Open and Distance Learning: Exploring stress among undergraduate students

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Abstract: *The landscape of teaching and learning for higher education has long changed since the outbreak of pandemic COVID-19 in 2020. Open distance learning has gained significance prominence in the realm of education, offering flexible opportunities for learners to access educational content remotely. This study explores the factors contributing to stress in the context of open and distance learning. It delves into the multifaceted nature of stressors such as internet connection, learning process and environment of the study. The study adopts quantitative descriptive approach that aims to provide a detailed account of a particular phenomenon. Thus, in this study, questionnaires were disseminated online to students around the Klang Valley area. The analysis done onto 382 respondents revealed that three of the independent variables have a significant relationship with the dependent variable. In addition, it was also found that the highest impact of the factor contributing to stress among students during open and distance learning is environment of study. Students are found to be daunted by their study environment during ODL because they are distracted by being in a noisy environment. A harmonious environment is important in reducing the stress among students especially during open and distance learning.*

Keyword: *Stress, internet connection, learning process, Study environment, Open Distance Learning*

1. INTRODUCTION

Virtual learning allowed educators to deliver instructional content remotely, eliminating the need for physical classrooms. Students could access course materials and lecture materials from any location with an internet connection, providing flexibility and overcoming geographical barriers. Teaching Computer Networking courses remotely is challenging. One of the difficulties is to cater to the hands-on activities for the real networking equipment configuration (Abdul Rashid et al., 2019). But, with the adoption of a Learning Management System (LMS), teaching remotely has become convenient and manageable. LMS is a teaching platform that caters to the communication between lecturers and students in conducting teaching activities remotely (Saidi et al., 2021). There are free LMS available such as Google Classroom, but University Teknologi MARA (UiTM) has developed its own LMS knowns as uFuture (www.ufuture.uitm.edu.my). uFuture has become an excellent platform that caters features for Online and Distance Learning (ODL) and Blended Learning (BL), such as forums, chat, video, assessment, and assignment. This has made uFuture an excellent LMS platform for a virtual learning environment.

Undoubtedly, the pandemic has led to a transformation in teaching and learning approaches, shifting towards virtual or online learning, which encompasses the practical evaluation aspects (Gamage, K. A. A et al., 2020). Since hands-on learning involves active engagement and physical involvement of students in practical activities that directly relate to the subject matter (Miriam, 2021), the process of teaching and assessing computer networking courses has become very challenging (Wang et al, 2020), especially during the pandemic as it requires hands-on activities, such as cabling, configuring and troubleshooting the network devices and network scenarios. The course Routing and Switching Technologies (ITT532) is one of the core subjects in Bachelor of Computer Science (Hons) Computer Network (CS255) and this program is offered in three UiTM campuses, namely UiTM Shah Alam, UiTM Jasin, and UiTM Arau. In order to maintain consistency and object measure of students' performance across different campuses, a common approach of assessment, specifically for a skill-based was used to standardize the evaluation of the students' skills for this course. For the purpose of achieving the desired learning outcomes of the

