ASIAN PENDIDIKAN
ISSN: 2735-2331 eISSN: 2805-4350

The Sudden Transition to Synchronized Online Learning During the Covid-19 Pandemic in Polytechnic Merlimau: A Quantitative Study Exploring Mechanical Engineering Student's Perspectives

Ibrahim, Raman[1]* & Baharudin, Suzana[2]

[1]Mechanical Engineering Department, Polytechnic Merlimau, Melaka, 77300, MALAYSIA

[2]Commerce Department, Polytechnic Merlimau, Melaka, 77300, MALAYSIA

*Corresponding Author: raman@pmm.edu.my

DOI: https: //doi.org/10.53797/aspen.v3i1.5.2023
Available online: 20 June 2023

Abstract: The closure of educational activities in Malaysia due to the ongoing COVID-19 pandemic resulted in an unplanned shift from traditional learning to a setup that exclusively involves digital teaching and learning. Within this context, the present study aimed to explore Mechanical Engineering First Semester students' perceptions regarding the effectiveness of synchronized online learning at Polytechnic Merlimau, Melaka. The focus area of the research is academic life, technological challenge and emotional and social life development. The total population is 90 which consists of respondents from Diploma in Mechanical Engineering (DKM), Diploma In Mechanical (Manufacturing Technology) (DTP) and Diploma In Mechanical (Electro-Mechanical) (DEM). The number of respondents is 90 people. However, only 81 respondents provided feedback in this study which contributed to 90% of the total respondents. The Likert scale used for the questionnaire was ranked from 1 to 5. This data was analyzed using Statistical Package for the Social Science for Microsoft Windows Release 27 computer software (SPSS). The Alpha Cronbach's value for this research was 0.80. This result refers to the main objective of this research, to study the student's perceptions regarding the effectiveness of synchronized online learning experiences during Covid-19 lockdown period in Malaysia. For the academic life, based on the mean average score obtained 3.73, it was found that the respondents as a whole are satisfied with academic life in a new norm. The mean average obtained for technological challenge is 3.69 indicating that the satisfaction rate of the respondents is high. For the emotional and social life development, based on the mean average score obtained 3.49 it was found that online leaning has a lot of impact on them. As a conclusion, the sudden synchronized online classes were well-accepted by the Mechanical Engineering first semester students. Overall, it showed that students are still coping with the new norms working from the home period, but they had dissatisfaction with certain elements that may need to be considered. The top management of Mechanical Engineering Department need to come up with some strategic initiative, both at individual as well as institutional level to combat the situation. The entire framework of mind and working components of the institution should be changed in accordance with the requirement of digital learning, then only we can win the battle over corona.

Keywords: Covid-19 pandemic, synchronized online learning, polytechnic Merlimau

1. Introduction

The Covid-19 pandemic started in December 2019 in Wuhan, China and spread around the world rapidly within months. The pandemic affected all areas of life, including education. As the situation worsened, the global lockdown culminated in a lockdown of educational institutions (Tarkar, 2020). This closing of schools, colleges, and universities resulted in a stressful event for educational administration with highly limited options.

The COVID-19 pandemic is forcing educational institutions such as universities to shift rapidly to distance and online learning. COVID-19 has forced universities around the world to adopt online learning (Tadesse & Muluye, 2020).

*Corresponding author: raman@pmm.edu.my

We are now in a state of emergency and must react with different and available ways of learning such as e-learning systems and mobile learning applications. Online learning is not new to learners, nor is distance learning. However, COVID-19 is reviving the need to explore online teaching and learning opportunities.

According to UNESCO (2020) confirms that universities and school closure have several adverse consequences on students such as interrupted learning which results in students and youth being deprived of opportunities for growth and development. Therefore, online digital learning systems can address this problem with easy access to these systems and offer fast internet connections.

In fact, e-learning tools are playing a crucial role during this pandemic. E-learning systems can assist learning providers to manage, plan, deliver and track the learning and teaching process (Arkorful & Abaidoo, 2015). Furthermore, it aims to help instructors, schools and universities facilitate student learning during periods of universities and school closure. In addition, most of these systems are free which can help ensure continuous learning during this Coronavirus pandemic.

