Online Teaching & Learning During Covid-19 Pandemic: Exploratory Study on The Effectiveness of Google Classroom at Kolej Komuniti Bandar Darulaman

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Abstract

The COVID-19 pandemic is not a typical adjustment and readjustment to a pedagogical approach. Educators must quickly adjust and develop a plan of action, thinking of an out-of-the-box teaching method as the epidemic will not end soon. The COVID-19 pandemic spread for the second and third wave of infection, policies and measures to curb the disease are implemented, limiting the number of people congregating in public places. Such efforts have disrupted the normal functioning of schools and universities. This study aims to identify the effectiveness of Online Teaching & Learning (Online T&L) using Google Classroom (GC). A quantitative method of approach was used to utilise questionnaire tools to solicit responses from 180 students in Kolej Komuniti Bandar Darulaman (KKBDA). The questionnaire was administered using Google Forms. Findings were then analysed using SPSS. Results were presented in the form of frequencies and correlational analysis. The findings indicate a high degree of acceptance of Online learning. In terms of online learning effectiveness, more than half of the respondents, 70.6% (M=3.81, SD=.853), agrees that the Online T&L using Google Classroom is effective. These respondents used the type of internet connection exclusively mobile broadband through their mobile phone for internet access. 14% of the students indicate that their internet coverage is either poor and very poor. This could be linked to the internet access traffic, as well as network coverage. During Movement Control Order (MCO), internet access in housing areas was congested and slow as internet usage was very high due to working, learning and business from home. The outcomes of the analysis postulate that there is a high level of effectiveness in Online T&L. Underlying, it also indicates that Online T&L did provide prospects to the new breed of students with a better education and communication opportunities irrespective of time and place. A thorough study of every aspect of online learning is necessary as Online T&L is still in its early stages, especially the implementation of a holistic assessment. Diversifying the Online T&L methodologies, such as using Google Classroom, allows the lecturer to know whether the Online T&L effectiveness is achieved.

Keywords: covid-19, google classroom, online learning

1.0 Introduction

For lecturers and educators alike, the COVID-19 pandemic is not a typical adjustment and readjustment of a pedagogical approach. There is no such guidance and responses to guide them accordingly (Abdullah, Husin & Haider, 2020). They have to quickly adjust and develop a plan of action, thinking of an out-of-the-box teaching method as the epidemic will not end soon. Pressing educational needs and responses that emerge as the epidemic spread throughout the surrounding countries of the world has led to the adaptation of Online Teaching & Learning. The COVID-19 pandemic spread for the second and third wave of infection, policies and measures to curb the disease are implemented, limiting the number of people congregating in public places. Such efforts have disrupted the normal functioning of schools and universities. Because the duration of such measures has been extensive and is likely to continue in some countries for a certain time until a vaccine becomes available – leaders of public and private education institutions have put in place alternative methods for students and teachers to continue with their lessons when attending school is not possible and are working on strategies that will make schools fit for working in a safe environment.

In mid-March 2020, the government decided to impose a *Partial Lockdown* on Malaysia. The Malaysian version of the lockdown is known as the Movement Control Order (MCO). The primary objectives of the planned MCO are to flatten the rate of infection well below the current capacity of healthcare systems. The first phase started from the 18th to 31st March 2020, the second phase from 1st April to 14th April 2020. This phase would be followed by a third phase from 15th April to 28th April 2020 and a fourth phase from 29th April to 12th May 2020.

With a focus on social distancing, the "New Norm" of doing things has been the primary strategy for combating and slowing down the transmission of COVID-19. This new norm also has come with a cost. The old norm of congregation, grouping and socialisation has been subjected to the new norm of social isolation and distancing. The education sector is one of the worst affected areas of social services, which has had the full impact of this pandemic.

