

# Online and Distance Learning (ODL) and Hybrid Learning in COVID-19 era: The Effects of Pandemic to Undergraduate Students

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## Abstract

Undergraduate students are facing challenges during COVID-19 pandemic where teaching and learning (T&L) are completely migrated to online and distance learning (ODL). Most of the countries worldwide are under lockdown. Regardless of the shock faced, education is one of the main sector where it is important and can be continued to operate completely online, and perhaps combined with face-to-face (F2F) into Hybrid Learning when the pandemic rate

is going under control. However, many feedback received from the students especially from various sources including students themselves, parents, and educators on real situation in ODL. Thus, this study is taking an initiative to gather systematic and objective feedback on three main factors; Autonomy, Competence and Relatedness. The undergraduate students of the higher institutions of learning in southern state of Malaysia are the respondents in this study consists of 321 students from multiple faculties representing different fields of studies. As a result, the factors under investigation had effects on students' motivation, interaction, communication, and online accessibility in continue enrolling to pursue their study using ODL and Hybrid Learning. Learning environment and preferences can be further explored to support the students in a more comprehensive manner in post-COVID-19 pandemic.

**Keywords:** Online and Distance Learning (ODL), Hybrid Learning, COVID-19

## 1. Introduction

The COVID-19 pandemic undeniably is one of the causes for the year 2020 global impacts education at higher learning institution. Undergraduate students need to adapt with changes in the learning methods and environment. Student course enrollment need to be done online from registration, learning until examination. These new norms lead to several challenges, not only due to understanding subjects but also due to in-conducive environment. This is because in online learning period, there is no conducive classrooms but only virtual classrooms. Thus, the learning environment between each student is differed since students need to have their own spaces, mostly at their own home. Thus, mostly the learning process during pandemic to obtain their bachelor or diploma is more on online distance learning methods. Student's need to adapt with the new learning style, as the university staff and lecturers are also experiencing the similar difficulties in conducting lectures due to the pandemic, where the university closure leads to several issues in current education system. For example, there is uncertainty about how university closure could impact the real achievement of students if they are continuously required to perform online learning for years to come.

The university closures even after the pandemic rate decreased had negatively impacted on student emotional aspects and stress level. Based on the previous learning methods and most of the university students have access to university classroom and library making their group discussion to enhance their understanding easier and completing their task in group. However, the issue to be explored are will these trends continue in 2021 school year ahead? How the trends will look like will be of interests to many. Student may face other challenges in terms of having inadequate tools for learning, and thus it's important to know student learning preferences during pandemics. Two main learning modes that have been practices in Malaysia until current situation which are ODL and hybrid learning (ODL and F2F performed concurrently). F2F method requires students to physically be in the learning environment, ODL means the lecture is being conducted via online classroom where the students are separated in their locations, whereas the hybrid method is the combination of both teaching methods altogether at one time of a particular class session.

It is not easy for decision makers to make the rational decisions on the suitable time to return to face-to-face learning. It remains problematic in the uncertainty on how the pandemic could affects student learning, ever. Nowadays, education officials had to weight the decisions that and concerns involved with face-to-face learning against the educational interests and health risk in physical classrooms. Undergraduate learning processes have changes from F2F to online distance learning and hybrid techniques after the occurrence of pandemic that trigger several challenges in students' learning methods. In comparison to the learning and teaching style before the pandemic, students are required to attend lecture in F2F mode. This will increase the interaction between students and lecturer, and thus facilitate the learning processes. However, due to the pandemic, the scenarios have changed many aspects in the learning methods, where students and lecturers and required to be familiarize with online teaching and learning tools. Therefore, in current study in conducted to assess the challenges faced by students in current new norm that changes their learning ways and how student could adapt by measuring their emotional acceptance in current situation.