1.1 Research Objective

The closure of educational activities in Malaysia due to the ongoing COVID-19 pandemic resulted in an unplanned shift from traditional learning to a setup that exclusively involves digital teaching and learning. Within this context, the present study aimed to explore Mechanical Engineering First Semester students' perceptions regarding the effectiveness of synchronized online learning at polytechnic Merlimau, Melaka.

The focus area of the research is academic life, technological challenge and emotional and social life development. Table 1 shows research objective synopsis.

Table 1 - Research objective synopsis

No.	Focus Area	Synopsis
1	Academic Life	To finding out how the COVID-19 pandemic has affected student's experiences with teaching and learning, administrative support as well as student's performance and expectations.
2	Technological Challenge	To finding out about students support network and facilities during the COVID-19 crisis.
3	Emotional And Social Life Development	To finding out how students have been feeling and develop social life since the onset of the COVID-19 pandemic.

1.2 Structure of References

The importance of the study is to identify the effectiveness of the implementation of synchronized online learning during the covid-19 pandemic in Mechanical Engineering Department, polytechnic Merlimau by first semester students June 2020 session in terms of academic life, technological challenge and emotional and social life development. Based on the study conducted, it is hoped that students can benefit from synchronized online learning by guiding from their lecturer. The duties of a lecturer as individual who can provide guidance, advice, monitoring and observation not only helpful in the academic field but also in personal problems.

By analyzing the results of the study, it is hoped that it will provide a guideline to the polytechnic Merlimau, especially Mechanical Engineering Department to improve the facilities provided to the students to make sure the success of teaching and learning process. As a results polytechnic can explain to stakeholder the importance of implementing synchronized online learning in each polytechnic as an alternative to increase the academic student's performance in an effort to form successful and quality human beings.

2. Literature Review

The provision and usage of online learning materials in e-learning system is becoming the main challenge for many universities and polytechnic during COVID-19 pandemic. E-learning system is an important source of information, due to its ubiquity, low cost, ease of use and interactive character (Amarneh et al., 2021).

Online learning is classified as synchronous or asynchronous. Synchronous technology allows for "live" interaction between the instructor and the students (e.g., audioconferencing, videoconferencing, web chats etc.) while asynchronous technology involves significant delays in time between instruction and its receipt (e.g., Email, earlier video recording, discussion forums etc.) (Finkelstein, 2006).

It has long been acknowledged that online instructional methods are an efficient tool for learning (Aronoff et al., 2010). However, online learning can be challenging for students because of the limited non-verbal communication. Other aspects, such as students' and professors' interactions, accessibility of materials, and time management, can also affect the opinions of online education participants (Middleton, 1997).

In addition, students can easily to get learning content into their mobile devices because they can be connected to mobile networks or to local wireless networks. Ülker & Yılmaz (2016) mentioned that one approach to e-learning is the use of learning management system (LMS). Thus, e-learning refers to offer, organize and manage e-learning activities within a system, such as student enrolment, exams, assignments, course descriptions, lesson plans, messages, syllabus, basic course materials, etc. (Haghshenas, 2019). By converting from traditional learning, this will enable learner's access to e-learning systems like Blackboard 24 hour per day, and presents several benefits such as increase effectiveness and efficiency of learning services through improved connectivity with teachers and better access to learning materials

Distance education is formal institution-based education, where students, their infrastructure and teaching staff are in different places. This distance education requires an interactive telecommunication system to connect the two and the various resources required therein. Learning carried out in this distance education program is through online which specifically combines electronic technology and internet-based technology (Parinduri, 2019). Online Learning (in network) is learning online through specified media. Students and lecturers can still discuss, as well as with their group friends. The media used can vary, usually zoom, google class, google meet, teams, etc. Online learning does require personal responsibility, independence and persistence, because no one controls it other than himself. They have to download and read the material, answer quizzes or questions and submit assignments independently.

Online learning capabilities will provide better student performance compared to conventional learning, because besides being knowledgeable they are also technology literate. Online learning does provide varied learning media such as video learning media connected to YouTube, video conference media, scientific journal media or digitally systemized topics. But the advancement of learning technology must be supported by adequate facilities and infrastructure, such as an even distribution of the internet network to schools in rural areas (Maatuk et al., 2022). With this change in the way of learning from face-to-face to online or online, it certainly affects the learning process and the way students learn. So that through this research it will be known the effectiveness of the results of online mathematics learning during the Covid-19 epidemic.