Under the circumstances where face-to-face Teaching & Learning (T&L) cannot be conducted onsite or on-campus grounds, Online Teaching & Learning is an alternative medium that must be used by lecturers and students alike. The COVID-19 pandemic has also affected the structure of T&L in Malaysian Community Colleges. Higher education institutions, including community colleges and schools, were also instructed to close, and the live or face-to-face method of T&L was changed to a fully online mode (Abdullah et al., 2020). However, Jabatan Pendidikan Politeknik dan Kolej Komuniti (JPPKK) has prepared an action plan which states that all technical courses must be conducted in a Blended Learning model, a combination of online and Face to Face Mode (Nor Halina, Norlizawati & Norhafinas, 2020; Muniroh, Siti Balqis & Pei Eng, 2020). Meanwhile, Google Classroom is used as a platform and also a One-Stop Center to provide class information, upload class notes, upload class assignments, give quizzes and hold discussions and also for students to submit assignments there. Google Classroom is used

because it does not involve any cost and is easy to operate (Ventayen, Estira, De Guzman, Cabaluna, & Espinosa, 2018).

A similar case also happens at Kolej Komuniti Bandar Darulaman (KKBDA) for students. However, in terms of implementation, any problems and challenges faced by students. Among the challenge's students face are access to internet facilities without computers / mobile phones, unconducive learning experience, learning effectiveness, etc. This study aims to investigate and uncover the following objective: to Identify the effectiveness of Online T&L using Google Classroom (GC).

2.0 Literature Review

The Malaysian Education Development Plan 2015-2025 (Higher Education) or PPPM (PT) outlines Ten Leaps or strategies to foster the continuous empowerment of the Malaysian higher education sectors (Quah, Roazam & Norlia, 2020). The Malaysian government, after diagnosing the standing of technology-based edification and Malaysia's position in the progress of online learning, which is also included in the PPPM (PT), includes Leap #9 which is developing a Globalised Online Learning (GOL), which focuses on intensifying the access to education, refining the quality of teaching and learning in a while allowing education to be personalised to the current needs of the students. Ministry of Higher Education (2015).

Siti Azura, Suzana & Zulkurnain (2021) noted these interesting findings when discussing the effectiveness of online learning. Findings showed that the level of effectiveness of online learning was at a high level (M=3.8046) and the barriers encountered were at a moderate level (M=3.1405). Although the study results show that the level of effectiveness is high, every obstacle faced by students must be taken immediate action so that the effectiveness of learning and teaching can be further improved.

Another barrier is the Learning style barrier. Learning Style refers to students' aptness to technology and adapting e-learning as their primary learning style. On the lecturers and instructor side, the Instructional barriers are one of the barriers. Instructional barriers refer to the quality of online teaching materials, feedback from lecturers and instructions and explanations from lecturers (Norfarahi, Mohd Isa & Khadijah, 2020). There are several obstacles and problems found during conduction online T&L. These three barriers or obstacles are interconnected, as shown in Figure 1 below. Three common barriers are identifiable in this study, includes the Technological Barriers, Pedagogical Barriers and Self-Efficacy Barriers.