course, it is crucial to emphasize practical skills. Thus, the inclusion The landscape of teaching and learning for full time students in higher education drastically changed the first time when the pandemic hit the nation in 2020. A drastic decision had to be madethus, the Ministry of Higher Education (MOHE, 2020) had instructed all public and private universities to shift their traditional face-to-face teaching and learning to ODL starting from March until December 2020 (Hasan, Mohammed, Gazem, Fazea, Abdulsalam & Omar, 2021). Thus, begun the journey for academicians to conduct their teaching and learning through open and distance learning. Open and distance learning refers to a teaching mode which is led by somebody who is distant from the students and the mission intends to incorporate greater elements of flexiblity and acceptance, regardless of accessibility to other components of structure and all educational program (curriculum). With fully online teaching, typically there is no face-to-face interaction between the lecturers and the learners (Allen & Seamen, 2007, 2013). This is what the Commonwealth of Learning (COL) defines open and distance learning as: a learning system, which uses technology to mediate instruction and learning (COL, 2005). To substitute the face-to-face component, online learning technologies such as audio and video conferencing are used, delivered individually or in group using text, audio and video tools available in the Internet or using mobile learning technologies. A study by Thierry Karsenti, 2010 indicated that 75% of students that accomplished a program open and distance learning generate a firm feeling toward the professional skills, followed by 35% of higher responsibility, promotion and professional advancement. Thus, open and distance learning derived massive changes in professional self- impression causing without natural, significant changes in the teaching occupation. In a meantime, 92% of students agreed that the program of open and distance learning assist them to enhance their skills in order to achieve their professional purpose. Pedagogy and technology are two important elements in ODL. The pedagogy consists of Guided Learning (GL) and Independent Learning (IL). Both originate from Skinner's classical programmed instruction (1954) and independent learning theory (Wedemeyer,1981; Moore, 1983), distance learning interaction theory (Moore, 1989) and online learning theory (Anderson, 2008). GL is structured and teacher-centred learning, managed and implemented by teachers. Instruction or learning is programmed and structured in the form of Self- Instructional Module (SIM) supported by face-to-face tutorial and

online discussion. Learners learn at their own pace and learning units are sequenced from easy to difficult learning units. Learning units are designed and developed based on instructional systems design (Dick and Carey, 1990; Heinich et al., 1996) and Bloom's mastery learning theory (1969).

Most public universities adopted similar strategies at the time they embarked towards open and distance learning for full time students during the pandemic and endemic stages of Covid-19. It was conducted by utilizing electronic devices such as laptops and mobile phones through online platforms such as Google classroom, MS Teams, Massive Open and Online Course (MOOC), and other Learning Management Systems. Open Distance Learning (ODL) has become an integral part of the modern educational landscape, providing flexible access to education. However, as the prevalence of ODL continues to grow, there are significant and pressing issues concerning the elevated levels of stress experienced by undergraduate students engaged in remote learning. ODL greatly assists the process of teaching and learning during the pandemic; nevertheless, the short period to adapt from face-to-face learning to ODL among students can lead to stress and panic (Mheidly, Fares, & Fares, 2020). Stress can then trigger depression which can be complicated by anxiety (Visnjic et al., 2018). Stress is a common incidence which happens in all humans of every generation and most people have been through it.. According to psychological perspective, stress is the sense of mental pressure and tension (Amir Mohammad Shahsavarani, 2015). Thus, stress can be anticipated situations where the individual feels stress but not for other people. In other words, it can be said that a person might feel particular situation give them extreme stress while others might recognize it as a pleasant situation (John Allan, 2003). The most common mental issues among university students have been identified as stress, anxiety and depression and there are statistic shows that depression and anxiety were prevalent in 15.6 percent of undergraduate students and 13 percent for graduated students (Halimah Mohd Yusof, 2019). Based on the result by Anna Rosiek (2016), suicidal thoughts, depressive symptoms and anxiety are all linked to the presence of stress in students and as many as 66 percent of students admit to having suicidal thoughts when under stress. Thus, stress also affects to the academic delays, as well as the mental well-being of students (Bao, 2020).

