UNIVERSITI TEKNOLOGI MALAYSIA

Project 1 - SECI 2143

ANALYZING STUDENT'S PRE-COVID AND POST-COVID DAILY ACTIVITY AND ITS EFFECT ON THEIR ACADEMIC PERFORMANCE

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Introduction

The COVID-19 pandemic which occurs in the early 2020 has made new whole changes to the world and it also heavily impacts all aspects of activities especially education. After MCO was announced by the government in March 2020, all of the education institutions including UTM have been closed to prevent the spread of the virus. All of its students have been informed to leave the campus site and go back to their respective home. As the situation has changed, the students need to adapt with the new situation and need to continue their study by using the online platforms. As this new situation emerges, many students need to cope with it and it also affects their academic performance.

Our team has decided to do a study about this situation and the purpose of this study is to determine whether the student's activity during COVID-19 can affect the student's academic performance or not. Do the students' academic performance before and after the pandemic is different? Does every faculty manage to do online learning effectively? How do the student activity hours can affect their performance? In this report, all of those questions will be answered which results into our conclusion regarding this matter.

Data Collection Method

Introduction

In this project, we conducted an online survey using Google Forms which we had distributed around the Universiti Teknologi Malaysia (UTM) students through different kinds of social media platforms. Through this online survey we are able to get the data on how students adapt during this pandemic. The questions asked were about their study hours, data spending, cost for learning, daily activity and how their mental health are during this pandemic.

Sample Selection

The sample that we've got is from the students from Year 2, Year 3 and Year 4 since they had their past CGPA. Around 202 students from different kinds of faculty had filled the survey so that we can conduct this project successfully. At the end of the online survey we had asked for the reason and solution to help students manage their mental health during these trying times.

Limitation of the study

This study also contains some errors because the questions may have confused some of the students causing some error in the data.

No	Questions	Answers	Level of Measurement	Suggestion Input Type
General Question				
1	Gender	Male / Female	Nominal	Multiple choice selection
2	Age	Metric value	Ratio	
3	Year	Metric value	Ratio	Multiple choice selection
4	Faculty	Engineering, Social Science, etc...	Nominal	Multiple choice selection
5	Program	SECBH, etc...	Nominal	User Input
6	State (Malaysia, International)	Johor, Selangor, etc...	Nominal	User Input
7	Pre-Covid CGPA	Metric value	Ratio	User input
8	Post-Covid CGPA 1	Metric value	Ratio	User input
9	Post-Covid CGPA 2	Metric value	Ratio	User input
10	Preference (Study Method, Internet Provider)	Google Meet, Skype...	Nominal	Multiple choice selection
Pre Covid				
1	Hours student spend for studying	Metric value	Ratio	User input

2	Internet connection speed	Metric value	Ratio	User input
3	Data spend on online study per month	Metric value	Ratio	User input
4	Cost spend for study per month	Metric value	Ratio	User input
5	Hours spend for housework/social media/ personal per day	Metric value	Ratio	User input
6	How is your mental health during this pandemic	Very bad, Bad, Neutral, Good, Very Good	Ordinal	Multiple choice selection
7	Reason for your mental health deteriorating	Study Environment, Technical Problem (PC,Laptop, etc..), Teaching method	Nominal	Paragraph
8	The best solution to help improve your academic	Improve internet connection, new teaching methods, etc..	Nominal	Paragraph
9	How frequent studying with friends	A month, a week ,less than a week etc	Ordinal	Multiple choice selection
Post Covid				
1	Hours student spend for studying	Metric value	Ratio	User input
2	Internet connection speed	Metric value	Ratio	User input
3	Data spend on online study per month	Metric value	Ratio	User input
4	Cost spend for study per month	Metric value	Ratio	User input
5	Hours spend for housework/social media/ personal per day	Metric value	Ratio	User input
6	How is your mental health during this pandemic	Very bad, Bad, Neutral, Good, Very Good	Ordinal	Multiple choice selection
7	Reason for your mental health deteriorating	Study Environment, Technical Problem (PC,Laptop, etc..), Teaching method	Nominal	Paragraph
8	The best solution to help improve your academic	Improve internet connection, new teaching methods, etc..	Nominal	Paragraph
9	How frequent studying with friends	A month, a week ,less than a week etc	Ordinal	Multiple Choice Question

Table 1: Data Table Collection Conduct

Data Description Analysis

In this project data description, we will discuss two types of data summary which are categorical data and numerical data summary.

