



The Level of Readiness of Refrigeration and Air Conditioning Program Students in Facing Online Learning during COVID-19 Pandemic

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DOI: <https://doi.org/10.30880/ojtp.2021.06.02.010>

Received 15 July 2021; Accepted 31 August 2021; Available online 30 September 2021

Abstract: The spread of Covid-19 has affected the education sector in Malaysia. The closure of higher educational institutions due to the Covid-19 pandemic has affected the structure of learning and teaching, from physical learning and teaching methods in institutions to fully online learning and teaching. The main objective of this study was to study the level of readiness of Refrigeration and Air Conditioning Program Refrigeration and Air Conditioning Program Program students in facing online learning during the Covid-19 pandemic. This study uses a quantitative approach with descriptive research designs and survey methods. The instrument used in this study was a questionnaire that has been distributed to the respondents for their feedback. The population involved in this study is 111 students in Faculty of Technical and Vocational Education, Universiti Tun Hussein Onn Malaysia (UTHM). The data obtained was analyzed using IBM Statistic SPSS software version 23. Results of data analysis indicated that the mean score for the attitude of the participating students is 3.36, whereas the mean scores for the aspects of the motivation, knowledge of existing technology, and internet access were recorded as 3.66, 3.86, and 3.77 respectively. In conclusion, the level of readiness of students of Refrigeration and Air Conditioning Program in facing online learning is at a moderate level.

Keywords: Readiness, online learning, Covid-19

1. Introduction

The closure of higher educational institutions and schools due to the Covid-19 pandemic has affected the structure of Learning and Teaching which is from physical learning and teaching methods in institutions to fully online learning and teaching. In the education sector, formal learning activities involving students worldwide are affected by the closure of educational institutions either at the school level or higher institutions (Goyal, 2020). According to Wulandari (2020), the closure of educational institutions results in reduced teaching time and can affect student achievement. The implications of the closure of educational institutions have had a huge impact on the management, lecturers and students. Online learning refers to activities involving instructors and students by using an online platform to implement the learning and teaching process (Wan Rozaini et al., 2019 and Sun et al.2008). Abidah et al (2020) stated that teachers in schools and higher educational institutions are trained to carry out online teaching and learning activities during the Covid-19 pandemic. The implications of the Covid-19 pandemic on higher education have led to the widespread transformation of digital platform usages (Kandri, 2020 and Strielkowski, 2020) such as the

implementation of online learning and teaching and online seminars, the use of digital books and also virtual interaction. According to Sahu (2020), the transition to online mode has raised many questions about the quality of education.

The spread of covid-19 in Malaysia has affected learning and teaching methods where students are instructed to study online at home. According to the Department of Statistics Malaysia (2020), the level of internet access in Malaysia for online learning is at a moderate level of 54.5 percent. 28.2 percent at a fast pace. 16.3 percent at a lesser level. While only 1.1 percent did not have internet access. Only a handful of students are experiencing internet access problems especially students who are in rural areas. The Department of Statistics Malaysia also stated that the peak hour for fast internet usage is access time during the day between 7 am and 12 pm which is was 46.3 percent, followed at night by 32.5 percent at night and the remaining 21.2 percent at 12 noon to 7 pm.

In addition, due to prolonged online learning, students' weaknesses and challenges in negative attitudes towards online learning were also found in several past research studies. Some of the Sstudents' problems related to negative attitude towards online learning are is identified by the level lack of computer skills, technological anxiety and low computer hardware problems, as well as weak learning skills, low motivation, and the inability to work independently (Yusof, Ad, et al., 2017; Wong, Bonn, et al., 2018; Jonah, 2018; Perumal, Abdullah, et al., 2020). In addition, according to Ying and Yang (2017) the study looked at the usage of computers and attitudes of 800 university students, and the findings revealed that students who use computers at home have a positive attitude, whereas students who use computers at university have a negative attitude. Meanwhile, Maziah (2013) studied attitudes, skills, and computer usage problems among community college students and the results of the study showed that the attitudes and problems in computer use among students are at a high level while students' skills are at a low level.

Another Among the other problem s of online learning is student's lack of ing motivation. Before the Movement Control Order (MCO) was implemented, university students were used to familiar with the physical environment for classroom learning sessions in a physical environment, as well as having schedules and rules of the day which required resulted in them being required to attend all certain classes. According to Md Azali and Hassan (2018), students are were found to still be moderate and less motivated to use online applications as online applications are only implemented for certain subjects. Therefore, a study needs to be done to ensure that students and lecturers can perform the learning and teaching process smoothly during the learning and teaching process.