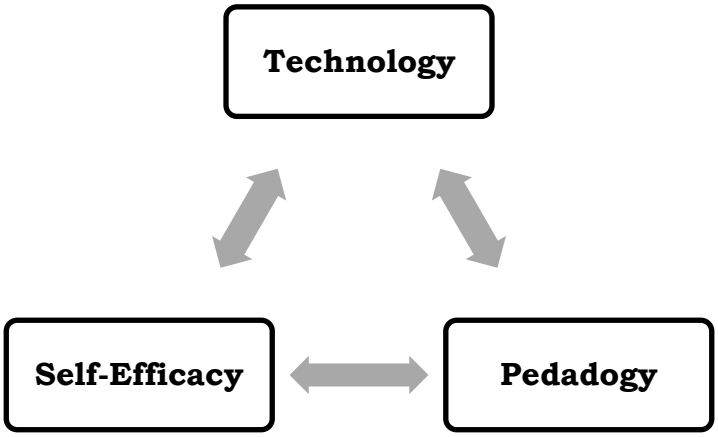

Figure 1: Barriers for Online Learning

Self-efficacy refers to an individual's belief in their capacity to execute behaviours necessary to produce specific performance attainments (Lee, Kim, & Choi, 2012). Self-efficacy reflects confidence in exerting control over one's motivation, behaviour, and social environment. The previous study conducted on the effectiveness of online learning within the community college setting was limited to the pedagogical, teaching and learning, and content. Pedagogy barriers include the method and techniques in disseminating the teaching method, appropriate to the students and technology, the hindrance of electronic devices, and connectivity (Muniroh, Siti Balqis, Pei Eng, 2020).

3.0 Methodology

This study was conducted in response to whether online teaching and learning using the Google Classroom platform. The design of this study follows the quantitative approach by measuring and analysing student's responses to Online T&L as a primary approach to learning. The study was centred based on this research questions:

"How effective is Online T&L using GC among students at KKBDA?"

In order to answer the question above, samples of previous data collection tools were sought, analysed and later developed to be the primary data collecting instrument for this research. The primary data collection tools are in the form of a survey questionnaire. The study questionnaire is divided into two sections, Section A and Section B. Section A collects respondents' demographic information. In contrast, Section B solicits students' responses based on their perspectives. The questionnaire was modified from the questionnaire used by Siti Azura et al. (2021) to identify the effectiveness of online learning and teaching has been implemented to ensure that the system helps the T&L process among students. The same study was also conducted to determine the effectiveness and barriers faced by students in implementing online learning and teaching. Students' responses were solicit using the Likert scale with an anchor, as shown below

Table 1: Responses scale and anchor

Numeric Indicator	Anchor
1	Very Poor
2	Poor
3	Average
4	Good
5	Very Good

Stratified, purposive sampling techniques were used to identify the relevant respondents. A sampling frame based on the student's registry in the community colleges was used to create the initial sampling frame and strategies for delivering the data collection tools. Students from five academic courses which are offered in the community colleges were selected, comprises of Diploma Teknologi Kenderaan Perdagangan (DCV), Sijil Servis Kenderaan Ringan (SKR), Sijil Teknologi Elektrik (SKE), Sijil Sistem Komputer dan Rangkaian (SSK) and Sijil Teknologi Senibina (STS).

Respondents were given the link to the online questionnaire using Google form and requested to fill up the questionnaire. In total, 180 respondents participated in the study. Data collected from the questionnaire were analysed further using statistical analysis software, SPSS 25. Analysis of frequencies and descriptive analysis were used to interpret the data, followed by further dissecting the data, measuring the correlation between dependent and independent variables.

4.0 Findings and Discussion

This section details out the finding together with the accompanying discussion. The findings and discussion are separated into three main themes, Demographics findings, Effectiveness of online T&L and Challenges and obstacles of Online T&L. The discussion is as follows.

4.1 Demographic Findings

This section discusses the demographic findings of the survey. In total, 180 responses were recorded for students from five academic programs in KKBDA. The majority (78%) of the students took academic courses at the certificate level, while the remaining 22% were at the diploma level. Differences between diploma and certificate programs are the depth and duration of the program.

Table 2: Demographic findings

Details	Frequency	Percentage	Details	Frequency	Percentage
Course			**Gender**		
DCV	39	21.7	Male	160	88.9
SKR	31	17.2	Female	20	11.1
SKE	54	30.0	**Total**	**180**	**100.0**
SSK	46	25.6			
STS	10	5.6	**Age**		
Total	**180**	**100.0**	19	72	40.0
			20	51	28.3
Semester			Above 21	57	31.7
Sem 1	43	23.9	**Total**	**180**	**100.0**
Sem 2	55	30.6			
Sem 3	51	28.3	**Ethnicity**		
Sem 4	27	15.0	Malay	161	89.4
Resitting	4	2.2	Indian	11	6.1
Total	**180**	**100.0**	Chinese	6	3.3
			Siamese	2	1.1
Religion			**Total**	**180**	**100.0**
Islam	161	89.4			
Buddha	8	4.4			
Hindu	9	5.0			
Kristian	2	1.1			
Total	**180**	**100.0**			

Out of the 180 respondents, based on gender segregation, 89% were male respondents, and only a meagre 11% were female respondents. The median age was 20 years old for these students. The Malay were the most significant number of students, followed by Indian, Chinese and others at 89%, 6%,3% and 1% respectively.

