al., 2017). The standard deviation (SD) and mean of each item are presented selectively in table results. Accordingly, the results will be calculated based on the values allocated (5= “Very true”, 4= “True”, 3= “Moderately true”, 2= “Slightly true”, 1= “Not true at all”). As for the last two dependent variables, the descriptive analysis and summative content analysis are planned to use to analyse the frequency of “satisfaction” and the reasons of the participants given. Hsieh and Shannon (2015) emphasized that summative content analysis contributes to studying people’s interests. Moreover, the results of this study are expected to be compared with other similar research, such as Young and Bruce’s (2011) research discussing classroom community and student engagement, as well as Mucundanyi’s (2019) work about college student engagement in online learning.

3.6 Ethical considerations

According to Mucundanyi (2019), the considerations of whether the participants volunteered for the study and whether the consent forms embody pertinent information are ethical issues to be addressed in research. Taking the responsibility of a researcher, I considered these issues and would explain the purpose, risks, and potential benefits of the study. Moreover, the researcher would request the supervisor and other relevant personnel in the department for permission to implement the study. It is guaranteed that the participants' personal information will not be leaked, and all investigated questions are answered as per their own wishes. Last but not least, other questions that are unrelated to academic purposes will not be involved in this study.

CHAPTER IV

FINDINGS

This chapter highlights the findings obtained from the responses of the self-reporting survey. As outlined in the previous chapter, there are two research questions to be answered by dissecting the following components, which are organized into three main sections. In the first section, a general description of the studying participants is illustrated. The second section comprises the results of 23 scale items about the three types of interactions, learner-instructor, learner-learner, and learner-content. The data are used to examine the level of engagement whereby the first research question can be answered. With regards to the last section, the findings of two dependent variables are explained whereby the answer to the second research question can be indicated.

4.1 Demographic information of the sample

Table 2. *Description of the participants (n=100)*

	Categories	n	Percentage
Gender	Female	76	76%
	Male	24	24%
Age	17-20	20	20%
	21-24	72	72%
	25-28	2	2%
	Over 28	6	6%
Year of study	Year 1	18	18%
	Year 2	16	16%
	Year 3	66	66%
Degree course	English Education	40	40%
	English Language	12	12%
	Public Relations	6	6%
	Advertising	8	8%
	Journalism	7	7%
	Psychology	27	27%
Expected course grade	A	60	60%
	B	38	38%
	C	2	2%
	Below C	0	0%

This section summarised the demographic characteristics of the sample, including their gender, age, year of study, degree course, and expected course grade. As mentioned before, the 100 participants, who are undergraduates majoring in different courses, are selected from the Faculty of Arts and Social Science (FAS) in Universiti Tunku Abdul Rahman (UTAR) Kampar campus. Between the Week 1 and Week 2 of the October trimester in 2021, all participants who were invited responded voluntarily and positively to this self-reporting survey. As reported in *Table 2*, below, a total of 100 responses (n=100) were received, which has entirely reached the expected number of participants, making up 100% of the study sample. It is apparent that the data obtained here are mostly collected from females (76%), whereas males occupied merely 24% of the sample community. Remarkably, over half of the participants are Year 3 undergraduates (66%), followed by Year 1 (18%) and Year 2 (16%). In terms of their degree course, students of English Education (40%) are the main contributors of the data collected,

followed by Psychology (27%) and English Language (12%). The other three majors, however, had less than ten participants, comprising 8% (Advertising), 7% (Journalism) and 6% (Public Relations) respectively. It should be noted that A (60%) is the most expected grade among the participants, while 38% of them reckoned that achieving B is enough. By contrast, only two students look forward to getting C results in their undergraduate career and none of the participants demands themselves to be failed the subjects (Below C, 0%).