Demographic

Sex and Year

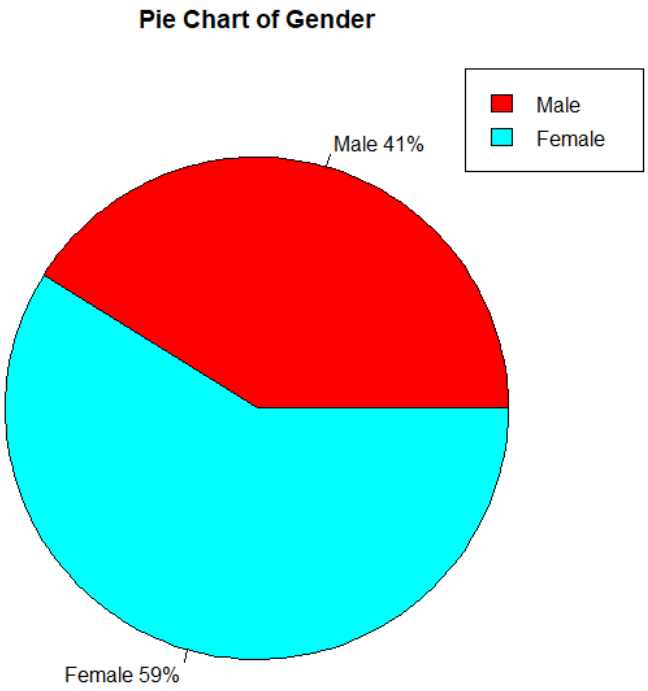

Figure 1: Pie chart of the respondent's gender

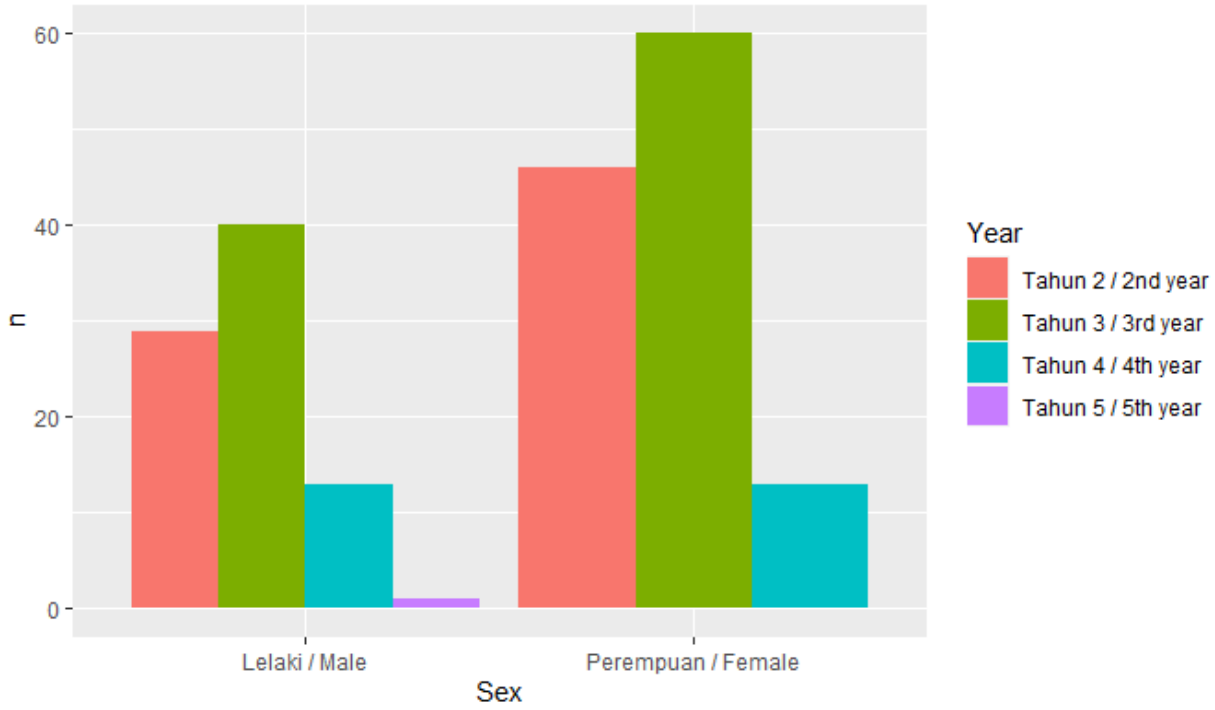

Figure 2: Bar chart of the respondent's year base on sex

Year	Frequency	Relative frequency	Cumulative frequency	Percent	Cumulative percent
1st Year	0	0	0	0%	0%
2nd Year	75	0.371	75	37.1%	37.1%
3rd Year	100	0.495	175	49.5%	86.6%
4th Year	26	0.129	201	12.9%	99.5%
5th Year	1	0.005	202	0.5%	100%
Total	**202**	**1**	**202**	**100%**	**100%**

Table 2: Frequency Table for Year

In Figure 1, it shows that 59% of the respondents are females which makes it the majority in terms of gender that takes this survey while only 41% of the respondent is male taking the survey. The demographics according to the respondents' study year shows that almost half of the respondents are 3rd year students in UTM and the rest are spread across the remaining years. From our survey, there is only one 5th student which responded, and it represents 0.5% of the respondents that take the survey, which is the lowest of all the categories. We also noted that there is no 1st year student that responded to our survey because they are not in our sample due not to join yet as university students. The female respondents also outnumber the male respondents according to each year of study except for the 5th year category which has only one male respondent and no female respondent.

Sex and Age

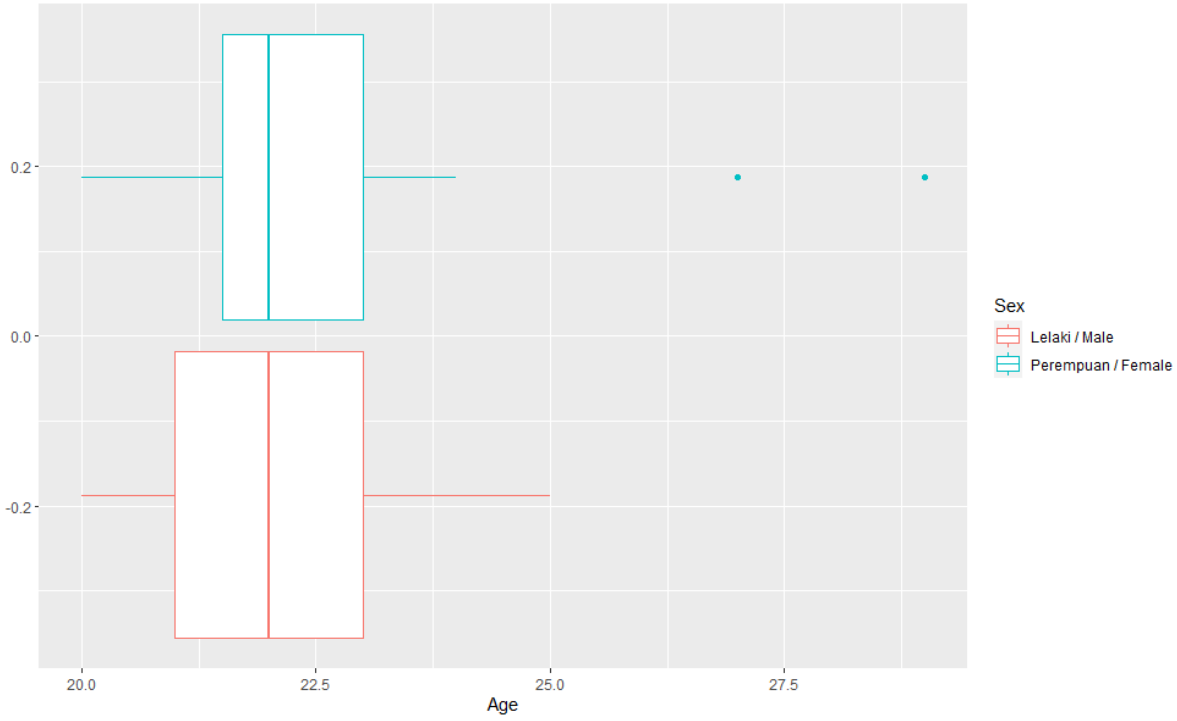

Figure 3: Pie chart of the respondent's gender

The figure shows the box plot focused on age based on sex. When we look at the female,the outlier for min is 20 .For female, the mean are 22.14, median and mode are both the same which is 22. While for men,the outlier for max is 25 which is more than female.While for the mean is 22.11, median is 22 and mode is 23. As we can see in the interquartile range , the

median and 3rd quartile are the same. The difference is only on the 1st quartile . So the conclusion, the boxplot for male is bigger than females due to the 1st quartile.