Online learning is a necessity for the development of Malaysia. Given the growing prevalence of the Covid-19 pandemic, online learning is the new norm for students to ensure they do not lag behind in their learning. The problem in this study is internet access during online learning. Not all students have good internet access in their homes especially in the village and rural areas. Students in rural areas had to go to the city to get good internet access. Sometimes the weather also affects the student's internet access when learning and teaching are run online which results in frozen screens, unclear voice and others. As there are a few students who do not have good internet access, lecturers had to find a solution to enable them to study online. According to Sinar Harian (2020), in the face of online learning, the problem of lack of technology equipment facilities is a factor that influences students' involvement in online learning. Not all students have money, parents are forced to buy laptops for their child's convenience in taking virtual classes and facilitating their child's learning.

In addition, the negative attitudes of students towards their learning are above a number of factors that affect them in online learning. This problem not only affects students but also affects the education sector in Malaysia. This caused problems for the Ministry of Education Malaysia and the university in order to fully implement virtual teaching and learning during the covid-19 outbreak. And finally, the motivation of the students is fading due to too much distraction and lack of awareness. Students are often exposed to problems, especially at home. Not all students have a good environment to gain knowledge while at home. Some students need to do homework and be disturbed by the surrounding environment. This results in them being unable to focus while the learning and teaching process is running. Based on the background of the problems discussed, the researcher would like to get information on the level of readiness of students of Refrigeration and Air Conditioning Program in the face of online learning in the Covid-19 pandemic. Therefore, the research questions of this study are:

- a) What is the level of readiness in terms of the attitude towards online learning among of students of refrigeration and air conditioning Refrigeration and Air Conditioning Program?
- b) What is the level of readiness in terms of the motivation toward online learning among of the students of Refrigeration and Air Conditioning Program?
- c) What is the level of readiness in terms of knowledge of the technology among students of Refrigeration and Air Conditioning Program?
- d) What is the level of internet access for Refrigeration and Air Conditioning Program students during in the face of online learning?

2. Literature Review

According to Eryilmaz, Yildiz & Akin (2011), the investigation or relationship between attitudes towards learning for class involvement. In a study conducted by Shuib (2009), student attitudes showed that most students have a positive attitude towards social values and educational status of learning. When students have a positive attitude, they show positive behavior and they meet their academic needs. Students' achievements, motivation and interests are influenced by positive and negative attitudes (Miller, Abraham, Cohen, Graser, Harnack, & Land, 1996).

According to a study conducted by Abdul Aziz Ishak & Aida Zuraina (2020), the level of motivation of students towards online learning is at a moderate level. This study has found that environmental factors influence the behavior and motivation of students to follow the teaching and learning process either physically or virtually. Student motivation has been widely accepted as a major factor influencing the rate and success of learning. There are many factors that can cause low student efficiency, one may stem from the student's motivation towards the subject. According to McDonough (1983), student motivation is one of the most important factors affecting their success or failure in learning.

Students' knowledge of technology, according to (Manaf et al., 2015) the basic skill level is measured in terms of computer and internet usage which students can determine, access, evaluate, manage, integrate, build and communicate information. According to Hafiz Rahman, 2016, female students are the ones who are left behind in the handling of information compared to males. Based on Wan Hussain (2019) study on the level of ICT literacy of students regarding application software usage found that the level of knowledge of students on application software usage is at a high level where the majority of students are knowledgeable using Microsoft word, Microsoft PowerPoint and Microsoft excel software. Therefore, the majority of students are proficient in application software usage.

According to Hamat (2020) study on online teaching and learning, the level of internet access for students is at a satisfactory level as there are still a few students who are still not ready to accept the online learning and teaching process due to unsatisfactory internet access. While based on a study conducted by Mahathir Yahaya (2021), the level of internet access among students is at a high level. However, this study found that internet access is a challenge for online learning where there are four students who stated that they have difficulty getting a good internet connection in the rural areas. In order to gain knowledge, students are willing to go to the city to get good internet access. In addition, they often state that their internet connection depends on weather conditions.

3. Methodology

Every methodological step from the beginning of research, data collection process until completing the research is very important. Methodology in research studies is very important from prior processes and processes after conducting data collection to complete research (Hua, 2016). This study used uses quantitative research with descriptive study design and survey method. The design of the study can assisted the researcher in obtaining information and data related to the purpose of the study (Zulzana Zulkarnain et al, 2011). Therefore, the instrument used is the questionnaire form. In this study, the researcher will distribute a questionnaire to respondents consisting of students of Refrigeration and Air Conditioning Program Faculty of Technical and Vocational Education, UTHM.