With the development of science and technology, indirectly it has brought changes that are so real to all aspects of human life. In the world of education, technological developments have also made it easier for lecturer to provide learning to students. The development of technology has brought real changes in the field of learning, this convenience has led to a growing learning pattern that requires teachers to always innovate in the field of learning. In its development, the online learning model was originally used to provide information about the system and benefits of learning using an online network based on a computer / laptop / Android cellphone, learning which is usually done face-to-face directly can be done virtually. Online learning makes it very easy for lecturers or students because it can be done anytime and anywhere. Students and lecturers can make an agreement about the learning time without having to be tied to the schedule in the universities. However, online learning is also inseparable from the advantages and disadvantages that must be managed by the lecturer so that the objectives of the learning process can be achieved (Ahmad et al., 2020).

Online learning is learning that uses an internet-based interactive model and Learning Management System (LMS). Online learning is the use of internet networks in the learning process. With online learning students have the flexibility to study time, can study anytime and anywhere. Students can interact with the lecturer using several applications such as classroom, video conference, telephone or live chat, zoom or via WhatsApp Group. In the industrial era 4.0, digital technology can have a bad impact on the world of education if it is used inappropriately. Therefore, understanding the principles and factors that affect the effectiveness of digital technology in learning is something very important for an educator (Putrawangsa & Hasanah, 2018). So, it can be concluded that online / online learning is an educational innovation to answer the challenges of the availability of varied learning resources during the Covid-19 pandemic like today

3. Methodology

This is a descriptive study in the form of a survey using a questionnaire as a tool to obtain information from respondents.

3.1 Population and Sample

Table 2 shows the population of the research consisting of first semester students of the Mechanical Engineering Department June 2020 Session. The total population is 90 which consists of respondents from Diploma in Mechanical Engineering (DKM), Diploma In Manufacturing Technology (DTP) and Diploma In Electro Mechanical (DEM). All population was taken as sample for this research.

Table 2 - Population and sample

No	Programme	Numbers of Respondents
1	Diploma in Mechanical Engineering (DKM)	30
2	Diploma In Mechanical Manufacturing Technology (DTP)	30
3	Diploma In Mechanical Electro Mechanical (DEM)	30
	Total	**90**

3.2 Research Instrument

The research instrument used is a questionnaire in which respondents will answer 22 questions using 5 Likert Scales (Table 3). Likert type scales Likert scales are described as the set of items, composed of approximately an equal number of favorable and unfavorable statements concerning the attitude object that is given to a group of subjects (McIver & Carmines, 1981). Respondents were asked to respond to each statement in terms of their own degree of agreement or disagreement.

Typically, there are five different responses among are; strongly disagree, disagree, neither agree or disagree, agree and strongly agree which respondents are instructed to select.

Table 3 - Likert scale

Likert Scale	Level of Agreement
1	Strongly Disagree
2	Disagree
3	Neither Agree or Disagree
4	Agree
5	Strongly Agree

Source: McIver & Carmines (1981)

This data was analyzed using Statistical Package for the Social Science for Microsoft Windows Release 27 computer software (SPSS). Meanwhile, the level of tendency and interpretation of mean scores as Table 4 is used for this research.

Table 4 - Mean interpretation

Mean Score	Interpretation
1.00-1.80	Very Low
1.81-2.60	Low
2.61-3.20	Medium
3.21-4.20	High
4.21-5.00	Very High

Source: Moidunny (2009)