4.2 Results

4.2.1 RQ1: level of engagement

In responding to the first research question, 'What is the level of engagement in E-learning classes among undergraduates during the COVID-19 pandemic', the results of the 23 scale items are generally consistent among the three types of interactions. A glance at the tables below (*Table 3, Table 4, Table 5 and Table 6*), the level of engagement among the undergraduates in UTAR, when the E-learning classes were conducted due to the pandemic, was at a level between 'Moderately True' and 'True' (Mean=3.89, SD=0.896) in general. Here, 'Very True' (=5) indicates the highest level of engagement. Notedly, all the three factors were indicated as 'True' in spite of the ranking having some differences. Among them, 'Learner-instructor interaction' was ranked first (Mean=4.02, SD=0.790), followed by Learner-content interaction' (Mean=3.91, SD=0.908) and 'Learner-learner interaction' (Mean=3.72, SD=0.956).

Table 3*. The means and standard deviations of the three factors.*

	Learner-instructor		**Learner-learner**		**Learner-content**		**General**	
N	Mean	SD	Mean	SD	Mean	SD	Mean	SD
100	4.02	0.790	3.72	0.956	3.91	0.908	3.89	0.896

1) ***Factor 1: Learner-instructor interaction.***

Table 4. *Descriptive data of learner-instructor interaction (Factor 1)*

No.	Items	Mean	SD	Arrangement	Level of Engagement
1	The course rules in each of my E-learning classes are clear enough	3.97	0.745	5	True
2	My instructor is present and active in class discussions	4.05	0.702	4	True
3	My instructor is responsive to me when I have questions	4.20	0.725	2	True
4	My instructor is consistent about enforcing course rules	3.86	0.865	7	True
5	I know that I can contact my instructor when I need to	4.25	0.744	1	True
6	I trust my instructor to handle inappropriateness in class interactions	3.94	0.874	6	True
7	My instructor provides a well-organized course	4.09	0.653	3	True
8	I never feel isolated in the class	3.83	0.900	8	True
	Learner-instructor interaction	**4.02**	**0.790**		**Ture**

Given is the table of factor 1 illustrating the descriptive data of learner-instructor interaction. As observed in Table 4, it can be discovered that the level of engagement in terms of the factor 1 was generally at the level of 'True' (Mean=4.02, SD=0.790) among the undergraduates in UTAR. Significantly, the item 5, "*I know that I can contact my instructor when I need to*", was agreed as 'True' (Mean=4.25, SD=0.744) by the majority of participants. Nonetheless, the item 8, "*I never feel isolated in the class*", was ranked last in this section, but the level of engagement is still indicated as 'True' (Mean=3.83, SD=0.900). As for the remaining items, item 3 (Mean=4.20, SD=0.725), 7 (Mean=4.09, SD=0.653), and 2 (Mean=4.05, SD=0.702) have the means which are over 4, with the level of engagement at the moderately high level of 'True'.

2) *Factor 2: Learner-learner interaction*

Table 5*. Descriptive data of learner-learner interaction (Factor 2)*

No.	Items	Mean	SD	Arrangement	Level of Engagement
1	I participate actively in discussions of E-learning classes	3.56	0.935	5	True
2	I ask questions voluntarily in online discussions when I don't understand	3.51	0.990	7	True
3	I interact with classmates on course material.	3.95	0.833	2	True
4	I connect personally with classmates	3.91	0.944	3	True
5	I enjoy interacting in my E-learning classes	3.55	0.957	6	True
6	I help my fellow classmates during E-learning	3.86	0.817	4	True
7	I share personal concerns with others	3.40	1.146	8	Moderately True
8	I am committed to working with my classmates so that we can help each other learn	4.03	0.797	1	True
	Learner-learner interaction	**3.72**	**0.956**		**True**

In terms of the interaction among students themselves, the eight items below (Table 5) comprehensively demonstrated that student engagement regarding this factor is at a low level of "True" (Mean=3.72, SD=0.956) compared to the other factors. In Table 3, it can be seen that item 8 of the factor 2, "*I am committed to working with my classmates so that we can help each other learn*", was identified at the highest level of engagement among the eight items below, indicated as 'True' (Mean=4.03, SD=0.797). Whereas, the item 7, "*I share personal concerns with others*", was indicated as "Moderately True" (Mean=3.40, SD=1.146), which is classified at the lowest level of engagement among all 23 scales items. The remaining items in a mass present a low level of 'True' because none of their means reached 4 or above.