According to Mohd Yusof (2005), the population refers to a large group of individuals to be studied. Subsequently, according to Mohd Yusof (2005), the samples selected from the population must be the true representative of the population. The samples are the group that will be studied obtained from the population. For the population, this study focused es on the students of Refrigeration and Air Conditioning Program in Faculty of Technical and Vocational Education, UTHM. It involved s students from the first year of study until to the fourth year. that is randomly selected. In this study, the sample sampling method was selected conducted randomly and by distributing the questionnaire was distributed to 149 students of Refrigeration and Air Conditioning Program program. A total of 111 Refrigeration and Air Conditioning Program students responded to the questionnaire given by the researcher.

The questionnaire was divided into five categories. Section A is the demographic profile of respondents. Section B is the attitude of Refrigeration and Air Conditioning Program students in facing online learning. Section C is the motivation of Refrigeration and Air Conditioning Program in facing online learning. Section D is the knowledge of the existing technology of Refrigeration and Air Conditioning Program students and section E is the level of internet access of Refrigeration and Air Conditioning Program students. A Likert scale is a measure used to measure the reliability of an item in question.

The validity of the instrument refers to the extent to which the method is used to obtain information and reliability refers to the depiction of internal stability and consistency (Creswell, 2009). In the context of this study, the researcher will select three lecturers from the Faculty of Technical and Vocational Education, UTHM as experts to obtain confirmation on the validity of the content structure, format and grammar for the items constructed in this questionnaire. Before the questionnaire is distributed to the respondents, the researcher conducted a pilot study on 30 randomly selected students from the population who are not from the study sample which are catering and multimedia students of Universiti Tun Hussein Onn Malaysia. The Cronbach Alpha test is used in this study to obtain the reliability statistics of the study instruments. The results from the pilot study showed that the questionnaire instrument has an

excellent level of reliability, with the Cronbach Alpha value exceeding 0.9 for the aspects of student attitude and knowledge about technology.

4. Results and Discussion

The findings were discussed as follow;

4.1 Descriptive Analysis

Data were obtained from 111 respondents consisting of students of Refrigeration and Air Conditioning Program, Faculty of Technical and Vocational Education, UTHM. Data and information obtained were analyzed using IBM Statistical software (SPSS) version 23 to obtain information on mean, standard deviation, percentage and frequency. Table 1 shows the demographic distribution of respondents in Section A.

(a) Section A: Demographics of the respondents

Table 1 - Distribution of respondents by demographics

Demographic Characteristics	Number of Respondent (n=111)	Percentage (%)
Gender:		
Male	68	61.3
Female	43	38.7
Race:		
Malay	105	94.6
Chinese	-	-
Indian	3	2.7
Others	3	2.7
Year of Study:		
One	38	34.2
Two	25	22.5
Three	25	22.5
Four	23	20.7
Are You Ready for Online Learning in the Covid-19 Pandemic:		
Yes	77	69.4
No	11	9.9
Not sure	23	20.7

Table 1 shows the demographic of respondents in the study of the level of readiness of Refrigeration and Air Conditioning Program students in facing online learning during the Covid-19 pandemic. Out of the 111 respondents involved in this research, 68 (61.3%) were males and 43 (38.7%) were females. A majority (94.6%) were Malay, 2.7% were Indian and others were 2.7%. (34.2%) of the participants were year one students, 22.5% were year two and three students and 20.7% were year four students. The majority of the respondents, 77 (69.4%) are ready for online learning, 11 (9.9%) of them are not ready while the rest, 20.7% (n=23) were not sure whether they are ready or not for online learning.

(b) Section B: The level of readiness in the aspect of attitude of the students of Refrigeration and Air Conditioning Program in facing online learning during the Covid-19 pandemic

Table 2 - The mean score for readiness in attitude

Item	Item Statement	Mean	Standard Deviation	Mean Interpretation
B1	I am always ready early to join an online learning class.	3.91	0.82	High
B2	I do not feel bored when facing the computer for a long time.	2.93	1.13	Moderate
B3	I like online learning.	3.27	1.10	Moderate
B4	I am interested in the teaching methods of lecturers that are implemented virtually.	3.39	1.09	Moderate
B5	Online learning makes me more focused on learning.	3.02	1.16	Moderate
B6	I am more active during online Learning and Teaching. Online learning interests me to learn.	3.03	1.14	Moderate
B7	Online learning interests me to learn.	3.25	1.07	Moderate
B8	I am able to complete the assignments given by lecturers according to the time set during online learning.	3.68	0.96	High
B9	I am able to submit assignments given by lecturers according to the current time stipulated.	3.78	0.88	High
AVERAGE		3.36	1.04	Moderate