Show in Table 3 is the type of electronic devices used for the online T&L. It seems that most students depend primarily on a smartphone for online T&L sessions. Students using desktop and laptop computers only account for 22% of the total respondents.

Table 3: Type of electronic devices used for T&L

Devices	Frequency	Per cent	Cumulative Per cent
Desktop Computer	8	4.4	4.4
Laptop Computer	32	17.8	22.2
Smartphone	139	77.2	99.4
Tablet	1	.6	100.0

In terms of internet connectivity, most of the students rely on the use of mobile broadband. 74% of the respondents used either unlimited or limited data broadband services from the telco companies. It is understandable as

most of these students stay at rented houses around the campus during the initial parts of the MCO. Only 2% of the respondents used dedicated home or fixed-line broadband services. Still, students who rely on free Wi-Fi and internet hotspots point due to internet coverage and cost limitations.

Table 4: Type of internet connections

Type of Internet Connectivity	Frequency	Per cent	Cumulative Per cent
Free Wi-Fi	21	11.7	11.7
Hotspot	23	12.8	24.4
Home Broadband	3	1.7	26.1
Mobile Broadband Unlimited Data	66	36.7	62.8
Mobile Broadband Data with Limit	67	37.2	100.0

One of the hindrances of online T&L is internet service coverage either by mobile broadband or fixed-line broadband services. KKBDA students' responses on the status of their internet coverage were substantially on the average level (45%). Similar findings can be found from a study by Roslan, N.S. & Halim A.S. (2021) found that although all students owned at least one learning device, 22.5% did not have a learning space at home. 21.9% of students did not have Wi-Fi access, and 11.2% did not receive mobile broadband coverage at home. Despite these barriers, students had a suitable OL self-regulation level.