## 2. Literature Reviews

The increase of online courses and online education from the programs offered by universities adopting the teaching materials and delivery using online and distance learning (ODL). The transformation needs and demands from the students and faculty can be shown by the increase of the number of students enrolling online courses which grew up to 5.8 million students at national level according to Online Learning Consortium since 2002 to 2015. Furthermore, one third (30%) of higher education students enrolled in at least one online course (Allen et al., 2015). Online learning is just like any kinds of learning approaches where motivation and self-determination plays a big role. Self-determination must be enhanced as an intrinsic will from inner self of the students. The problem-solving skills and competences can be encouraged through design of thinking skills and creativity (Calavia et al., 2021). Self-determination theory can influence motivation. Realizing these scenario, surveys are required from the respondents consist of diploma students (transition periods from school to university).

Self-determination theory (SDT) can be utilized to connect with three (3) factors that potentially influenced students' learning ability; autonomy, relatedness and competence. SDR is an approach to explicate the needs of satisfaction, well-being and motivation (Deci & Ryan, 1985; Ryan & Deci, 2000). Deci and Ryan (2000) proposed that higher happiness is attained by satisfying three essential human needs: autonomy (the quality of being self-governing), competence (individuals' beliefs of their ability to execute essential activities), and relatedness (feeling connected with others). From this perspective, a social setting can help people achieve their highest levels of motivation and happiness by providing opportunities. Individuals' motivation and well-being can be harmed by a lack of contextual support, which makes it difficult for them to meet their basic needs (Ryan & Deci, 2000).

Muthuprasad et al. (2021) mentioned that based on their study, majority (70%) students are ready to opt for online classes during pandemic in India. Rhiannon Lee White, Andrew Bennie provide evidence of self-determination theory with physical education efficacy as

opposed to online education. According to fundamental psychological needs theory, humans have three basic wants: autonomy, competence, and relatedness. From F2F to online distance learning and hybrid Learning Style, several equipment and tools are required to assist learning as undergraduate learning would involved focus to solve assignments and tests assigned.

Challenges for education in post-COVID-19 pandemic could turn out more unexpected than ever forecasted by experts and media. Human lives and personal matters do affect their studies while they need to perform online learning, getting input from the instructors far away and provide output without acknowledging the reality the students' must face in their family. The role could be more than just being imagined by educators and leaders from their comfort sit. However, realizing that education are still crucial for the development of nation during and post disasters, hybrid techniques can be considered. Synchronous and asynchronous learning can be practiced in order to help students feel that they are emotionally connected.

Student challenges in learning during COVID-19 pandemic could be due to the emotional aspect. Internet accessibility is critical in online learning. Furthermore, appropriate mobile data is required for smooth online learning processes which translated to the additional expenses for learning process. The overarching themes included feelings of being (a) restricted, (b) stressed, (c) devalued, (d) validated, and (e) revitalized. Furthermore, some studies in the field of emotions and online learning focus tactics for reducing students' negative feelings such as loneliness, isolation, and anxiety and promoting connections (MacFadden, 2005; Reupert, Maybery, Patrick, & Chittleborough, 2009; Wallace, 2003; Weiss, 2000; Zembylas, Theodorou, & Pavlakis, 2008). Reupert et al. (2009) highlight the significance of instructor presence and charisma in online courses; students want teachers who are engaging, approachable, and enthusiastic about their subject matter to stay interested and connected.

Marchand and Gutierrez (2012) researched the emotion role in learning by investigating the motivating views, emotions, and learning strategy usage of graduate students enrolled in online and face-to-face parts of research methodologies courses over the course of a semester. Analyses were carried out to evaluate a conceptual model in which student task value beliefs, self-efficacy for research methodologies, and perceived relevance of instruction affected course-related emotions of hope, frustration, and anxiety, which in turn predicted student-reported use of meaningful learning strategies. Multi group path analyses were used to compare the degree and direction of the antecedents and consequences of student emotion for students in diverse environments. It discovered that the groups differed in various ways, including routes from extrinsic utility value to anxiety and hope; relevance to hope; and frustration and anxiety to learning techniques.