Based on Table 2, the average mean score obtained for the items of the attitude of students of Refrigeration and Air Conditioning Program in the face of online learning in the Covid-19 pandemic was 3.36 with a standard ratio of 1.04 which is at a moderate level of readiness. Item one which was “I am always ready to participate in online learning classes” has the highest mean score of 3.91 with a standard ratio of 0.82. While item two, which was “I do not feel bored when facing the computer for a long period of time” is the item that has the lowest mean score of 2.93 with the standard deviation of 1.13.

(c) Section C : The level of readiness in the aspect of motivation of the students of Refrigeration and Air Conditioning Program in facing online learning in the Covid-19 pandemic

Table 3 - The mean score for readiness in motivation

Item	Item Statement	Mean	Standard Deviation	Mean Interpretation
C1	I am participating in online learning in subjects involved online.	4.08	0.75	High
C2	I always join early for classes in online learning.	3.85	0.78	High
C3	I always make early preparations before entering online learning classes.	3.63	0.87	Moderate
C4	I always have breakfast in the morning before I start attending class to avoid	3.21	1.010	Moderate

distractions while studying.

C5	I provide a conducive study place.	3.81	0.93	High
C6	I can divide the study time well.	3.54	0.95	Moderate
C7	I always remind my friends to attend online classes.	3.78	0.93	High
C8	I am always excited for online classes.	3.45	1.07	Moderate
AVERAGE		3.66	0.92	Moderate

Based on Table 3, the average mean score obtained for the items of motivation of the students of Refrigeration and Air Conditioning Program in the face of online learning in the Covid-19 pandemic is 3.66 with a standard ratio of 0.92 which is at a moderate level. Item one which was “I participated in online learning in the online subjects” has the highest mean score of 4.08 with a standard deviation of 0.75. While item four which was “I always have breakfast before I start attending class to avoid distraction while studying” is the item that has the lowest mean score of 3.21 with the standard deviation of 1.10.

(d) Section D : The level of readiness in the aspect of knowledge on technology in facing online learning

Table 4 - The mean score for knowledge

Item	Item Statement	Mean	Standard Deviation	Mean Interpretation
D1	I know how to use an online learning platform.	3.90	0.80	High
D2	I know how to use advanced technology tools for learning purposes.	3.83	0.87	High
D3	I know how to find additional information related to the topic of learning easily.	3.85	0.84	High
D4	I know the use of technology in learning can save time searching for information.	4.00	0.80	High
D5	I always showcase presentation slides on platforms like google meet, zoom and so on.	3.76	0.92	High
D6	I know the learning platform makes it easier for me to connect actively with lecturers online.	3.80	0.95	High
D7	I am constantly following current technological developments.	3.84	0.78	High
D8	I can help my friends in the use of technology for learning.	3.91	0.81	High
AVERAGE		3.86	0.85	High

Based on Table 4, the average mean score obtained for the items of knowledge on the technology of Refrigeration and Air Conditioning Program students was 3.86 with a standard deviation of 0.85 which is at a high level. Item four was “I know that the use of technology in learning can save information search time” with the highest mean score of 4.00 with a standard ratio of 0.803. While item five which was “I always display presentation slides in platforms such as Google Meet, Zoom and others” is an item that has the lowest mean score of 3.76 with a standard deviation of 0.92.

(e) Section E : The level of readiness in the aspect of the level of internet access for students of Refrigeration and Air Conditioning Program in facing online learning

Table 5 - The mean score of the Level of Internet Access

Item	Item Statement	Mean	Standard Deviation	Mean Interpretation
E1	I always get good internet access at home.	3.44	1.07	Moderate
E2	I am able to see the lecturers clearly during online teaching and learning sessions.	3.63	0.89	Moderate
E3	I can hear the lecturer's voice clearly during the online teaching and learning sessions.	3.59	0.87	Moderate
E4	Internet access affects my learning.	4.20	0.94	High
E5	I am able to download the learning materials given by the lecturers.	3.93	0.82	High
E6	I am able to upload the learning materials provided by the lecturers.	3.89	0.80	High
E7	I can send the assignments given by lecturers well.	3.88	0.84	High
E8	I am able to download a video stream of teaching given by lecturers.	3.63	0.91	Moderate
AVERAGE		3.77	0.89	High

Based on Table 5, the average mean score obtained for internet access items for students was 3.77 with the standard deviation of 0.89 at a high level. Item four which was "internet access affects my learning" has the highest mean score of 4.20 with the standard ratio of 0.935. While item one which was "I always have good internet access at home" is the item with the lowest mean score of 3.44 with the standard deviation of 1.07.