This problem is multifaced, with several factors contributing to increased stress levels among ODL students. ODL heavily relies on technology - technical issues such as connectivity problems, software glitches or device compatibility, can cause considerable frustration and stress for students. Issues such as slow or unreliable internet connections can disrupt the learning process. According to a 2020 UNESCO report, over 460 million students worldwide lacked internet access, making them vulnerable to connectivity issues during ODL. According to the statement made by Ministrine Radin, the Director of Education Department in Sabah, around 60 percent of the students face poor internet accessibility and most of the student have few numbers of gadgets which need to be shared among their family members. Compared to this, in the urban areas, only 24 percent of students have poor internet accessibility and a majority of them have advanced gadgets, such as computers to further their studies through online learning (Lee, 2020). In addition, in a research that had been conducted by Moawad, R.A (2020) it was discovered that the percentage of students who faced stress after changing from conventional to online education is 17% of male students and 11% of female students- they mainly faced the problem of internet speed and connectivity in using online platforms-specifically, with the cost of the internet data and interaction during the online learning platforms : these then subsequently led to their poor academic performance. Most students are not ready for the sudden adoption of ODL since it depends exclusively on online learning where students have no chance to actively contribute to the preparation of learning during online classroom mode. Consequently, students may only be able to fully comprehend part of the online lecture, especially in terms of content, since the lecturer may not recognize if their students are having a problems towards particular subjects. Students also give little cooperation to the lecturer's question during classes, which leads to a slow response by them. Thus, compared to traditional classes, the lecturer mosly gets a faster response from the students during face-to-face lectures. (Maya et al., 2018). The usability of open and distance learning gives pressure to the students especially those in higher learning institutions because they needed to adjust themselves to a definite online learning method in contrast to the traditional methods (Md Daud Ismail, 2016). According to the study conducted in India, it was found that percentage of student's satisfaction while attending online classes

is only 21.6%, and another 43.8% of the students were dissatisfied with online classes. Therefore, the overall percentage of students can be seen as having stress for their studies and were not comfortable with online classes (Utsav Raj, 2020). Therefore, the learning process in ODL can indeed be a significant indicator of stress among undergraduate students.

Thus, this brought a certain level of stress among undergraduate students, such as missing assignment and project deadlines. This also means volume of coursework, reading materials and assignments can be overwhelming, particularly when students are trying to balance ODL with other responsibilities. According to the behavioral sciences, stress is referred as perception of risk resulting in anxiety distress, emotional stress, and difficulty in adapting (Fink, 2017). In psychological science, stress is a sense of mental pressure and tension (Amir Mohammad Shahsavarani, 2015). Stress is an unhelpful response and is inefficient to change. Stress is also a force that influences psychologically, emotionally, physically, socially and spiritually. Stress is also defined as the way people respond to the demands that they have put onto themselves which will also immobilize their capability to handle their daily lives (Akinboye, 2002).

In China, university students reported a significant unpleasant impact towards the psychology wellbeing and increasing level of stress with regards to the distance online learning especially during the Covid-19 pandemic. This is supported by Guanghai Wang (2020) who reported that 53.8 percent of students which consisted of 1210 students who lived in 194 cities in China faced a moderate to critical psychology impact and high levels of stress. According to D Sundarasen et. al., (2020) based on the students' response, the common stressor faced in distance online classes is students facing heavy tasks in terms of coursework load and assessment methods. Thus, it is also surprising when there are students who attend six to eight hours of online classes per day using their smartphones, which in turn leads to the overwhelming stress and health problem.

In addition, other contributors to the level of stress amongst students include the high expectations of lecturers towards students in completing their given task and assignments, as well as tight, non-negotiable assignment submission deadlines.

The environment of study also plays a crucial role in determining stress among undergraduate students during open distance learning. An environment with frequent distractions or interruptions, such as family members, household chores or noisy neighbours also leads to high stress because students need to organize the household chores and take care of their siblings whle attending online classes (Sheela Devi D Sundarasen, 2020). A study by Manap, Hamid, and Ghani (2019) on depression, anxiety, and stress among undergraduate students in one private college in Malaysia mentioned that not only do university students face challenges in their academic pursuits but they must also strike a balance between their academic and family responsibilities. Studying in an online format can be described as a whole new experience for most students (D'Amato, 2021). This lack of experience may be aggravated by difficult home conditions, such as a loss of access to educational resources (e.g., laptops, stable network access, and reference books) and disruptions in the home learning environment (Wang et al., 2020). As such, Distance Learners often study alone, leading to feelings of isolation and loneliness, which can be stressful. At the same time, balancing works, family and academic responsibilities required undergraduates to be self-disciplined and manage their time effectively.