3) *Factor 3: Learner-content interaction*

***Table 6**. Descriptive data of learner-content interaction (Factor 3)*

No.	Items	Mean	SD	Arrangement	Level of Engagement
1	I complete all of the assigned class work during E-learning period	4.17	0.829	2	True
2	I visit the course website regularly	4.25	0.809	1	True
3	I truly desire to learn the course material through E-learning	3.82	0.989	5	True
4	I give a great deal of effort to the E-learning class	3.89	0.863	3	True
5	I am well organized in my learning online	3.64	0.980	7	True
6	I will earn a good grade in the course through E-learning	3.82	0.868	4	True
7	I am consistent in following the reading assigned	3.81	0.873	6	True
	Learner-content interaction	**3.91**	**0.908**		**True**

In table 6, there are seven items covered in the factor 3, which comprehensively described the level of engagement regarding the learner-content interaction at the level of "True" (Mean=3.91, SD=0.908). As reported, the item 2 of the factor 3, "*I visit the course website regularly*", was identified at the highest level of engagement among the seven items below, indicated as 'True' (Mean=4.25, SD=0.809). Whereas, the item 5, "*I am well organized in my learning online*", was indicated as "True" (Mean=3.64, SD=0.980), which, however, is classified at the lowest level of engagement in this part. Except for the item 1 (Mean=4.17, SD=0.829), the remaining items are in a mass situated at the low level of 'True'.

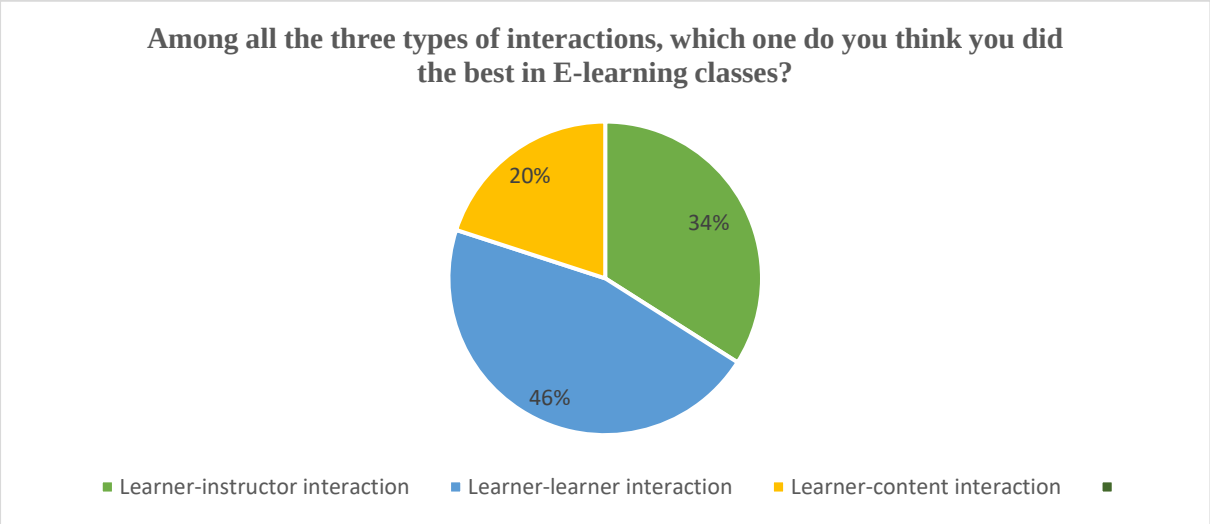
4.2.2 RQ2: Undergraduates' perception

The last section of the survey questionnaire consists of two dependent variables, which correspond to the second research question, "How do undergraduates perceive engagement in E-learning classes during the COVID-19 pandemic?".