4.2 Discussions

Objective 1 of this research is to determine the level of readiness in the aspect of attitude of the students of Refrigeration and Air Conditioning Program in facing online learning during the Covid-19 pandemic. Based on the result, students' attitudes toward Refrigeration and Air Conditioning Program in the face of online learning in the Covid-19 pandemic are at a moderate level and show that they are less prepared for online learning in the Covid-19 pandemic. This study is in line with the study conducted by (Limi Chong, 2021 and Abu Hassan, 2020) where the results of his studies have also found that students' attitude towards online learning is at a modest level. This study finds that students are less likely to be online learning. This finding is supported by Limi Chong (2021) stating that it does not mean that they are not interested in online learning, but students are interested in getting lecture notes. He also noted that students will be more interested in online learning if the notes provided by lecturers are complete and clear task instructions.

Objective 2 of this research is to determine the level of readiness in the aspect of motivation of the students of Refrigeration and Air Conditioning Program in facing online learning. From the results obtained, students' motivation of Refrigeration and Air Conditioning Program in the face of online learning is at a moderate level and shows that they are less prepared for online learning. In line with the study conducted by Aziz Ishak (2020) and Abu Hassan et al., (2020) were findings he also found that student motivation on online learning was at a modest level. While the average value of the mean score for student motivation levels on online learning shows at a moderate level, but there is an item in this section that finds high motivated students in participating in online learning. This finding is supported by Ishak and Talat (2020) stating that highly motivated students will push themselves and have the determination to continue to follow the learning without fail.

Objective 3 of this research is to determine the level of readiness in the aspect of knowledge of the technology of students of Refrigeration and Air Conditioning Program in facing online learning in the Covid-19 pandemic. Based on results and data analysis, the knowledge of the technology of Refrigeration and Air Conditioning Program students in

the face of online learning in the Covid-19 pandemic is at a high level and thus demonstrates that they have high knowledge of technology for online learning in the Covid-19 pandemic. This study found that students are always following the development of current technology. This finding is supported by Abdillah and Musa (2021) gets high scores, students are always positive about the use of the latest technology in learning. Similarly, Nawi and Mohd Soffian Lee (2020) stated that new generation students have a high level of knowledge and awareness of the use of the latest technology in learning. Additionally, in this study, students find out how to handle online learning platforms. This finding is supported Nawi and Mohd Soffian Lee (2020) expressed that students do not face many problems despite having to learn the use of new applications and can adapt to the platform in a short time.

Objective 4 of this research is to determine the level of readiness in the aspect of internet access for students of Refrigeration and Air Conditioning Program in facing online learning in the Covid-19 pandemic. From the results obtained, the level of readiness in terms of internet access for students of Refrigeration and Air Conditioning Program in the face of online learning in the Covid-19 pandemic is at a high level and shows that they have good internet access while at home. This study contradicts the study conducted by Abdillah and Musa (2021) where the findings show that the speed of the Internet is at a modest level. This study found that Internet access influenced student learning. Internet access affects student learning where students need to access the learning platform during learning sessions and teaching.

5. Conclusion

Some suggestions are presented to be taken into account by all parties to increase the level of readiness of Refrigeration and Air Conditioning Program students in the face of online learning in the Covid-19 pandemic season. These proposals are expected to assist certain parties to take appropriate action in ensuring that the level of readiness of Refrigeration and Air Conditioning Program students in the face of online learning in the COVID-19 pandemic season is increasing. Students should try to train themselves to discipline themselves in improving their motivation in online learning. They should also instill a positive attitude towards the social value and the status of learning education in their lives. Lecturers also play an important role to ensure the students in a good conditions. They can be more creative in diversifying teaching methods to attract students from boredom, less focus and so on. They can also care about students by always asking about learning development from time to time.

Based on the findings and discussions that have been conducted, it is concluded that the level of readiness of the students of Refrigeration and Air Conditioning Program in the face of online learning in the Covid-19 pandemic is at a moderate level. This is supported by the results from every aspect of the study, which are attitude, motivation, knowledge of technology and the level of internet access of students.

Acknowledgment

This research was made possible by support from the Faculty of Technical and Vocational Education, Universiti Tun Hussein Onn Malaysia.

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