Faculty and School

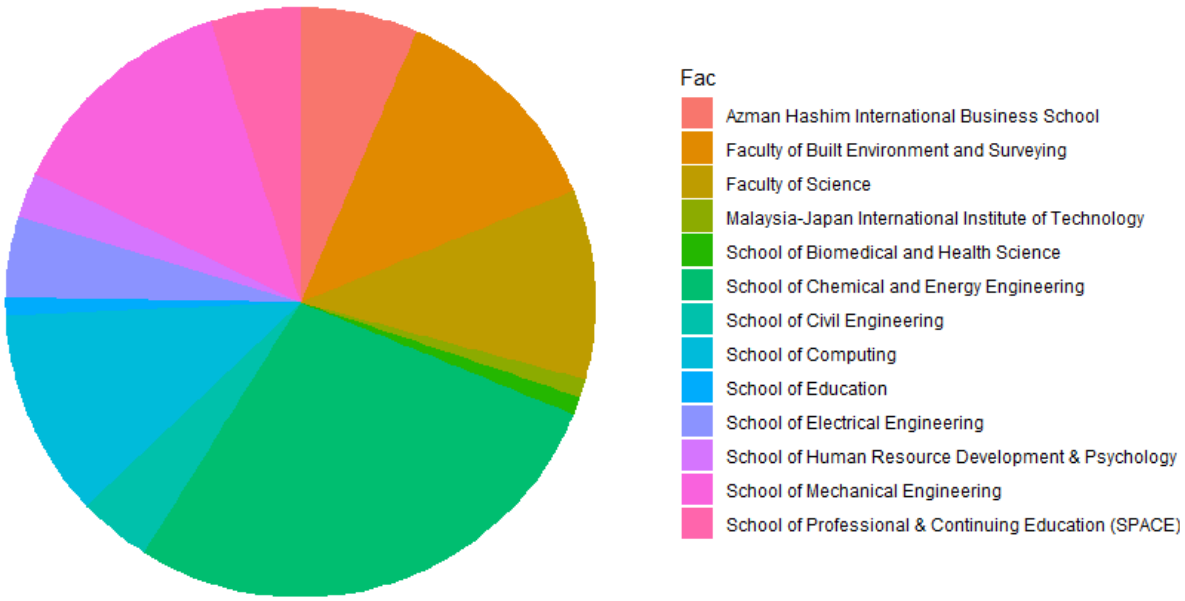

Figure 4: Pie chart of UTM Student's Faculty

Based on the bar chart, there are 12 faculty in UTM which are Azman Hashim International Business School, Faculty of Built Environment and Surveying, Faculty of Science, Malaysia-Japan International Institute of Technology, School of Biomedical and Health Science, School of Chemical and Energy Engineering, School of Civil Engineering, School of Computing, School of Education, School of Electrical Engineering, School of Human Resource Development & Psychology, School of Mechanical Engineering, School of Professional & Continuing Education(SPACE).

From our survey, students from School of Chemical and Energy Engineering have the highest number that take part which are 56 respondents and make up 27.7% of the respondents.There are also 3 faculties that have the lowest number that take part in our survey which are only 2 respondents from each faculty and it only makes up 1% of the

respondents.Those 3 faculties are Malaysia-Japan International Institute of Technology, School of Biomedical and Health Science and School of Education.

Faculty	Frequency	Percent
Azman Hashim International Business School	13	6.4%
Faculty of Built Environment	25	12.4%
Faculty of Science	21	10.4%
Malaysia-Japan International Institute of Technology	2	1.0%
School of Biomedical and Health Science	2	1.0%
School of Chemical and Energy Engineering	56	27.7%
School of Civil Engineering	8	4.0%
School of Computing	23	11.4%
School of Education	2	1.0%
School of Electrical Engineering	9	4.5%
School of Human Resource Development & Psychology	5	2.5%
School of Mechanical Engineering	26	12.9%
School of Professional & Continuing Education (SPACE)	10	5.0%
Total	**202**	**100%**