Higher degrees of self-efficacy have been repeatedly linked to higher levels of positive feelings like optimism, pride, and enjoyment and lower levels of negative emotions like anger/frustration, humiliation, boredom, and hopelessness. (e.g. Goetz, Cronjaeger, Frenzel, Ludtke, & Hall, 2010; Pekrun et al., 2011). From environmental perspectives, remote education is the most well-known description used when referring to remote learning. It

frequently refers to the effort made to provide access to learning for individuals who are geographically distant. Various writers and researchers have used contradictory definitions of remote education and distant learning throughout the previous two decades, according to the relevant literature. The design of various types of learning environments can be influenced by the learning aim, target audience, access (physical, virtual, or both), and content type [according to Moore et al. (2011). According to Moore et al. (2011), research in the field of distant learning might be even more challenging to apply because there are several contexts with varying features. A poll of 43 people revealed that there was inconsistency in the usage of nomenclature for various sorts of distribution systems.

Their findings show that different learning environment names elicit various expectations and perceptions: remote learning, e-Learning. An effective online course combines a variety of web technologies and resources to help students understand course material (Jönsson, 2005). All students may engage and engage in the online arena, however certain students (e.g. older students) may feel uncomfortable interacting with other students in the in-class format, which may have had an influence on student performance since the online format may have given a more welcoming and relaxed setting for interaction (Rao and Dicarolo, 2000). The findings by Butz and Stupnisky (2016) shows that the students who participate in the intervention increased their self-efficacy for relatedness with those who was in ODL. This has significance for ODL since it explains how it can encourage relatedness growth.

Ivan Pavlov, notable for his studies with dogs, food, and aural stimuli like as a bell, is commonly identified with the origin of behaviourism with the discovery of Pavlovian conditioning (Urcelay and Domjan, 2020). Dogs learned to associate food or feeding time with the sound of the bell in his trials and started salivating, Pavlov's tests were carried out in the early 1900s. Many other scholars reproduced these findings during the twentieth century. John B.'s formal name is John B. Watson, one of the first Americans to study Pavlov's work, saw it as a part of psychology science of nature. Watson became a significant supporter of Pavlov and is widely regarded as the father of Pavlov's theory that went beyond into behaviorism (Watson, 1998; Strapasson, 2020). He argued that mind and consciousness are unimportant in the learning which could be controversial to certain community. Cognitivism has been considered a reaction to the "predictive stimulus and response" (Harasim, 2012) Cognitive theorists promoted the concept that the mind has an important role in learning and sought to focus on what happens in between the occurrence of stimulus and student response. The future of cognitivism is particularly interesting as more advanced online learning applications seek to integrate artificial intelligence and learning analytics into instruction.

### **3. Research Methodology**

The participants for this study are the university students at a higher education institution in Johor, Malaysia. In this study, 321 students participated. This is a cross-sectional research, with questionnaires given by internet. The justifications here is due to the emergence of pandemic in Malaysia with Movement Control Order (MCO) 1.0 since 18<sup>th</sup> March 2020, but with reduced restrictions months afterwards, another MCO 3.0, started on June 1<sup>st</sup>, 2021. The compulsory needs to only proceed the education systems using online technologies can

determine how actually the students behave and cognitively think during COVID-19 era where there is no other choice but to opt into full-scale ODL rather than F2F or with the thought of possibility to perform hybrid learning again or not. The questionnaire was separated into three parts: demographics, learning environment factors, and learning preferences. The questions in the learning environment part were modified from Butz and Stupnisky (2016), whereas the questions in the learning preferences portion were adapted from Arispe and Blake (2012). The data was analyzed using SPSS, and a descriptive analysis was performed (frequency and mean analysis). Referring to Allam et al., (2020), the range mean used for the level of acceptance was discussed.