1) Multiple-choice question

The first dependent variable is a multiple-choice question, which asks students about the type of interaction that they performed the best in E-learning classes. In Figure 4, it can be noticed that learner-learner interaction was chosen by nearly half of the participants (46%), whereby 34% of the selected undergraduates reckoning learner-instructor interaction is the best one. Further, one-fifth (20%) of the participants thought they performed the best during the interaction with course content. As learned from the results that the most participants believed they did the best in learner-learner interaction.

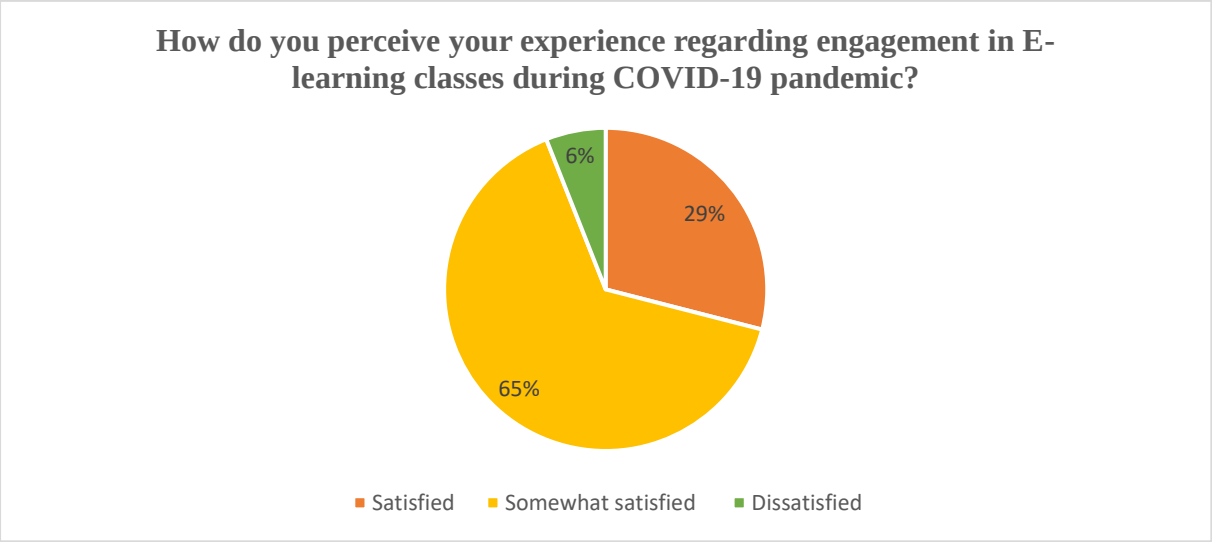
Figure 4*. The proportion of the interaction that participants thought they performed best in E-learning classes.*



2) Open-ended question

As for the students' overall perception regarding the engagement in E-learning classes, the last dependent variable, which is an open-ended question, was proposed. At first, students were required to determine whether they are satisfied with their engagement in E-learning classes (Figure 5). As can be identified from Figure 5, "somewhat satisfied", which makes up 65%, is chosen by most of the participants, then next is "satisfied" with 29%, followed by "dissatisfied", constituting 6% merely.

Figure 5. *The proportion of the UTAR undergraduates' different perceptions about their engagement in E-learning classes.*



In order to have an in-depth understanding about the second research question, participants were subsequently asked to provide the reasons as per their answers to this variable. In this part, summative content analysis, which offers substitutes of the responses, is applied to evaluate participants' satisfaction with their engagement in an E-learning environment (Hsieh & Shannon, 2005). In a total of 100 responses, there are fourteen reasons that were invalid because the contents are completely irrelevant to the question. Notably, summative content analysis is a way of coding and counting the number of times the predetermined word or content appears (Hsieh & Shannon, 2005). Therefore, there is a possibility that one response contains one or more reasons at the same time. In this section, the results are screened into two categories: *positive* (Table 7) and *negative* (Table 8).