Table 3 : Frequency Table of Faculty

State and Nationality

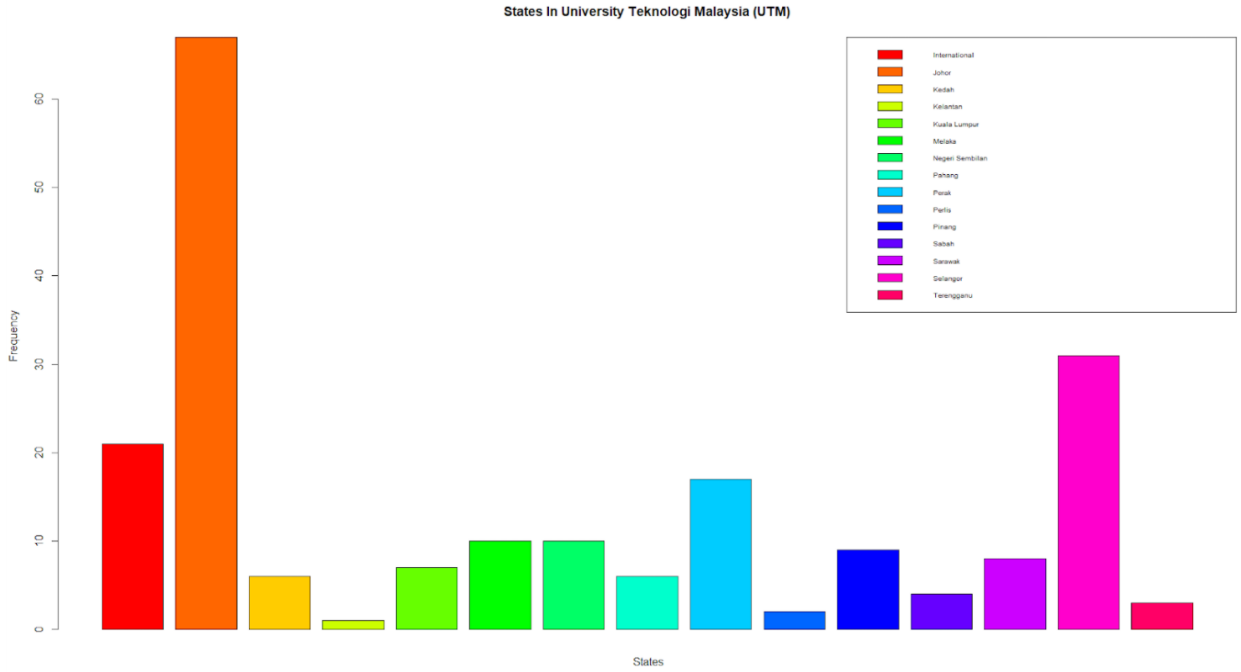

Figure 5: Bar Chart of State in UTM

Figure shows the number of students from different states that are in Universiti Teknologi Malaysia (UTM). Based on the bar chart, frequency students from each state, being International (21), Johor (67), Kedah (6), Kelantan (1), Kuala Lumpur (7), Melaka (10), Negeri Sembilan (10), Pahang (6), Perak (17), Perlis (2), Pinang (9), Sabah (4), Sarawak (8), Selangor (31), Terengganu (3). The highest student frequency from these states are from Johor (67) whereas the lowest student frequency are from Kelantan (1).

States	Frequency	Percent
International	21	10.40%
Johor	67	33.17%
Kedah	6	2.97%
Kelantan	1	0.50%
Kuala Lumpur	7	3.47%
Melaka	10	4.95%

Negeri Sembilan	10	4.95%
Pahang	6	2.97%
Perak	17	8.42%
Perlis	2	0.99%
Pulau Pinang	9	4.46%
Sabah	4	1.98%
Sarawak	8	3.96%
Selangor	31	15.35%
Terengganu	3	1.49%
Total	**202**	**100%**

Table 4: Frequency Table of State

We can also show the percentage number of students from different states that are in Universiti Teknologi Malaysia (UTM). Which are International (10.40%), Johor (33.17%), Kedah (2.97%), Kelantan (0.50%), Kuala Lumpur (3.47%), Melaka (4.95%), Negeri Sembilan (4.95%), Pahang (2.97%), Perak (8.42%), Perlis (0.99%), Pinang (4.46%), Sabah (1.98%), Sarawak (3.96%), Selangor (15.35%), Terengganu (1.49%).

Study Analysis

Study Hours

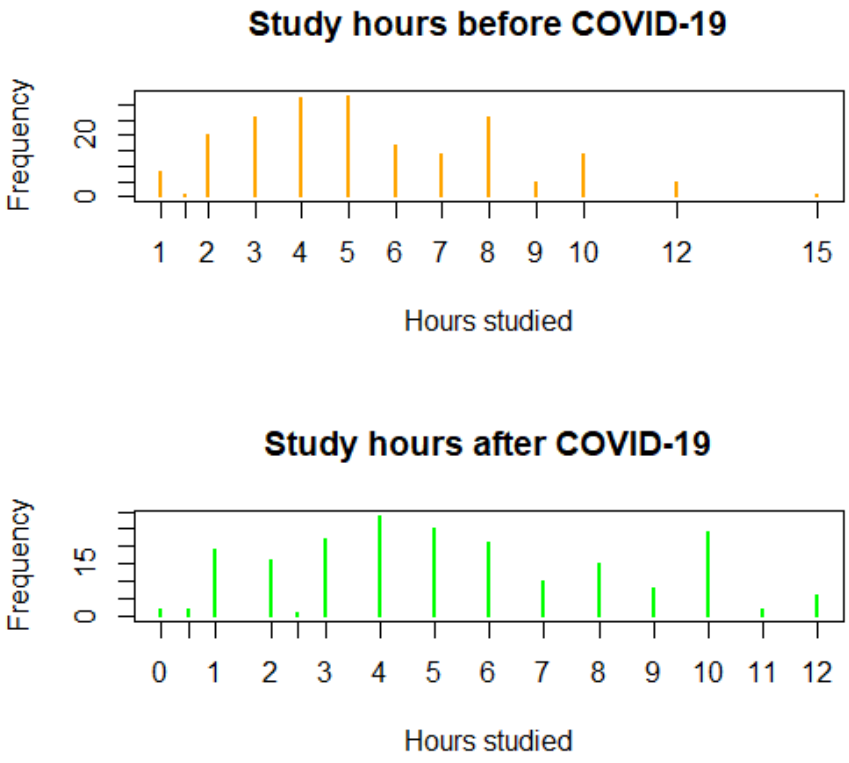

Figure 6: Study hours before and after COVID-19

The dot plot in Figure 3 shows the distribution of student's study hours before and after COVID-19. From the dot plot, we can see that the majority of the students spend 5 hours to study before COVID and 4 hours to study after COVID-19 as it is the mod for both dot plots with 33 and 29 respondents, respectively.

The reasons for these decreases can be related to the housework hours spent by the student during COVID-19 as they study at home after COVID-19. Even though the mod for after COVID is higher than after, there is a surge where there are 24 students who spend 10 hours studying after COVID-19 while before COVID-19, there are only 14 respondents that study 10 hours per day.