#### 4. Results

Table 1 shows the preferences ranking for student according to three main learning modes which are Hybrid Learning, Face-to-Face (F2F) and Online and Distance Learning (ODL). Based on the result, when compared to the three learning mode, the highest preferences rank by students during pandemic situation is ODL which accounted for 40.2% of the total respondents. Meanwhile the second highest preferences were the Hybrid Learning method which accounted for 49.5% of the total population. Interestingly, the third highest preferences ranked by student for their learning technique were scored by the ODL method again. This shows that most student would like to avoid the F2F learning that could be due to their worry and aim to avoid F2F interaction, and thus avoid spreading of viruses during pandemic.

Table 1. Student ranking based on preference learning modes.

Preferences ranking	Learning mode (Mean score/Percentages)		
	<i>Hybrid</i>	<i>F2F</i>	<i>ODL</i>
First	80 (24.2%)	118 (35.6%)	133 (40.2%)
Second	164 (49.5%)	84 (25.4%)	83 (25.1%)
Third	64 (19.3%)	100 (30.2%)	167 (50.5%)

The demographic information of the respondents in this study was shown in Table 2. There are 75.50 percent female students and 24.50 percent male students among the respondents. All respondents were diploma students from the Academy of Language Studies (1.50 percent), the Faculty of Accountancy (14.8 percent), the Faculty of Business and Management (14.80 percent), Computer and Mathematical Sciences (47.40 percent), and Information Management (20.20 percent). More than half of the respondents (64.40 percent) had a family income of RM1000-RM5000, followed by a family income of more than RM5000 (23.90 percent), and a family income of less than RM1000 (11.80 percent). There were 91 students

who lived in towns, accounting for 27.50 percent of all responses, and 147 who lived in rural areas (44.40 percent) while 93 (28.1%) of respondents from rural area.

Table 2. Statistics of Respondents' Demographic

Items	Demographic	Frequency (N)	Percentage (%)
Education level	Diploma	331	100
Gender	Male	81	24.5
	Female	250	75.5
Faculty	Academy of Language Studies	5	1.5
	Accountancy	49	14.8
	Business and Management	49	14.8
	Computer and Mathematical Sciences	157	47.4
	Information Management	67	20.2
	Others	4	1.2
Family income range	Less than RM1000	39	11.8
	RM1000–RM5000	213	64.4
	More than RM5000	79	23.9
Residential Area	Urban	91	27.5
	Sub-urban	147	44.4
	Rural	93	28.1

Cronbach's coefficient alpha is utilized in this study to evaluate the internal consistency

reliability of the factors. The results of that analysis are presented in Table 3. All the considered factors received the Cronbach coefficient alpha values of more than 0.82 indicating its reliability and internal consistency. Thus, the research instrument utilized in this study is reliable.

Table 3. Cronbach's coefficient alpha values of ODL according to SDT

<i>Learning factors</i>	<b>No of items</b>	<b>Cronbach's Alpha</b>
Autonomy	3 items	0.822
Competent	2 items	0.824
Relatedness	2 items	0.871

Table 4 shows the mean analysis on demographics for three types of learning factors based on Self Determination Theory; Autonomy, Competence and Relatedness. Based on the result, less than 50% students were self motivated and willing to allocate extra time to study during pandemic (Mean, 3.29). This could be due to the the highest percentage (64.4%) of middle income group family (RM1000 - RM5000), which could be limitation in terms of facility and learning environment. In addition, 11.8% of students come from a very low income family which is less than RM1000, whereas 23.9% of the students come from the income range of family more than RM5000. While in terms of residential area, 44.4% comes from sub-urban, followed by 27.5% students from urban area and 23.9% of the respondents live in rural area. This demographic factor is important that could explain their accessibility factors towards internet facility and identified their constraint in studies. Based on competence construct, it is noted that health and financial issues is less significant, with mean score 1.98 and 2.24 for health and financial issues, respectively indicating that most students are in a good health status and free from serious financial issues. The percentages of students that have financial problem (11.4%) is approximate to the percentages of respondents (11.8%) who come from a very poor family background (less than RM1000), and only 11.5% agree with financial issues problem. However, the result revealed that autonomy is the most significant factor that influence the ODL for students during the emergence of COVID-19 pandemic in a southern state in Malaysia.