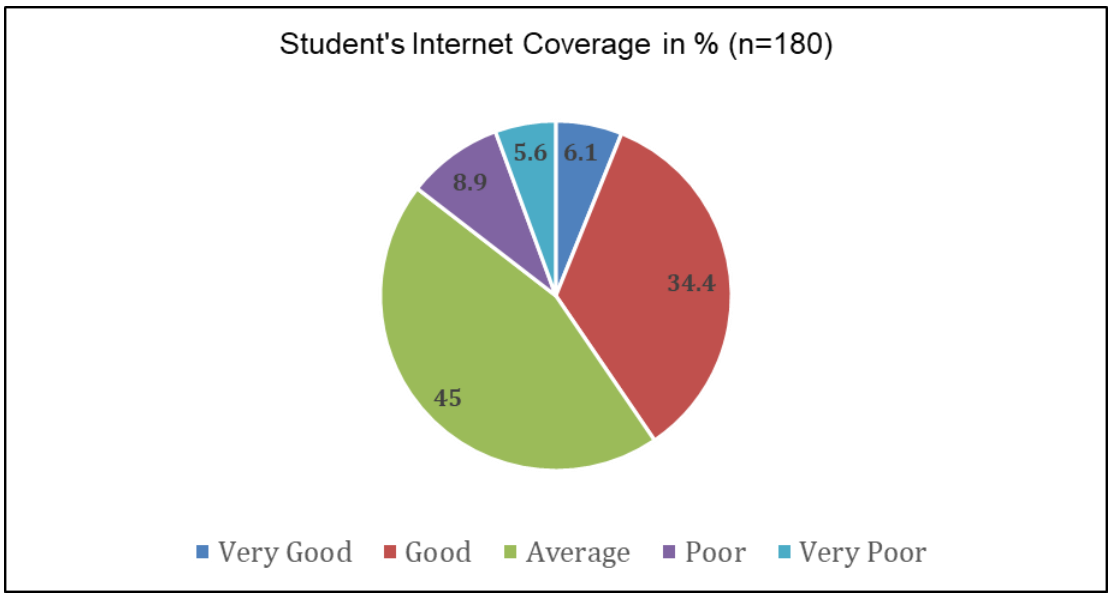

Figure 2: Student's internet coverage

Frequent interruption, loss of services and connection quality were found to be the major obstacles. The majority of the students, or 45%, mentions that their internet coverage and connectivity were at the range of

average. If we look at the type of internet connection, these respondents exclusively used mobile broadband through their mobile phone for internet access (Refer to Table 4). Meanwhile, 14% of the students indicate that their internet coverage is either poor and very poor. This could be linked to the internet access traffic, as well as network coverage. Internet access traffic provided by telecommunications companies depends on three major components: location of residence, business premises or workplace, and the routes connecting the two earlier locations. During MCO, internet access in housing areas were congested and slow as internet usage was very high due to working, learning and business from home (Bernama News, 2021). This is another one of the few obstacles identified in online T&L at KKBDA.

Similar findings by Quah et al. (2020) in community college settings also indicate identical problems. In an article by Abdul Karim (2020) and news carried by Malaysia National News Agencies, Bernama (2020) mentioned that limited internet access is among the challenges of online learning, especially for rural areas. Thus, the existing data package may not adequately meet the Online T&L needs. Next, the third challenge is poor Internet connectivity. Consequently, the remarks are empirically supported by a study conducted by Zulkifli, Hamzah, and Abdul Razak (2020). The findings show that internet/Wi-Fi coverage sources constitute a significant obstacle to the e-learning process using Massive Open Online Courses (MOOC); nevertheless, students are highly motivated to learn using Online T&L.

4.2 Effectiveness of On-line T&L

This section will discuss the findings for this study's research question: How effective is Online Teaching & Learning using GC among students at KKBDA? A few indicators were set to assess whether the effectiveness of T&L did indeed transpire as the result of using GC. The first indicator was the student's overall motivation level (Q20), Self-motivation (Q11), student's perception after using GC (Q17) and the effectiveness per se (Q19)

Table 5: Mean Score Interpretation

Mean Score	Interpretation
1.00 – 1.79	Very Poor
1.80 – 2.59	Poor
2.60 – 3.39	Average
3.40 – 4.19	Good
4.20 – 5.00	Very Good

Source: Based on Siti Azura et. al. (2021)

The interpretation will analyse the tendency and distribution of the mean score. The means score interpretation is based upon Siti Azura Abu Hassan et al. (2021) interpretation of mean score as shown in Table 5.

Table 6: Student's overall motivation of Online T&L (Q20)

Anchor	Frequency	Per cent	Cumulative Percent
Very Good	38	21.1	21.1
Good	96	53.3	74.4
Average	38	21.1	95.6
Poor	6	3.3	98.9
Very Poor	2	1.1	100.0
Mean = 3.90, SD=.806			

As shown in the table above, Students' overall motivation for Online T&L level was above the good marks, with 74.4% (M=3.90, SD=.806) of the respondents either marking this within the Very Good and Good range. 21.1% per cent indicate their motivation at the average cut off point, while only a meagre 4.4% indicate their motivation for the online class as poor and very poor.

Table 7: Students Perception after Online T&L (Q17)

Anchor	Frequency	Per cent	Cumulative Percent
Very Good	43	23.9	23.9
Good	90	50.0	73.9
Average	38	21.1	95.0
Poor	5	2.8	97.8
Very Poor	4	2.2	100.0
Mean =3.91, SD=.870			

After engaging with the online class (post-test), students' perception also saw an encouraging trend instead of the pre-test. 74% of the respondents (M =3.91, SD=.870) indicate that their perception after joining the GC session with the lecturer increased slightly from 70%.