Hence, this study aimed to identifying the specific stressors that undergraduates experience- this helps in understanding their unique challenges. Ultimately, exploring stress among undergraduates during open distance learning aims to create a better learning environment and ensure the well-being and success of undergraduates.

2. RESEARCH METHODS

2.1 DATA COLLECTION

The data collected for this study provided insights into the perception of the students when undergoing ODL. The data were analyzed and evaluated in order to know which factors contributed more to the level of stress among students. Thus, in this study, the researcher used the quantitative research method which relied on primary data from the survey involving students in the Klang Valley. This study also used the correlation analysis as a means to execute the relationship between two variables which were independent and dependent variables (Senthilnathan, 2019).

A cross-sectional survey design was used to investigate the factors contributing towards stress among undergraduates during ODL by using the tool of a questionnaire which was circulated using Google Form. This survey was conducted from May 2021 to June 2021. The main platform used in this survey was WhatsApp as it is the most popular communication and social platform in Malaysia (MCMC, 2018). A total of 382 students from various universities around Klang Valley such as UITM, UM, UTM, UKM, UPM, UNISEL, UNIKL, UNITEN and MSU were selected as respondents of the study by using a non- probability convenience sampling. It was explicitly informed that all questions were required to be answered before submission. In order to preserve the quality of the questionnaire, a pilot study was run before the actual fieldwork.

2.2 INSTRUMENTS

The questionnaire consists of five main parts: 1) Demographic profiles (7 questions); 2) Stress among graduate students (8 questions); 3) Internet Connection (6 question); 4) Learning Process (7 questions) and 5) Environment of study (5 questions). The demographic part consists of 7 items which are gender, age group, university of study, location of ODL engagement, telcos provider and mode of learning used during ODL.
The second until fifth part of the questionnaire consists of dependent variable and independent variables, factors contributing towards stress among students during ODL. These questions were used to measure the perception of stress in online learning, experienced by the students. All items in this part were measured using a 5-point Likert Scale of the responses (1= Strongly Disagree, 2= Agree, 3= Moderate, 4= Disagree, 5= Strongly Disagree).

The Statistical Package for the Social Sciences (SPSS) version 16.0 software (SPSS Inc., Chicago, IL, USA) was used to perform statistical analysis on the collected data. All categorical attributes were expressed as frequencies and percentages. In this study, the data analyses on factors contributing towards stress were using Pearson Correlation Analysis and Multiple Regression.

According to Sekaran & Bougie (2016) where the reliability value which less than 0.60 is poor, 0.60 to 0.70 is moderate, 0.70 to 0.80 is good, 0.80 to 0.90 is exceptionally good and above 0.90 is excellent.

Based on table 1, the values of Cronbach's alpha for all variables are as follows: the Internet Connection variable is 0.628, indicating that the reliability of the question under this variable is moderate. The questions under the Learning Process is 0.702, indicating that all the questions are good. The value for Environment is 0.622 which is moderate and as for Stress among students during open and distance learning, the value is 0.877 where it is exceptionally good. Thus, the Cronbach's alpha of the scale in this study was 0.877 (Table 1).

Variables	Cronbach's Alpha	No. of Items
Independent Variables:		
Internet Connection	.628	6
Learning Process	.702	7
Environment	.622	5
Dependent Variable:		
Stress Among Student during open and distance learning	.810	8

Table 1. Reliability Statistics

3.   RESULTS AND DISCUSSIONS

Demographic Profile

Profile		Frequency (n)	Percentage (%)
Gender	Male	141	36.9
	Female	241	63.1
Age	18 – 20 years	69	18.1
	21 – 23 years	232	60.7
	24 and above	81	21.2
Current academic taking	Diploma	88	23.0
	Degree	264	77.0
University	UITM	231	60.5
	UM	22	5.8
	UTM	9	2.4
	UKM	22	5.8
	UPM	17	4.5
	UNISEL	21	5.5
	UNIKL	19	5.0
	UNITEN	13	3.4
	MSU	28	7.3