CGPA

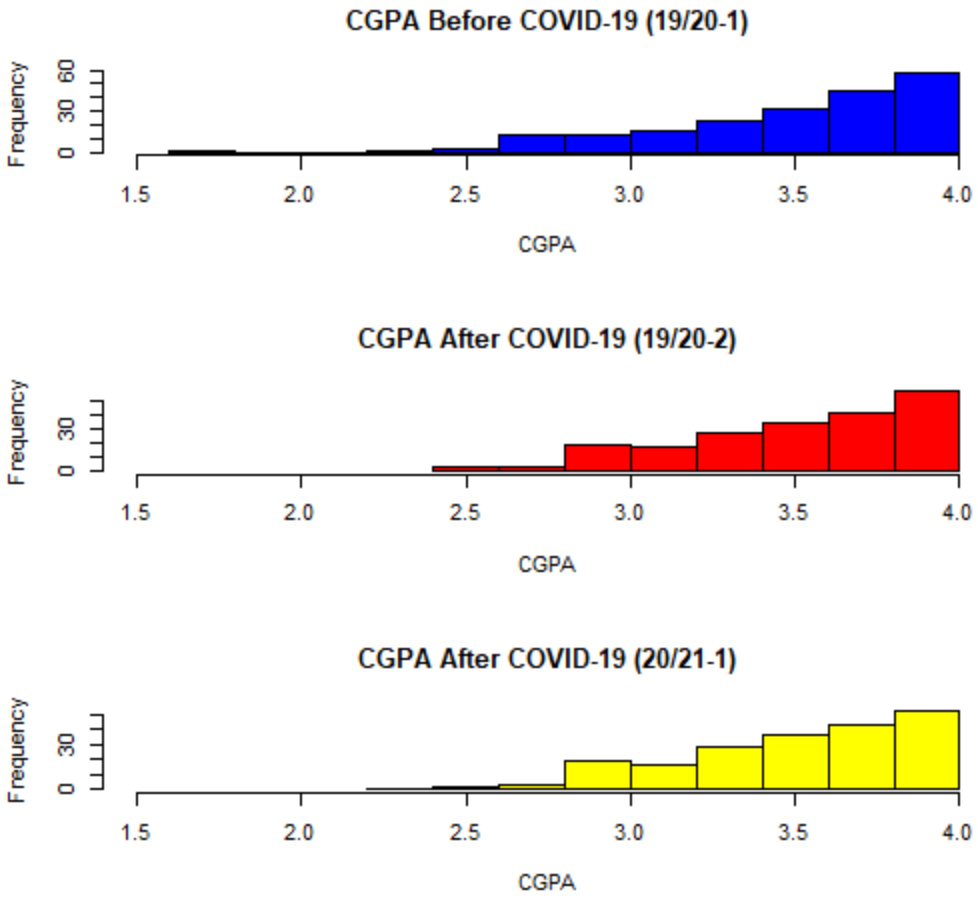

Figure 7: CGPA before and after COVID-19

The histogram in Figure 4 shows the CGPA before and after COVID-19 for all the 202 respondents. The mode of the graphs is 4.0 but the mean and median for the graphs varies. The mean for the first graph is 3.509 and the median is 3.615. The mean for the second graph is 3.527 and the median is 3.6. The mean for the third graph is 3.521 and the median is 3.585. Since there are not many differences between the graphs, it shows that the student's academic performance does not affect much by the pandemic and many can adapt to the situation.

Internet Speed

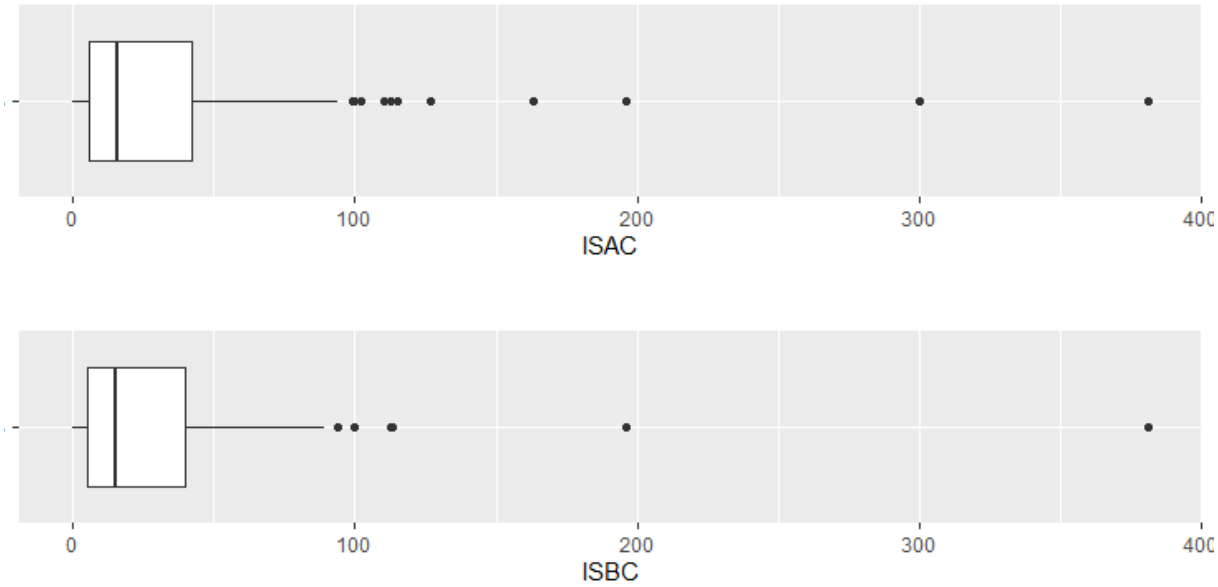

Figure 8: Internet speed before and after COVID-19

Based on the boxplot above, we studied about the internet connection before and after covid from students. The mean from the boxplot before covid (ISBC) is 29.69 Mbps whereas the mean from after covid (ISAC) is 35.13 Mbps. The median for both graphs is nearly identical which is 15 Mbps. Mode for ISBC is 15 Mbps and for ISAC is 5 Mbps.

The difference of the mode may affect the online learning for some students. This is because they have to use the internet to be able to go to online classes such as webex and google meet. With low internet speed they may experience lag or disconnection. There is also an outlier from both of the graphs, this is because some of the students have really fast internet which are faster than 300 Mbps.