Cronbach's alpha analysis Cronbach's Alpha was developed to meet the need of finding an objective way of measuring the internal consistency reliability of an instrument used in this research work (Cronbach, 1951). It is mostly used when the research being carried out has multiple-item measures of concept (Tavakol & Dennick, 2011). The value of Cronbach's Alpha is usually expressed as a number between .00 and 1.0. A value of .00 means no consistency in measurement while a value of 1.0 indicates perfect consistency in measurement (Sijtsma, 2009). The acceptable range is between 0.70 and 0.90 or higher depending on the type of research. Cronbach's Alpha of 0.70 is acceptable for exploratory research while 0.80 and 0.90 are acceptable for basic research and applied scenarios respectively. Furthermore, the number of items used on a scale usually affects the estimated reliability. A low value (e.g. <0.5) could or poor interrelatedness between items, while a high value of alpha (e.g. >0.90), maybe as a result of some redundant items in the instrument. The Alpha Cronbach's value for this research was 0.80

4. Result and Discussion

The quantitative data obtained from the respondent was analyzed using the SPSS. The main purpose of this method is to capture something important from the data collected in relation to the research question. Results analysis will be using mean and percentage analysis. It also presented in figures, graphs, tables and others that make the reader understand easily.

4.1 Demography Factors

4.1.1 Programme

The population of the research consisting of first semester students of the Mechanical Engineering Department June 2020 Session. The total population is 90 which consists of respondents from KM, DTP and DEM. The number of respondents is 90 people. However, only 81 respondents provided feedback in this study which contributed to 90% of the total respondents. Table 5 and Figure 1 show the distribution of respondents according to the program. Based on the table it was found that the DKM program contributed the highest percentage of 33%, followed by DEM 30% and DTP 27%.

Table 5 - Distribution of respondents according the program

No.	Programme	Total Respondents	Percentage
1	DKM	30	33%
2	DEM	27	30%
3	DTP	24	27%

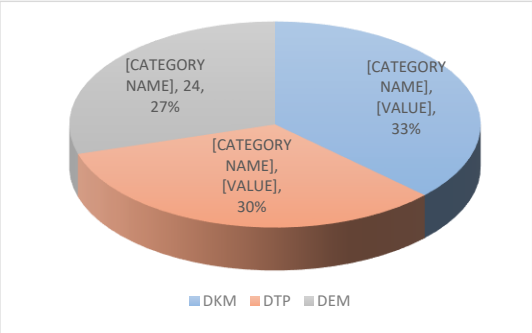

Fig. 1 - Distribution of respondents according the program

4.1.2 Gender

Figure 2 shows the gender distribution of respondents. Out of a total of 81 respondents it was found that 70 (86.42%) people consisted of male and 11 (13.58%) female.

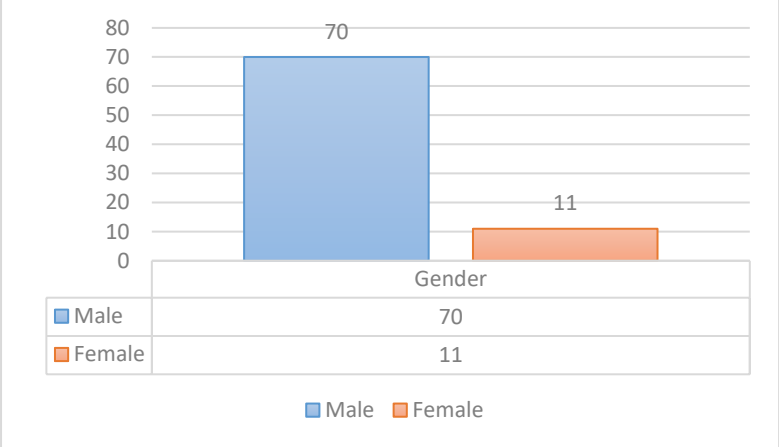

Fig. 2 - Respondent gender

4.1.3 Mode of accessing the LMS/VLE/Moodle/Student Portal/Blackboard/Zoom/Microsoft Teams/CIDOS

Figure 3 shows the respondent distribution for mode of accessing the LMS/VLE/Moodle/Student Portal/Blackboard/Zoom/Microsoft Teams/CIDOS. The results show that 71.60% (58) respondents use mobile phones and 28.40% (23) respondents use laptops. However, there is no student uses the desktop as a medium for accessing the applications used.