Table 7. *The positive responses for being satisfied with their experience of engagement in an E-learning environment.*

Positive Reasons	Times of being mentioned	Percentage	Examples
Teachers are responsive and supportive	26	40%	"Most of the lecturers are responsive." "My teacher will help me actively when I have problems."
Interactive course contents	6	9.2%	"Most of the tasks assigned were fun and interactive."
Course mates are supportive and active	4	6.2%	"Course mates were willing to help me throughout the e-learning period."
Course contents are always accessible	8	12.3%	"I can watch the content of the class repeatedly when I encounter content that I don't understand."
Meaningful teaching	2	3.1%	"I satisfied because the lecturer is trying their best to teach in different way."
I am interactive	3	4.6%	"I am interactive in E-learning classes."
Comfortable environment	7	10.8%	"I can learn quickly the lessons taught in class than physical classes as I'll be able to take notes in a comfortable situation."
Effective and efficient communication	9	13.8%	"The use of the MT chat has been very efficient to ask questions on."
TOTAL	65	100%	

Table 8*. The negative responses for being dissatisfied with their experience of engagement in an E-learning environment.*

Negative Reasons	Times of being Mentioned	Percentage	Examples
Being distracted	12	27.9%	"There are times where it is hard to focus on e learning as there were many distractions."
Silent course mates	7	16.3%	"There are only a few classmates who participated in discussions in class, while others do not respond at all."
Poor internet connection	1	2.3%	"The downfall for this is that the internet might not be as stable."
Lack of physical interaction	10	23.3%	"I can't physically interact with lecturers and friends which creates a barrier when I would like to contact them."
Teachers are irresponsive and inconsiderate	3	7.0%	"Dissatisfied because some lecturer irresponsive."
I'm an introvert	5	11.6%	"I'm not interactive much in the class."
Difficulty in understanding teachers' teaching	4	9.3%	"Sometimes I can't understand my teacher's teaching."
Stressful workload	1	2.3%	"The assignment workload during e-Learning period is heavier than physical classes."
TOTAL	43	100%	

Using the method described above, I obtained eight **positive reasons** which were mentioned in a total of 65 times. As detailed in Table 7, most of the learners are satisfied with their engagement mainly because *"Teachers are responsive and supportive*" which was indicated 26 times (40%). Whereas "*Meaningful teaching*" was mentioned only twice, comprising 3.1%. Data in Table 8 summarised eight **negative reasons** which were mentioned a total of 43 times. The students who chose "somewhat satisfied" or "dissatisfied" with the engagement explained their negative reasons, one of which is "*being distracted"* (27.9%). It was identified that distraction is one of the biggest reasons that affect students' engagement. Meanwhile, "*lack of physical interaction"* is another significant negative reason, which was mentioned 10 times (23.3%). In comparison, *"poor internet connection"* and *"stressful workload"* are indicated once (2.3%) respectively. In general, participants are mostly satisfied with their experiences regarding engagement and therefore the responses to this issue present more positive attitudes.

CHAPTER V

DISCUSSION & CONCLUSION

This chapter will summarise the key findings on the basis of the previous chapter and answer the two research questions. It also contains comparisons to some existing studies, along with some personal interpretations. Further, the implications and limitations of the study will be indicated accordingly. Meanwhile, a comprehensive conclusion will be included as a summary of the above statements. At last, a few forward-looking recommendations will be proposed at the end so as to refine the present study and prompt the further research.