Table 2: Demographic Profile

Current GPA	Below 3.00	120	31.4
	3.01-3.49	166	43.5
	3.50 and above	96	25.1
Place of resident	Rural	52	13.6
	Semi Urban	194	50.8
	Urban	136	35.6
Type of Learning & Teaching Method	Open & Distance Learning	349	91.4
	Physical Learning	15	3.9
	Both	18	4.7
Type of telco	Celcom	103	27.0
	Maxis	104	27.2
	Digi	86	22.5
	U mobile	54	14.1
	Others	35	9.2

Table 2: Demographic Profile (continued)

For this study, questionnaires were distributed to 382 respondents. Based on table 2 above, most of the respondents who responded to this survey are female (n=241) at 63.1%, and this is followed by 141 males which is (36.9%). Besides, the majority of the 232 respondents are at the age of 21-23 years (60.7%), followed by 81 respondents being at the age of 24 and above (21.2%) and the rest of the 69 respondents are 18-20 years of age (18.1%). Next, in terms of current academic taking, there are 264 of respondents which is (77.0%) who are currently in a degree programe, and another 88 respondents which is (23.0%) of them are in the diploma programme. Furthermore, the highest number of respondents who answered this survey are 231 respondents from UITM at 60.5%, followed by 28 of respondent from MSU (7.3%), and 22 respondents from UM and UKM, (5.8%)

respectively. In addition, there were 21 respondents from UNISEL which is about 5.5%, 19 respondents from UNIKL at (5.0%) and 17 respondents from UPM which makes up 4.5%.

There are also 13 respondents (3.4%) from UNITEN, and 9 respondents (2.4%). from UTM who responded to the survey.

Other than that, 166 of the respondents' current GPA is from 3.01 – 3.49 which is (43.5%), followed by 120 respondents with a current GPA of 3.00 (31.4%) and the rest are 96 of the respondents with a GPA of 3.50 and above (25.1%). Besides, place of resident where the highest number of respondents is 194 (50.8%) and they live in Semi-urban areas. 136 (35.6%) of the respondents live in urban areas and the rest of 52 (13.6%) of the respondents lived in rural areas. As for the type of teaching and learning method, there are 349 (91.4%) of respondents who are continuing their study through Open and Distance Learning (ODL), while another 18 (4.7%) use both ODL and face to face methods and the rest of 15 (3.9%) of the respondents in the Physical Learning (face to face) method. Last but not least, for type of telco, 104 (27.2%) of the respondents used Maxis as their telco, while for Celcom there are 103 (27.0%) respondents. Additionally, 86 (22.5%) of the respondents used Digi. As for Umobile, 54(14.1%) of the respondents currently use it and the rest of the respondents which are 35 (9.2%) used 'Others'.

Research Objectives 1: To explain the relationship between Internet Connection and Stress among students during open and distance learning

Correlations		DV_STRESS	Hypothesis
			Ha1 Accepted
INTERNET_CONNECTION	Pearson Correlation	.703**	
	Sig. (2-tailed)	.000	
	N	382	

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3: Correlation between internet connection and stress

Based on the table 3 above, the relationship between internet connection and stress among student during open and distance learning is strong and positively correlated since (r=0.703**, P=0.000, P<0.005). Therefore, the alternate hypothesis was accepted, and rejected null hypothesis.

H01: *There is no significant relationship between Internet Connection and Stress among student during Open and Distance Learning.*
Ha1: *There is significant relationship between Internet Connection and Stress among student during Open and Distance Learning.*

This can be seen from the previous studies conducted by Jie et al. (2014), where the author stated that there are positive correlation in stressful life events and internet connectivity (Tang Jie, 2013). Other studies conducted by Serap Unsar (2020) also proved that internet connectivity has a significant relationship towards the high level of stress among students. It means that internet connectivity is significant for student in continue their study through online platform and it will make the student feel stress if there is problem regarding internet connectivity.