Mental Health Ratio

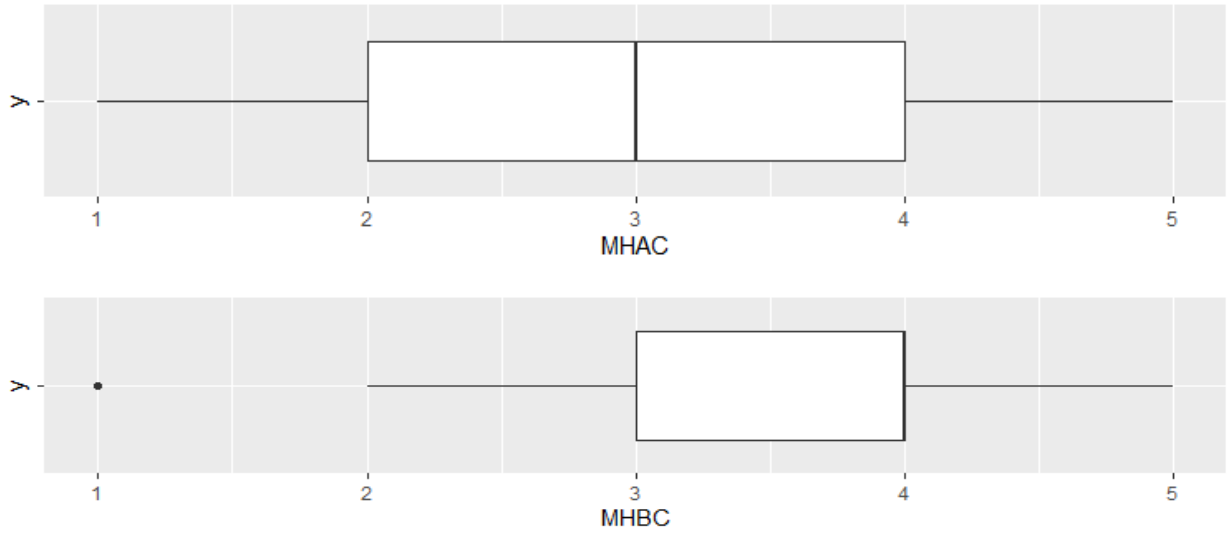

Figure 9: Mental health before and after COVID-19

This analysis is based on how many hours of study can affect the student's mental health before and after covid happened. (MHBC) Mental Health Before Covid and (MHAC) Mental Health After Covid can be represented in 5 levels. Based on the boxplot above 1 - Very bad, 2 - Bad, 3 - Normal, 4 - Good, 5 - Very good. The mean for before covid (MHBC) is 3.693 and for after covid (MHAC) is 2.817. The median and mode is the same for MHBC is 4 and MHAC is 3.

With this data we can see the decrease of student mental health due to the pandemic. The pandemic had caused the student to adapt to the new environment too quickly, and it can cause the drop of student's mental health, another possible reason because the student isn't able to adapt with online learning and it caused them to be overworked to achieve deadlines, tests, and many more. But there are still students that are able to adapt to the situation with their own ways.

	Mental Health Before Covid	Mental Health After Covid
Mean	3.693	2.817
Median	4	3
Mode	4	3

Table 5: Calculation for mental health

Mental Health Causing

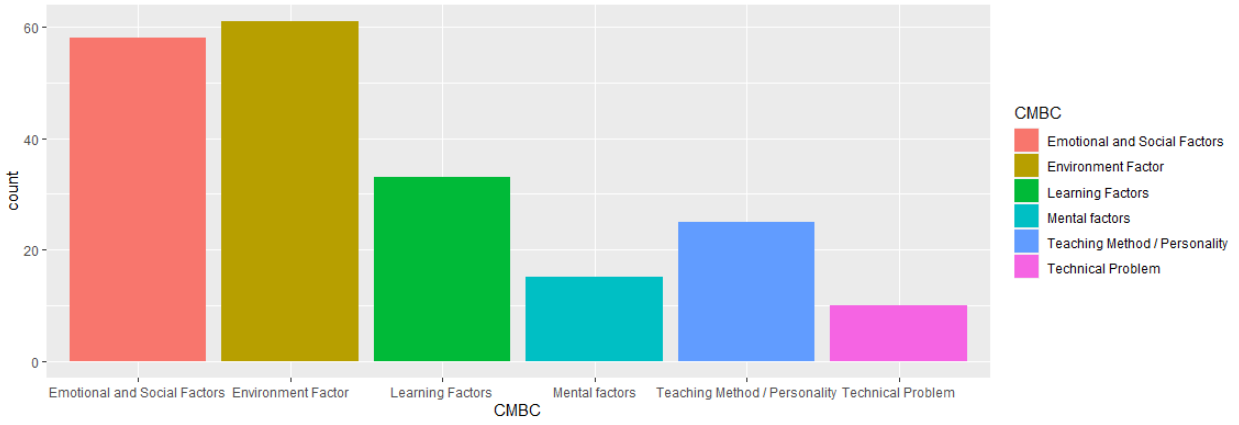

Figure 9.1: Mental health cause impact

As continue from mental health result, we do studying the impact and reason for the decrement for student mental health, we do summarize and giving option for student to choose the most reason impact for their mental health for the result as follow; Emotional and Social Factors (37), Environment Factor (63), Learning Factors (39), Mental factors (11), Teaching Method / Personality (38) and Technical Problem (14). As the result most highest reason is environmental factor like study room that not conducive and external factor like family issue and others also the most lowest impact is mental factor as category for them who likely have mental issue.

Study Hours

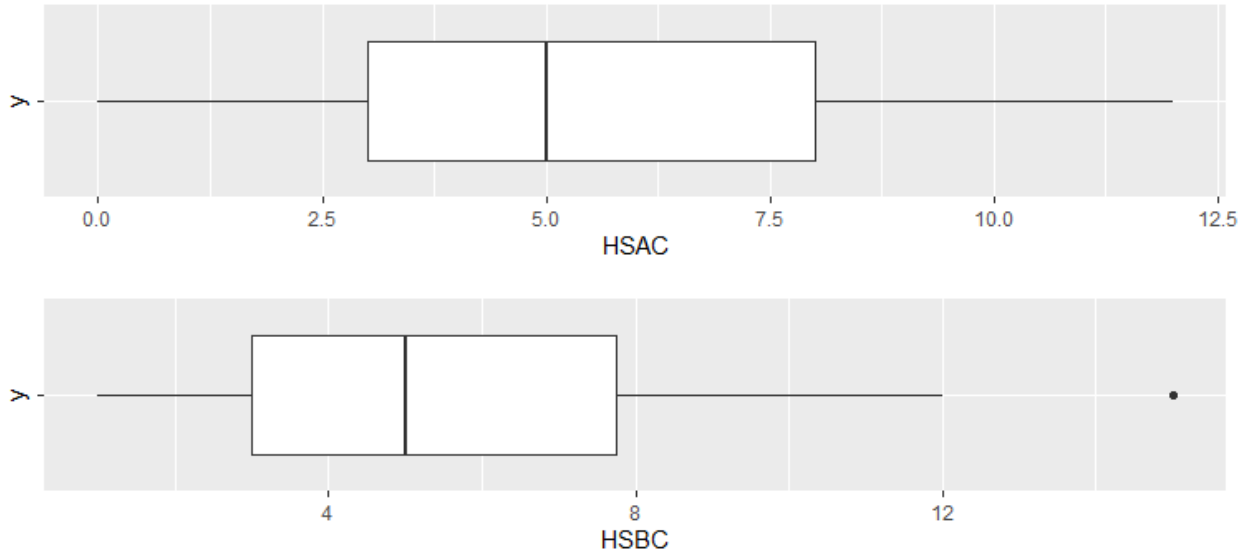

Figure 9: Study hours before and after COVID-19

Based on the boxplot above, we studied the student hours in studying everyday before and after covid. The mean for before covid (HSBC) and after covid (HSAC) is nearly the same 5.3 hours. The median for both HSBC and HSAC is 5 hours. The mode for HSBC is 5 hours and for HSAC is 4 hour. But there are also students that study before (4 hours) to after (7 hours). With these two results we can say that the reason for the student to change their time of study is to adapt their way in the pandemic. The outlier can be seen on HSBC which students also study more than 12 hours per day.