5.1 Discussion

5.1.1 RQ1: *What is the level of engagement in E-learning classes among undergraduates during the COVID-19 pandemic*?

On the question of asking the level of engagement in E-learning classes among undergraduates during the COVID-19 pandemic, this study demonstrated that the selected sample broadly engaged themselves in E-learning classes concerning the three types of interactions. Concerning the results provided in this research, learner-instructor interaction was ranked with the highest level of engagement; then next is learner-content interaction, followed by learner-learner interaction. Generally, the findings indicated that there is a moderately high level of engagement among UTAR undergraduates. Surprisingly, despite the result that almost two in five people do not expect to reach a top-level of grades, none of the items in the three factors showed a low level of engagement.

The results concluded above are a reflection as well as an extension of Oraif and Elyas's (2021) study. The researchers focused on four different factors, which are performance engagement, skills engagement, emotional engagement, and participation/interaction engagement. Utilising another existing approach, Handelsman et al.'s (2005) Student Course Engagement Questionnaire (SCEQ), Oraif and Elyas (2021) found that female EFL learners in Saudi Arabia also performed a high level of engagement in online English courses (Oraif & Elyas, 2021). In the meantime, investigating the three types of interactions in the current study also extends the findings of "interaction/participation engagement" in Oraif and Elya's (2021) research. In this factor, they solely focused on the learners' interactions with peers and instructors, but the current provided more findings on learner-content interaction, which serves as a complement to the former study.

However, another unanticipated finding in the present study is that the level of engagement revealed in the Likert scale items are almost "True" except for the item in learner-learner interaction that "I share personal concerns with others". This finding is inconsistent with that of Oraif and Elyas (2021) who obtained results for different levels of engagement in their 23 items of SCEQ. One possible reason to account for the bias probably is the difference in terms of the number of populations and the range of sampling. To support this, Faber and Fonseca (2014) explained that the research outcomes are liable to be influenced by the size of the study sample, resulting in some deviation from the expected results.

Moreover, it has been verified that using the survey approach in the current study produces similar results as indicated in the studies of the literature review. In this study, participants showed their high level of engagement in two items, "*I am committed to working with my classmates so that we can help each other learn"* under learner-learner interaction and *"I know that I can contact my instructor when I need to*" under learner-instructor interaction. In line with the previous studies, Young and Bruce (2011) found that there are correlations among the three types of interactions, which indicates that students are apt to engage in the learning if they have a positive attitude towards their work with peers and instructors. Similarly, Kuh (2009) also drew the conclusion from the research of using NSSE that learners opt to have a higher level of engagement if the learner-instructor interaction and learner-learner interaction are performed actively and collaboratively.

5.1.2 *RQ2: How do undergraduates perceive engagement in E-learning classes during the COVID-19 pandemic?*

The second research question is answered in the light of the undergraduates' perception. As reported in the results, a large percentage of the students reckoned that they performed best in their interactions with the classmates. It is reassuring to compare the findings with those

found by Young and Bruce (2011) who discovered that a positive relationship exists between the engagement and the community with classmates. Similar findings were agreed by Humber (2018) who investigated students' perception of defining engagement in online coursework, demonstrating that students are generally pleased with the online learning experiences especially when they are with the other classmates.

As discussed in the last question, however, students showed the lowest level of engagement in learner-learner interaction compared to the other types of interactions. It is utterly surprising that the students' perception regarding the item that "*the interaction that you thought you performed best in E-learning classes"* is entirely contrary to the results obtained in the previous section. This finding differs from Oraif and Elyas's (2021) research, in which the learners' satisfaction about E-learning positively correlates to their engagement. One possible explanation is that the participants failed to have a comprehensive understanding in regard to the meaning of learner-learner interaction before responding to this section. In other words, some important interpretations of the term "learner-learner interaction" that have been indicated in the Likert scale sections were ignored by the participants. To elaborate on this, Humber (2018) supposed that the lack of relevant understanding of this concept among students has a lot to do with the educational institutions. Indeed, the institutions should undertake the duties of introducing the new students about their expected roles in each online course whereby students are more likely to engage themselves with commitment (Humber, 2018).