Research Objective 2: To identify relationship between learning process and Stress among student during open and distance learning

		Correlations	Hypothesis
DV_STRES S			
LEARNING_PROCES S	Pearson Correlation	.591**	Ha2 Accepted
	Sig. (2-tailed)		.000
	N		382

**. Correlation is significant at the 0.01 level (2-tailed)

Table 4: Correlation between Learning Process and Stress

Based on the table 4. above, The relationship between internet connection and stress among student during open and distance learning is moderate and positively correlated since (r=0.591**, P=0.000, P<0.005). Therefore, the alternate hypothesis was accepted, and rejected null hypothesis.

Ho2: ***There is no significant relationship between Learning Process and Stress among student during Open and Distance Learning.***
Ha2: ***There is significant relationship between Learning Process and Stress among student during Open and Distance Learning.***

From the findings, it can be said that learning process like lack of lecturer feedbacks, poor academic performance can be directly give an impact toward stress among student during open and distance learning. According to the previous study conducted by Ong, Bessie & Cheong (2009) found that learning process is consistent predictor of the level of stress among undergraduates students. It was supported by Habibah Elias et al (2011), which in their study found that learning process has a significant relation between stress and learning process.

Research Objective 3: To analyze relationship between Environment and Stress among student during open and distance learning.

	Correlations	Hypothesis
DV_STRESS		
		Ha3 Accepted
ENVIRONMENT	Pearson Correlation	.737**
	Sig. (2-tailed)	.000
	N	382

**. Correlation is significant at the 0.01 level (2-tailed).

Table 5: Correlation between Environment and Stress

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Table 5 above shown that, there was correlation result between the independent variable which was Environment and the dependent variable which was Stress among student during Open and Distance Learning.

Ho3: There is no significant relationship between Environment and Stress among student during Open and Distance Learning.
Ha3: There is significant relationship between Environment and Stress among student during Open and Distance Learning.

The relationship between Environment and Stress among student during open and distance learning was strong and positively correlated since ($r=0.737**$, $P=0.000$, $P<0.005$). Therefore, the alternate hypothesis was accepted, and rejected null hypothesis.

Research objective 4: To determine which one of the factors contributed towards stress give high impact to the stress among student during open distance and learning

Variables	Beta	Sig.	Tolerance	VIF
Internet Connection	0.265	0.000	0.396	2.528
Learning Process	0.180	0.000	0.580	1.723
Environment	0.450	0.000	0.474	2.111
R Square	0.625			
Adjusted R Square	0.622			
F Change	209.880			
Sig	0.000			

Table 6: Regression Results

From the above regression results showed that all of the variables were identified as the predictors of stress among student during open and distance learning with an adjusted R square value which is 62.2%. The ANOVA test also showed a significant probability value ($p=0.000$) and it indicated that all variables which are Internet Connection, Learning Process and Environment was significantly affects the Stress among student during open and distance learning. The table 6 also showed that the environment of study had a high beta ($\beta=0.450$, $p=0.000$) which explained that the environment gave a high degree of stress among students during open and distance learning.

This findings was supported by the study done by Najmeh Najafi et al. (2018) which has proved this hypothesis that an interruption of environmental gave high impact to the stress level of the student where the significant value is ($p < 0.001$) and consist 60% and more student impacted with environmental interruption like nuisance. It means that harmony environment is important in reducing the stress among student especially during open and distance learning.

4. CONCLUSION

In general, the study has shown that there was significant relationship between students and stress when teaching and learning using the mode of open and distance learning. Through this study, it has shown that the three independent variables which were internet connection, learning process and environment of study has strong relationship with the dependent variable which was stress among students during open and distance learning. As the study also showed that environment of study played a significant role as contributing factor towards stress, it is vital that educator and learner pay more attention towards better surroundings when taken ODL as part of learning mechanism. Thus, future research should consider looking into more opinion from those in the environment such as family members on support system when open and distance learning become a significant new ways for learning mechanism.

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