Table 8: Self-motivation for Online T&L (Q11)

Anchor	Frequency	Per cent	Cumulative Percent
Very Good	52	28.9	28.9
Good	86	47.8	76.7
Average	34	18.9	95.6
Poor	6	3.3	98.9
Very Poor	2	1.1	100.0
Mean =4.00, SD=.846			

The self-motivation aspect shows an encouraging response from the respondents where 76.7% of them cited either to have good and very good self-motivation in participating in online learning. Nevertheless, roughly 22% of the respondents indicate to have an average to very poor motivation. Specific correlations could be associated with internet coverage and personal motivation for the low indicating responses when further explored.

Table 9: Correlations personal motivation and Internet coverage

		Self-Motivation to Online T&L	Internet Coverage
Self-Motivation to Online T&L	Pearson Correlation	1	.036
	Sig. (2-tailed)		.630
	Sum of Squares and Cross-products	128.000	5.000
	Covariance	.715	.028
	N	180	180
Internet Coverage	Pearson Correlation	.036	1
	Sig. (2-tailed)	.630	
	Sum of Squares and Cross-products	5.000	149.200
	Covariance	.028	.834
	N	180	180

Personal motivation and Internet coverage have a statistically insignificant linear relationship (r=.036, $p > 0.05$), therefore rejecting the Null Hypothesis H_o. This indicates that a small degree of correlation does exist between these two variables. The direction of the relationship is positive (i.e., personal motivation and Internet coverage are positively correlated), meaning that these variables tend to increase together (i.e., greater motivations associated with greater internet coverage). However, the magnitude, or strength, of the association between the variables is relatively small ($| r | <.1$).

The t-test analysis below reports the mean and standard deviation of the difference scores for each pair of variables. The mean is the difference between the sample means. It should be close to zero if the population mean is equal. The mean difference between Motivation scores before and after using Online T&L using Google Classroom is not statistically significant at $\alpha = 0.05$. This is because 'Sig. (2-tailed)' $p > 0.05$.

Table 10: Paired Samples t-test Results

	Paired Differences							
				95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Motivation Before Online T&L using Google Classroom - Motivation After Online T&L using Google Classroom	-.078	.849	.063	-.203	.047	-1.230	179	.220

Given are the hypothesis to test for the T-test:

H_o There are no significant differences in motivation among students after Online learning using Google Classroom.

H_a There is a significant difference in motivation among students after Online learning using Google Classroom.

Motivation scores before and after using Online T&L using Google Classroom were compared. On average, the motivation fared slightly lower (M=3.83, SD=.831) than after using the Online T&L using Google Classroom (M=3.91, SD=.870). This slight improvement, 0.1, at 95% Confidence Interval, was statistically insignificant, t (179) =1.23, p>0.05. Therefore, the alternate hypothesis is rejected, and the null hypothesis is accepted. There are no significant differences in motivation among students after Online learning using Google Classroom.

Analytically, the motivation for students to engage in Online learning were already high even before they engage in this pedagogical approach. Slight differences were detected but insignificant to the overall motivation score before and after using Online T&L using Google Classroom. This indicates that these students were highly motivated to engage in their study, regardless of whether the mode of T&L was Online learning or the conventional face-to-face. If we look at the demographic composition of the respondents, their average age is 20 years old. These respondents can be categorised as millennials. Millennials' clear and defining traits are their responsiveness to embrace and adopt technological changes as they have been exposed to ICT-based technology from a young age.

Table 11: Effectiveness of Online T&L (Q19)

Anchor	Frequency	Per cent	Cumulative Per cent
Very Good	33	18.3	18.3
Good	94	52.2	70.6
Average	41	22.8	93.3
Poor	9	5.0	98.3
Very Poor	3	1.7	100.0

Mean = 3.81, SD=.853

The table above shows the effectiveness of the Online T&L from the student's perspective. More than half of the respondents, 70.6% (M= 3.81, SD=.853), agrees that the Online T&L using Google Classroom is effective. The mean score for this response is considered good, therefore answering the initial research question on the effectiveness of Online T&L at KKBDA. If we add these findings with the other findings above and the finding on Pre and Post motivation, it can be assumed that the effectiveness of Online T&L in KKBDA is achieved to a certain degree.