Meanwhile, a generally positive attitude towards the experience of engagement in an E-learning environment was revealed among the selected participants in this study, especially the satisfaction about the responsive and supportive teachers. This can happen to some extent because when the participants were asked in the Google survey about "why are you satisfied or dissatisfied with your engagement in an E-learning environment", I gave a relevant example of "Teachers are responsive". However, it is undeniable that this result was also reflected in

other studies. In research from Clark and Mayer (2016), student-instructor interaction was concerned, and they found that teachers' responses exert a powerful influence over the student engagement. Beyond that, Wu and Hung (2018) conducted a case study on when and where students do their homework and ultimately advised that teachers should respond promptly to students' online questions to ensure that students are actively engaged in their learning. To some extent, it can be naturally concluded that teacher presence plays a vital role in enhancing student engagement in E-learning environments (Ma et al., 2015).

Moreover, there was also a certain number of negative feedbacks from the participants on asking why they are dissatisfied with their experience of engagement in an E-learning environment. For a couple of respondents who have unsatisfied feelings with online engagement, they mainly broached three problems that caused their poor engagement, which are the distractions, lack of physical contacts, and introvertive personality. These results are supported by a great deal of the previous work in this field. Phirangee (2016) researched how the students perceive the learner-learner interaction that reduces the sense of community in online classes. She pointed that learner-learner interaction in online learning environments lacks the presence of a physical medium, which may lead to confusion regarding the sense of community, such as the distraction and isolation (Phirangee, 2016). Further, when it comes to the factor of introversive personality observed in the current research, the findings somehow mirrored Humber's (2018) study of interviewing learners' opinions about the communications with instructors and peers. The researcher discovered that students who justified themselves as introverts hold negative attitudes towards the importance of learner-learner interaction (Humber, 2018). Above all, it is essential to bear in mind the possible bias in these responses. Above all, due to the time and resource limits, the scope of the sample was restricted in the FAS of UTAR Kampar campus. Therefore, it is essential to bear in mind the possible bias in these responses.

5.2 Conclusions

In general, this paper was designed to assess student engagement in E-learning classes during the COVID-19 pandemic. The unexpected epidemic resulted in the widespread closure of the global campuses, including the institutions in Malaysia, which exerts a huge influence on the learning mode. Consequently, E-learning has become the only viable solution for students and teachers to continue the teaching and learning activities in this campaign. In this study, the researcher focused on finding out the level of engagement and undergraduates' perception regarding their engagement in E-learning classes during the COVID-19 pandemic.

By conducting this quantitative research using an online self-reported survey, the current study found a moderately high level of engagement among the UTAR undergraduates in regard to the learner-learner, learner-instructor, and learner-content interactions. Although there were a number of participants do not expect to reach a top-level of grades, none of the items in the three factors showed a low level of engagement. Going forwards, UTAR undergraduates also showed their satisfaction or dissatisfaction regarding their experiences of engagement in E-learning environments during the COVID-19 pandemic. Indeed, each student had different perceptions in terms of their interactions with peers, teachers, or course content, but overall, the majority hold a positive attitude towards their experiences of engagement during the lockdown period. Nevertheless, the findings also indicated some causations that have considerate implications for student engagement in online classes, such as distraction, lack of physical contacts, introvertive personality, and so on. Despite that many problems to some extent cannot be avoided, they should be mitigated as much as possible. In the meantime, the evidence from this paper confirmed that the teachers play a leading role in learner-instructor interaction, becoming the facilitators and participants of promoting student engagement in an E-learning environment. Besides, institutions are suggested to help students define the concept

of engagement so that they can have a better understanding of what they should do in E-learning classes.