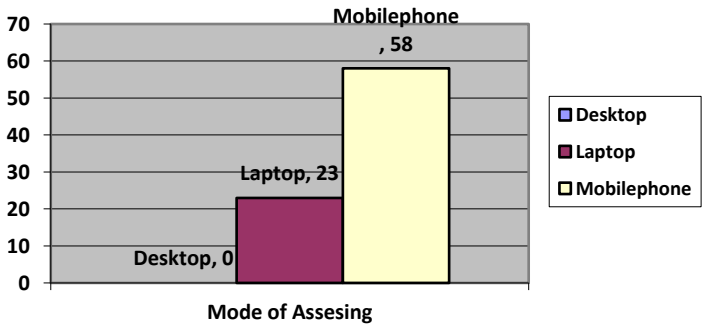

Fig. 3 - Mode of accessing the LMS/VLE/Moodle/Student Portal/Blackboard/Zoom/Microsoft Teams/CIDOS

4.2 Mean Analysis for Academic Life

In this part of the questionnaire, will discuss and finding out how the COVID-19 pandemic has affected respondent's experiences with teaching and learning, administrative support as well as performance and expectations.

Table 6 - Mean Analysis for academic life

No.	Item	Mean	Standard Deviation	Mean Interpretation
1	I'm happy about online teaching methods and lecture materials	3.69	0.944	High
2	Frustration and lack of interest in learning while being locked down	3.62	0.888	High
3	Online lectures are effective than traditional/live classroom lectures	3.19	0.963	Medium
4	Using online learning is fun	3.68	1.023	High
5	Gained experience of learning in a new online environment	3.84	0.915	High
6	Have flexibility in participating for online lectures	3.68	0.878	High
7	Have opportunity to ask questions or clear doubts during online lectures	3.57	0.948	High
8	Faced difficulty in understanding some of the lectures, especially those containing practical concept, were not clear in the online sessions.	3.62	0.943	High
9	In my opinion, non-verbal communication like eye contact with the lecturer is essential to establish learning process.	3.68	0.864	High
10	Lectures recording option in online learning, benefited us a lot	3.86	0.932	High
11	Online sessions provided me with a great time to study and I experienced better time management."	3.65	0.911	High
12	Online classes had a positive effect on me in terms of saving time and effort	3.81	1.014	High
13	Lecturer have provided course assignments (e.g. readings, homework, quizzes) on a regular basis.	4.07	0.771	High
14	Lecturer provided feedback on my performance on given assignments.	3.75	0.942	High
15	Lecturer have responded to my questions in a timely manner.	3.90	0.831	High
16	Lecturer open to students' suggestions and adjustments of online classes.	3.88	0.812	High
17	Lecturer informed me on what exams will look like in this new situation.	4.00	0.922	High
	Mean Average	**3.73**		**High**

Based on the mean score obtained (Table 6), it was found that the respondents as a whole are satisfied with academic life in a new norm. This is proved that lecturers have excellent credibility in delivering teaching content effectively. Through item number 13 where the lecturer has provided course assignments (e.g. readings, homework, quizzes) on a regular basis with a mean score obtained is 4.07. In addition, item 17 proves that almost all lecturers explain to students about the forms of assessment in the new norm with a mean score value of 4.00 Lecturers also responded to respondent's questions in a timely manner. In conclusion, lecturers play an important role in motivating and help students gain a positive experience during teaching and learning process.

However, emphasis should be given to items number 2,3,7 and 8. Although the mean score is at a high level, the value is relatively low compared to other items. Item 3 indicates that respondents do not agree that online learning is more effective than traditional or face-to-face classes. This is supported by item 2 where respondents feel frustrated and lack of interest in learning during pandemic with a mean score value of 3.62.

The shift from face-to-face class to online class has a serious impact on assessments and evaluation. Depending on the course nature and the assessment type applying assessments and evaluation online is a challenging task. So that lecturer has enforced to change their assessment types to fit the online mode. Also, it is difficult to monitor the student how they are taking courses online and difficult to ensure that students are not cheating during online exams (Basilaia & Kvavadze, 2020).

Meanwhile, the management of the Mechanical Engineering department also needs to take note of the difficulty of students to ask questions during the teaching and learning process (Item7). Through item 8 students faced difficulty in understanding some of the lectures, especially those containing practical concept, were not clear in the online sessions.