Table 4. Mean Analysis Results according to the Factors

Items	Percentage of agreement (%)	Mean
<i>Learning factors</i>		
<b>Autonomy (total mean)</b>	3 items	<b>3.29</b>
I am highly motivated to come back to campus for completing my study using a hybrid approach (ODL and F2F)	45.0%	3.26
For the purpose of the study, I always stay up late (from MCO to RMCO)	45.3%	3.31
I am willing to spend time according to the required hybrid approach (F2F and ODL)	46.2%	3.28
<b>Competence (total mean)</b>	2 items	<b>2.11</b>
I am not capable to study either ODL, F2F or hybrid approach due to health issues	9.4%	1.98
I am not capable to study either ODL, F2F or hybrid approach due to financial issues	11.5%	2.24
<b>Relatedness (total mean)</b>	2 items	<b>2.68</b>
I was unable to reply to my lecturer's queries all the time due to poor internet connection	24.8%	2.67
I was unable to reply to my lecturer's queries all the time due to costly mobile data	26.6%	2.68

The descriptive analysis of the respondents taking part in this study was explained in Table 5. The respondents believed that the most important factors that are affecting their study during pandemic was the autonomy factor (Mean, 3.29), followed by competence (Mean, 2.11) and relatedness factor (Mean, 2.68). However, autonomy factor received moderate acceptance level, and competence and relatedness received low acceptance level since the score is reverse rating. Based in the respondent preference learning mode, the highest percentage of student learning priority choice during pandemic ODL, with 40.2%, followed by 35.6% who

preferred F2F learning mode, and only 24.2% who preferred hybrid learning mode. The second choices was hybrid learning mode with a combination of both teaching methods, and interestingly their third preference of study mode during pandemic comes back to ODL learning method. This shows that students would want to avoid F2F interaction for learning during the pandemic, wherever possible.

Table 5. Mean score of factors based on demographic characteristics.

Demographic		Mean Score of Factors		
		Autonomy	Relatedness	Competence
Family income range	B40 (<RM4849)	3.187	2.730	2.195
	M40 (RM4850 - RM10959)	3.350	2.320	1.660
	T20 (RM5000 - RM10000)	3.280	2.790	2.260
Current residential area	Town	3.090	2.465	2.045
	Sub urban	3.410	2.735	2.130
	Rural area	3.283	2.780	2.140
Gender	Male	3.107	2.660	2.135
	Female	3.327	2.680	2.100

## 5. Discussion

Student learning preferences may differ among respondents as a result of their learning environment. Several variables influence students' learning climates, including demographic characteristics such as family income, which influences how they choose to study. Mutuprasad et al. (2021) investigated students' preferences for several aspects of online classrooms, which will aid in the construction of an efficient online learning environment. According to the findings, the majority of respondents (70 percent) are willing to use online classes to handle the curriculum throughout the epidemic. The majority of students opted to learn online using their smartphones. Thus, current study aims to assess the challenges and

learning preferences of students in pandemic situation in in Malaysia. Students prefer to get instructions very clearly, due to the constraints during pandemic. Students' perception and preference for online education during COVID -19 pandemic has interesting results (Muthuprasad et al. (2021). They reported simplicity of use of e-Learning was greatest (52.2 percent of participants in their survey), followed by perceived self-efficacy of utilizing e-Learning. The perceived usefulness of e-Learning and the behavioral intent to utilize e-Learning. Most students preferred studying in ODL mode during pandemic as compared to F2F and hybrid methods. Students' perception towards online learning (Khan et al., 2021; Tuma et al., 2021) were discussed comprehensively about feasibility and challenges that instructors found.