Essentially, the information and findings explored by this study could be made available to the other researchers who are interested in the similar topics. Until today, E-leaching mode is still in progress due to the epidemic. Thus, more studies are needed to gain a deeper understanding of student engagement in such a situation. Most importantly, it is inspiring to assume that this study would encourage all stakeholders in the higher education system to think about how they can do to improve student engagement in the context of online learning. Those stakeholders, including teachers, school leaders, government officials and students themselves, are expected to obtain some profound insights from this study.

5.3 Limitations of the study

It is undeniable that there are a few limitations in the present study. Google Form survey is the primary means for collecting responses. Unlike the face-to-face questionnaires, there is no guarantee that the data sources are all from the target population by using such an online tool. In addition, this research was conducted in accordance with the responses of a small sample size as mentioned, and the data was fully collected within one week only. In this case, cautions should be applied as the answers cannot be extrapolated to all populations. Apart from the issues of the participants, limitations also exist in the instrument plan of the study. The fact is that some indicative sample answers were attached to the last survey question, which was somewhat misleading to participants that their answers may deviate from their subjective consciousness.

5.4 Recommendations

At the end of the research, some recommendations are suggested as the forward-looking statements for the future studies. This study only involved 100 participants who come from one

particular faculty of the UTAR Kampar campus, which somehow indicated a limited range of sampling and sample size. Hence, firstly, it is suggested that further relevant studies could appropriately expand the sampling scope and increase the sample size to ensure the generalizability and applicability of the results (Faber & Fonseca, 2014). Secondly, further research on this topic is suggested to be undertaken before the correlation between the level of engagement and students' perception is more clearly analysed. Therefore, it is highly recommended to analyse the data by using the one-way ANOVA test as it supports the researcher to compare more than two groups (Kim, 2017). Thirdly, this study investigates student engagement on the basis of the undergraduates' perception only. In future investigations, it might be possible to also include teachers' perceptions as a supplement of the learner-instructor interaction. Last but not least, in the current circumstance created by the COVID-19 pandemic, E-learning, seemingly is a reluctant choice but the best action for the students in Malaysia. For other researchers, it is worth probing into this issue in a cross-national way, since a number of countries so far are still facing the same problem due to the pandemic (Radha et al., 2020).

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Appendix I

Survey items:

1. **Demographic information questions:**
    1) Gender
    2) Age
    3) Year of study
    4) Degree course
    5) Expected course grade
2. **Items for learner-instructor interaction**
    1) The course rules in each of my E-learning classes are clear enough
    2) My instructor is present and active in class discussions
    3) My instructor is responsive to me when I have questions
    4) My instructor is consistent about enforcing course rules
    5) I know that I can contact my instructor when I need to.
    6) I trust my instructor to handle inappropriateness in class interactions
    7) My instructor provides a well-organized course.
    8) I never feel isolated in the class
3. **Items for learner-learner interaction**
    1) I participate actively in discussions of E-learning classes.
    2) I ask questions voluntarily in online discussions when I don't understand
    3) I interact with classmates on course material.
    4) I connect personally with classmates.
    5) I enjoy interacting in my E-learning classes.
    6) I help my fellow classmates.
    7) I share personal concerns with others.

8) I am committed to working with my classmates so that we can help each other learn.

4. Items for learner-content interaction

1) I complete all of the assigned class work.
2) I visit the course website regularly.
3) I truly desire to learn the course material through E-learning.
4) I give a great deal of effort to the E-learning class.
5) I am well organized in my learning online.
6) I will earn a good grade in the course through E-learning.
7) I am consistent in following the reading assigned.

5. Items for answering RQ2 (last section):

1) Among all the three types of interaction, which one do you think you did the best?

- Learner-learner interaction
- Learner-instructor interaction
- Learner-content interaction

2) How do you perceive your experience regarding engagement in E-learning classes during Covid-19 pandemic?

- Satisfied
- Somewhat satisfied
- Dissatisfied

Kindly, add your reasons_____.