4.3 Mean Analysis for Technological Challenge

In this part of the questionnaire, researcher interested in finding out about respondent support network and facilities during the COVID-19 crisis.

Table 7 - Mean Analysis for Technological Challenge

No.	Item	Mean	Standard Deviation	Mean Interpretation
1	I have sufficient equipment and facilities (computer/laptop/Internet/software) to participate for online lectures	3.80	1.030	High
2	I have sufficient computer knowledge and IT skills to manage my online learning	3.63	0.980	High
3	Guidelines are provided (ex. how to use relevant online tools) before starting online lectures by your lecturer	3.77	0.870	High
4	Online tools are easy to use	3.56	1.025	High
5	Happy about online teaching methods and lecture materials	3.62	1.032	High
6	Slow internet connectivity and communication software failure were among frequent technical issues which I faced during whole course.	3.75	0.888	High
7	There was a wastage of time every day because of technical problems.	3.73	0.922	High
8	I used to face very frequent internet disconnection during online lectures daily and it was very hard for me to follow lectures with lecturer	3.62	0.860	High
9	My participation was greatly affected by issues like delayed download the lectures and internet lagging.	3.75	0.902	High
Mean Average		**3.69**		**High**

Table 7 shows the findings related to technological challenge. The mean average obtained is 3.69 indicating that the satisfaction rate of the respondents is high. Element number1 shows the highest score mean 3.80, which means that respondents have sufficient equipment and facilities (computer/laptop/Internet/software) to participate for online lectures.

Additionally, laboratory tests, practical tests, and performance tests are impossible to conduct online. Moreover, students who do not have internet access will suffer to take assessments and evaluations (Sahu, 2020). In Osman (2020) the assessment and evaluation of students' performance in online learning is difficult for both instructors and students particularly teaching practicum, technical competencies, and the assessment of practical skills is difficult. According to (UNESCO, 2020b) report, even for students, teachers, and parents in countries with reliable ICT infrastructure and internet access, the rapid transition to online learning has been challenging. Students, parents, and teachers also require training to deliver online learning effectively, but such support is particularly limited in developing countries. Education inequalities are a threat to education system continuity at a time of unexpected educational system closures (UNESCO, 2020b). Because, there are a limited number of computers, internet access, mobile network access, and lack of ICT trained teachers in developing countries (O'Hagan, 2020). Therefore, even if online teaching and learning are a good opportunity to continue education during the pandemic it is challenging for developing countries (Sun et al., 2020). Slow internet connectivity and communication software failure were among frequent technical issues which respondent faced during whole course. The respondent also agree that their participation was greatly affected by issues like delayed download the lectures and internet lagging.

Besides that, special attention should be given to element number 4 regarding online tools. In order to ensure the effectiveness of the teaching and learning process, the selection of online tools must be carefully considered before it is used. Through the eighth element shows that respondent used to face very frequent internet disconnection during online lectures daily and it was very hard for them to follow lectures with lecturer.

4.4 Mean Analysis for Emotional and Social Life Development

In this part of the questionnaire researcher are interested in finding out the respondent emotional and social life development since the onset of the COVID-19 pandemic.

Table 8 - Mean Analysis for emotional and social life development

No.	Item	Mean	Standard Deviation	Mean Interpretation
1	Lack of direct contact with other students/colleagues/friends	3.75	0.874	High
2	Inconsistent/poor contact and communication with the lecturers	3.43	0.948	High
3	Motivation is high in participating online lectures	3.64	0.780	High
4	Lecturer's personal attention and touch are less	3.35	0.911	High
5	Possibility of distractions from other family members during online lectures	3.53	0.808	High
6	I missed active interactive sessions like team-based learning sessions, peer instruction skills and discussion among students.	3.74	0.818	High
7	Online classes allowed me to save time for my studies and I found more time to sit with my family and enjoy quality refreshing time, whenever I wanted to take a break between my studies.	3.79	0.971	High
8	My family did not realize that I am seriously busy in learning through online system and that put a lot of pressure on me.	3.38	0.969	High
9	Online learning kept me away from my family,	2.99	1.112	Medium
10	While learning through online sessions, I had no time to enjoy my social life.	3.27	0.962	High
	Mean Average	**3.49**		**High**

Based on the mean score analysis in table 8, it was found that online leaning has a lot of impact on the emotional and social development of respondents. They has inconsistent or poor contact and communication with the lecturer. Besides that, they feel that lecturer's personal attention and touch are less. According to Purwanto et al. (2020), they reveal some of the challenges and obstacles experienced by students, teachers, and parents in online learning. Challenges associated with students are: limited communication and outreach among students, higher challenges for students with special educational needs, and longer screening times.