	Hour Study Before Covid	Hour Study After Covid
Mean	5.389	5.364
Median	5	5
Mode	5	4

Table 5: Calculation for study hours

Study Often

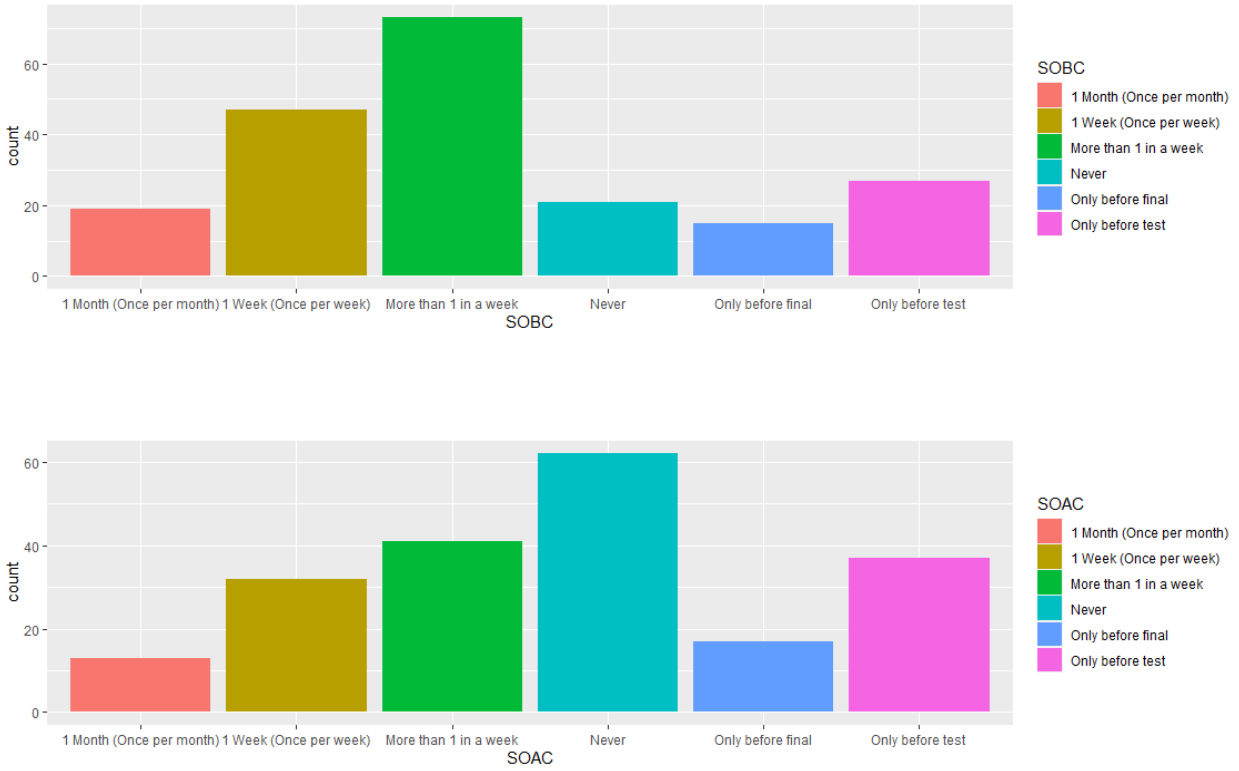

Figure 9: Study often before and after COVID-19

From the 1st bar chart which represents how often the students study before covid, we can see that the majority of the students study more than 1 session in a week. Next to it, the students also preferred to study once a week. Even though many of the students often study, there are also those who just study only before the test, once per month and never study at all. This can be the evidence of low CGPA in the data that we have collected.

When compared to the 2nd bar chart which represents how often the students study after covid. There is a significant increase in the number of students that never study which are related to their mental health during covid. Next to it, the students also only study before the test and results in low CGPA in our data.