Self-determination theory which are based on Autonomy, Competence and Relatedness helps in motivating students during hard times like the emergence of pandemic currently. Instructors and students should expect realistic solutions are not coming up very soon as the other pandemic solutions in the past. Therefore, mental and emotional preparation are extremely crucial to go through the education besides designing a quality content and evaluation approaches. The synchronous hybrid classroom has its own challenges. Engagement of students during ODL depends on their own self-determination perspectives to several challenges especially related to personal home or local facility issues. The emotional aspects can be directly or indirectly related to mental health issues. COVID-19 has been widely relate as one of the psychological stressors since its emergence (Xiong et al., 2020) "However, participating in specific activities during lockdown had no influence on anxiety levels." In order to assess the psychological effects of COVID-19 and its reaction DASS-21 (Bados et al. 2005; Nur Azma et al., 2014) provided scores range 0-7 with three sub-scales; depression, anxiety and stress while the Impact of Event Scale (IES) for intrusive thoughts and avoidance scales. As the result of the pandemic, the medical students are heavily impacted, where most of the participants 96.7% believed that COVID-19 pandemic lockdown affected their academic performance (Mahdy et al., 2020), but does not specify in detail why and how it affects them.

In terms Competence, the restriction in online learning could affect learning process, however most student feel they could study at an acceptable level. Most student feel that the financial and health is not the main problem. This could be due to the financial help from the government, where students received stimulus package. To assist these communities in surviving, the Malaysian government launched certain programmes for B40, M40, and students, besides enhance the broadband network (Ain Umaira et al., 2020) and the free 1GB daily data (Gong, 2020).

In term of Autonomy, it should be noted that student motivation and willingness to put more effort in online learning during pandemic is measured using autonomy construct. Deci and Ryan's (1985) self-determination theory was the first to consider the importance of need fulfilment and motivation within a specific social setting (SDT). When students believe their need for social engagement has been met, they become disengaged, which leads to a drop in motivation and academic accomplishment (Rovai et al., 2007). The goal of this study was to use a multiphase mixed methods design to evaluate the links between graduate students' need

fulfilment, motivation, and accomplishment (Deci & Ryan, 1985; Carter, 2013). According to Hennessey (2000), creativity is intimately tied to intrinsic motivation, self-initiation, and self-determination in individual actions, all of which influence each other. Cheng & Leung (2012) found that students described their creative learning as entertaining and energetic, helping them to think more broadly and enhance their confidence, curiosity, initiative, and drive.

In terms of Relatedness, most of students could interact with their lecturers without having much problem due to internet usage of mobile data. Internet accessibility is critical in online learning. Furthermore, appropriate mobile data is required for smooth online learning, which translates to an additional expense in the online learning process. For the synchronous hybrid learning environment, coordination is required. Furthermore, the lecturers should be providing exceptional assistance to the students in order for them to completely comprehend the instruction and subjects. According to Rajhans et al. (2020), during the COVID-19 epidemic, more than 80% of professors assisted in resolving any student issues or concerns via phone calls or text messages. According to Dhawan (2020), the students from the T20 family income range, needs more attention on the social component, rather than accessibility and academician, is the most significant impediment.

## 6. Conclusion

Students gain from ODL some cost savings and more flexibility in studying. However, the accessibility is crucial in order to guarantee that the learning process runs smoothly. Limitations on internet access, data package prices, and a shortage of gadgets were among the main challenges faced by students from remote areas. During this crisis, all academic institutions, should attempt to improve students' motivation and performance while also preventing major mental health difficulties that have lately affected certain pupils. Furthermore, students and academics must be emotionally and physically prepared to adjust to this new form of learning according to students' SDT which include several factors; Autonomy, Competence and Relatedness.

From current study, it has been noted that most of student can cater current ODL method, although some could face several challenges in their learning. It also has been noted that autonomy, competence and relatedness has impacts on students' motivation in enrolling ODL and hybrid learning during the emergence of pandemic. The study's population was made up of students from a single public institution in Malaysia, and not the private institutions which have different family income ranges, facilities, learning environment and competence which is one of the drawbacks to this study. Learning preferences does not signify understanding but interest; in a way, learning ways can possibly strengthen student learning processes and keep students' motivation at high level through their behavior, cognitive and responses in learning.

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