Regarding to family relationships, respondent realize that they has possibility of distraction from other family members during online class. Their family did not realize that they seriously busy in learning through online system and that put a lot of pressure on them. This situation will kept them away from their family. As a result the respondent fell that they had no time to enjoy their social life. The COVID-19 pandemic has looming negative impacts on mental health of undergraduate and graduate students at research universities, according to the Student Experience in the Research University (SERU) Consortium survey of 30,725 undergraduate students and 15,346 graduate and professional students conducted in May-July 2020 at nine public research universities.

5. Conclusion

As a conclusion, the sudden synchronized online classes were well-accepted by the Mechanical Engineering first semester student's. Overall, it showed that students are still coping with the new norms working from the home period, but they had dissatisfaction with certain elements that may need to be considered. Table 9 summarized the result of the research.

Table 9 - Mean Analysis for emotional and social life development

No.	Focus Area	Synopsis	Mean Average
1	Academic Life	How the COVID-19 pandemic has affected student's experiences with teaching and learning, administrative support as well as student's performance and expectations.	3.73
2	Technological Challenge	Students support network and facilities during the COVID-19 crisis.	3.69
3	Emotional And Social Life Development	Students have been feeling and develop social life since the onset of the COVID-19 pandemic.	3.49

For the academic life, based on the mean average score obtained 3.73, it was found that the respondents as a whole are satisfied with academic life in a new norm but the management of the Mechanical Engineering department also needs

to take note of the difficulty of students such as why a few of the students feel frustrated and lack of interest in learning during pandemic. They also feel difficulty to ask questions during the teaching and learning process and understanding some of the lectures, especially those containing practical concept, were not clear in the online sessions.

The mean average obtained for technological challenge is 3.69 indicating that the satisfaction rate of the respondents is high. Element number one shows the highest score mean 3.80, which means that respondents have sufficient equipment and facilities (computer/laptop/Internet/software) to participate for online lectures. Although the satisfaction is high special attention should given to slow internet connectivity and communication software failure and suitable online tools select during the whole course.

For the emotional and social life development, based on the mean average score obtained 3.49 it was found that online leaning has a lot of impact on them. The emotional and social development of respondents They has inconsistent or poor contact and communication with the lecturer. has possibility of distraction from other family members during online class. As a conclusion, the sudden synchronized online classes were well-accepted by the Mechanical Engineering first semester students.

Overall, it showed that students are still coping with the new norms working from the home period, but they had dissatisfaction with certain elements that may need to be considered. The top management of Mechanical Engineering Department should take necessary action accordingly before demotivating students due to this pandemic. The present situations which exist due to the widespread of covid-19 pandemic has caused lot of problems for the learners and for the higher educational institutions. However, the top management of Mechanical Engineering Department need to come up with some strategic initiative, both at individual as well as institutional level to combat the situation. The entire framework of mind and working components of the institution should be changed in accordance with the requirement of digital learning, then only we can win the battle over corona.

References

Ahmad, A., Nuzula, F., & Makky, K. (2020). Efektivitas pembelajaran daring dengan menggunakan google classroom pada mata pelajaran matematika di madrasah aliyah darul falah Batu Jangkih. *El-Hikam*, *13*(1), 66-82.

Amarneh, B. M., Alshurideh, M. T., Al Kurdi, B. H., & Obeidat, Z. (2021, May). The Impact of COVID-19 on E-learning: Advantages and Challenges. In *The international conference on artificial intelligence and computer vision* (pp. 75-89). Cham: Springer International Publishing.

Arkorful, V., & Abaidoo, N. (2015). The role of e-learning, advantages and disadvantages of its adoption in higher education. *International journal of instructional technology and distance learning*, *12*(1), 29-42.