Non-studying Hours

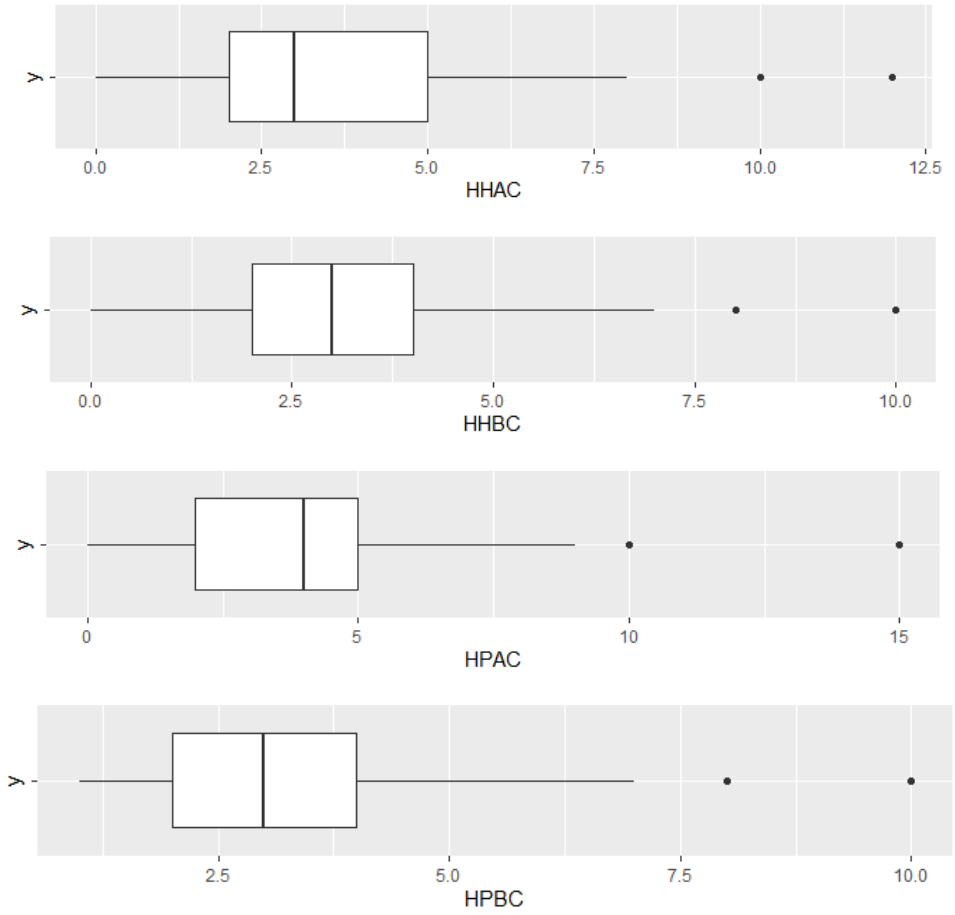

Figure 10: Non-study hours before and after COVID-19

Based on the boxplot above, we studied the analysis for the non-study spending hour during pandemic including before and after. In this analysis we divide into 2 main categories such as hour housework and hour personal time. As we the result it has slightly significant result, for the house housework before covid the average for housework is 3.078 hour, with median 3 hour and mode is 2 hour and the hour housework after covid as the average for the housework is 3.614 hour, with median 3 hour and mode increase which is 3 hour.

It is implemented also in hour personal time, before covid with mean is 3.644 hour with media is 3 hour and mode is 2 hour, after covid the hour personal time increase mean 3.99 hour with median is 4 hour and mode is 3 hour that previously got different plus 1 hour before covid.

This means that there is an increase for students in personal time since students are mostly staying at home.

	Hour Housework Before Covid	Hour Housework After Covid
Mean	3.078	3.614
Median	3	3
Mode	2	3

Table 6: Calculation for housework hours

	Hour Personal Before Covid	Hour Personal After Covid
Mean	3.644	3.99
Median	3	4
Mode	2	3

Table 7: Calculation for personal hours

Teaching and Platform Preference

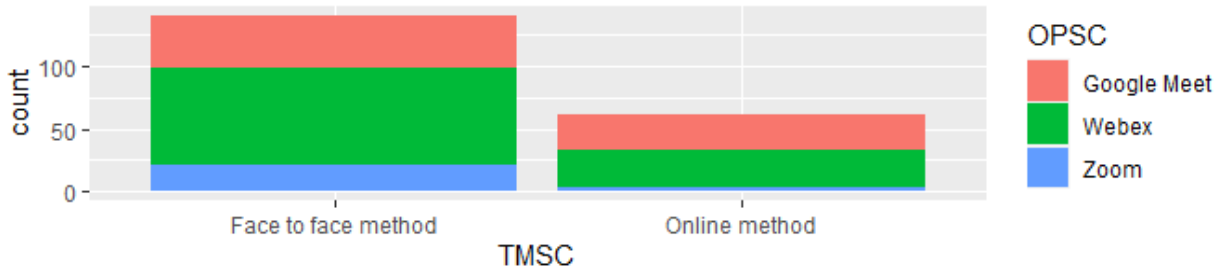

Figure 11: Teaching and platform preference

We initiative to take part for student preference after the survey regarding student learning impact in daily activities during a pandemic with teaching methods and online platform preference. Based on the bar chart above, we studied that most students who are interested in face to face method have the highest 141 choice instead of online method only 61 choices. However, based on student preference if the studying is still conducted online they have to choose the online platform in term for learning communication most of the students prefer webex with 107 choice and second alternative is google meet with 70 choice also the least choice is zoom with 25 choice. This is because of university digital services that google meet premium for all university citizens and webex premium that provide for lecture and staff in university.

Conclusion

As a conclusion , we can conclude that Covid-19 has brought a lot of impact and changes to the world and everybody needs to adapt with these situations until it ends. As comparing the results that we got during our survey. We analyze that **there are no significant changes** on the study learning during pandemic including before covid and after covid between Student CGPA and Daily Activity Affect. Basically, our conducted surveys have proven that students can and are easily adapted to the changes very quickly. The pandemic has taught us that we can actually study everywhere as long there is a will.

After we collected data such as internet speed, CGPA, study hour, teaching and learning method, online platform and study preference including study often, hour study, hour personal and hour housework from the respondents, As we can see from the demographic, the 3rd year students are the most students that participate in our survey and 59% of respondents are females .The students from School of Chemical and Energy Engineering are the highest number of participants that participate in our survey and Malaysia-Japan International Institute of Technology, School of Biomedical and Health Science and School of Education are among the faculties that have the lowest in terms of participants.

Based on the survey, there were no significant differences in terms of CGPA of the students. This proves that these students actually can study at home and get extra work from the university itself. The study hour becomes longer for an hour and also personal hour and housework hour also does not have any significant changes.

But, there are some impacts indirectly to daily activities such as study hour and internet speed . As we can see, the mode of ISBC has reduced from 15 Mbps to 5 Mbps on ISAC. This is because most of the students used their internet connection on learning via Webex and Google Meet. For mental health, based on our survey, we noticed that there are some decreasing on the rating from 4 to 3. These are due to adaptation to the new environment and chasing the deadline of the assignment.

Although the CGPA had no significant changes on the students but in the end, most students prefer face to face learning than online learning. This is because face to face learning is the most effective when it comes to effective learning.

Appendix

Term for Data

Short Term	Long Term
ACBC	Academic cost - before covid
ACAC	Academic Cost - after covid
HSBC	hour study - before covid
HSAC	Hour Study - after covid
DQBC	Data quota - before covid
DQAC	Data quota - after covid
ISBC	Internet Speed - before covid
ISAC	Internet Speed - after covid
HHBC	Hour Housework - before covid
HPBC	Hour Personal - before covid
HHAC	Hour Housework - after covid
HPAC	Hour Personal - after covid
CGBC0	CGPA - before covid 0
CGAC1	CGPA - after covid 1
CGAC2	CGPA - after covid 2
SOBC	Study Often - before covid
SOAC	Study Often - after covid
MHBC	Mental Health - before covid
CMBC	Causing Mental Health - before covid
SMBC	Support Reason Mental Health - before covid
MHAC	Mental Health - after covid
CMAC	Causing Mental Health - after covid
SMAC	Support Reason Mental Health - after covid

IPSC	Internet Provider - suggestion covid
SASC	Solution need academic performance - suggestion covid
TMSC	Teaching Method - suggestion covid
OPSC	Online Platform - suggestion covid
AESC	Anything Else - suggestion covid

Survey

link: bit.ly/slampp

Data

link: bit.ly/dataslampp