Aronoff, S. C., Evans, B., Fleece, D., Lyons, P., Kaplan, L., & Rojas, R. (2010). Integrating evidence based medicine into undergraduate medical education: combining online instruction with clinical clerkships. *Teaching and learning in medicine*, *22*(3), 219-223.

Basilaia, G., & Kvavadze, D. (2020). Transition to online education in schools during a SARS-CoV-2 coronavirus (COVID-19) pandemic in Georgia. *Pedagogical Research*, *5*(4).

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *psychometrika*, *16*(3), 297-334.

Finkelstein, J. E. (2006). *Learning in real time: Synchronous teaching and learning online* (Vol. 5). John Wiley & Sons.

Haghshenas, M. (2019). A model for utilizing social Softwares in learning management system of E-learning. *Quarterly of Iranian Distance Education Journal*, *1*(4), 25-38.

Maatuk, A. M., Elberkawi, E. K., Aljawarneh, S., Rashaideh, H., & Alharbi, H. (2022). The COVID-19 pandemic and E-learning: challenges and opportunities from the perspective of students and instructors. *Journal of computing in higher education*, *34*(1), 21-38.

McIver, J., & Carmines, E. G. (1981). *Unidimensional scaling* (Vol. 24). sage.

Middleton, A. J. (1997). How effective is distance education?. *International Journal of Instructional Media*, *24*(2), 133.

Moidunny, K. (2009). The effectiveness of the national professional qualification for educational leaders (NPQEL). *Unpublished Doctoral Dissertation, Bangi: The National University of Malaysia*.

O'Hagan, C. (2020). Learning Leadership and Technology Enhanced Learning: From Rhetoric to Reality. In *Developing Technology Mediation in Learning Environments* (pp. 1-22). IGI Global.

Osman, M. E. (2020). Global impact of COVID-19 on education systems: the emergency remote teaching at Sultan Qaboos University. *Journal of Education for Teaching*, *46*(4), 463-471.

Parinduri, R. H. (2019). The role of LAPER BE-ON (Online Library Service) for distance education in the era of globalization. *Journal of Iqra*, *13*(1), 126-141.

Purwanto, A., Pramono, R., Asbari, M., Hyun, C. C., Wijayanti, L. M., & Putri, R. S. (2020). Studi eksploratif dampak pandemi COVID-19 terhadap proses pembelajaran online di sekolah dasar. *EduPsyCouns: Journal of Education, Psychology and Counseling*, *2*(1), 1-12.

Putrawangsa, S., & Hasanah, U. (2018). Integration of digital technology in learning in the industrial age 4.0 [in Bahasa]. *Jurnal Tatsqif*, *16*(1), 42-54.

Sahu, P. (2020). Closure of universities due to coronavirus disease 2019 (COVID-19): impact on education and mental health of students and academic staff. *Cureus*, *12*(4).

Sijtsma, K. (2009). On the use, the misuse, and the very limited usefulness of Cronbach's alpha. *Psychometrika*, *74*, 107-120.

Sun, L., Tang, Y., & Zuo, W. (2020). Coronavirus pushes education online. *Nature materials*, *19*(6), 687-687.

Tadesse, S., & Muluye, W. (2020). The impact of COVID-19 pandemic on education system in developing countries: a review. *Open Journal of Social Sciences*, *8*(10), 159-170.

Tarkar, P. (2020). Impact of COVID-19 pandemic on education system. *International Journal of Advanced Science and Technology*, *29*(9), 3812-3814.

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International journal of medical education*, *2*, 53.

UNESCO (2020). COVID-19 Educational Disruption and Response. https://en.unesco.org/covid19 /educationresponse. Retrieved Feb 2020.

UNESCO (2020b). UNESCO Rallies International Organizations, Civil Society and Private Sector Partners in a Broad Coalition to Ensure #LearningNeverStops. UNESCO. https://en.unesco.org/news/unesco-rallies-international-organizations-civil-society-an d-private-sector-partners-broad

Ülker, D., & Yılmaz, Y. (2016). Learning Management Systems and Comparison of Open Source Learning Management Systems and Proprietary Learning Management Systems. *Journal of Systems Integration (1804-2724)*, *7*(2).