If we look at the responses given by the respondents on the lecturer's effort for conducting Online T&L, we can summarise that the efforts taken were adequately fulfilled. How are these measured up in terms of figures? Table 12, Table 13, Table 14 and Table 15 show students' responses regarding teaching materials, scoring method, and continuous assessment for both theoretical and practical elements.

Table 12: Suitability of Online T&L material in Google Classroom (Q5)

Anchor	Frequency	Per cent	Cumulative Per cent
Very Good	56	31.1	31.1
Good	83	46.1	77.2
Average	34	18.9	96.1
Poor	7	3.9	100.0
Very Poor	0	0	0

Mean =4.04, SD=.811

77.2 % (M=4.04, SD=.811) of the respondents cited that the T&L materials used in Google Classroom were at the level of good and very good. A mean score of 4.04 was recorded. The material used is suitable primarily for self-directed and independent learning, which means that the students can access those materials anytime and anywhere.

Table 13: Suitability of Continuous Assessment scoring method in Google Classroom (Q7)

Anchor	Frequency	Per cent	Cumulative Per cent
Very Good	51	28.3	28.3
Good	95	52.8	81.1
Average	31	17.2	98.3
Poor	2	1.1	99.4
Very Poor	1	.6	100.0

Mean =4.07, SD=.740

Regarding grading and assessments, 80% (M=4.07, SD=.740) of the respondents cited very good and good for the continuous assessment scoring method applied in the Google Classroom. Nineteen per cent cited average, poor and very poor. The response shows that overall grading for the continuous assessment is adequately represented in the Online T&L.

Table 14: Appropriateness of Continuous Assessment (Theory) in Google Classroom (Q8)

Anchor	Frequency	Per cent	Cumulative Per cent
Very Good	42	23.3	23.3
Good	99	55.0	78.3
Average	31	17.2	95.6
Poor	8	4.4	100.0
Very Poor	0	0	0

Mean =3.97, SD=.765

Nevertheless, since most of the academics offered in KKBDA is TVET oriented, continuous assessment is separated into two aspects: theoretical and practical. Table 14 shows the appropriateness of the continuous assessment method for theory and Table 15 for practical aspects.

Table 15: Appropriateness of Continuous Assessment (Practical) in Google Classroom (Q9)

Anchor	Frequency	Per cent	Cumulative Percent
Very Good	30	16.7	16.7
Good	81	45.0	61.7
Average	50	27.8	89.4
Poor	15	8.3	97.8
Very Poor	4	2.2	100.0

Mean =3.66, SD=.885

In terms of theory, the mean score (M=3.97, SD=.765) is slightly lower (Refer to Table 14) than the overall suitability of the continuous assessment scoring method applied in the Google Classroom (M=4.07, SD=.740). Out of

180 respondents, 39 cited average and poor for the theory assessment. Hence there is room for improvement in the continuous assessment implementation and allocation. However, on the practical side, the continuous assessment appropriateness yields an ever lower mean score (M=3.66, SD=.885). It is understood that most of these students are inclined to the hand on approach method, i.e., practical based assessment and teaching & learning. Since most of these academic courses are TVET based, difficulties arise in disseminating teaching material in actual practical engagement. Mastery learning, where students will get complete comprehension and competency, is a drawback in the Online T&L.

In the end, the assumption of whether the Online T&L using Google Classroom in KKBDA had achieved its goal of effectiveness can be composed together through the observation based on the findings discussed above. Penultimately, respondents openly indicate that Online T&L conducted in KKBDA achieved its effectiveness by 70.6% (M= 3.81, SD=.853). Other indicators such as internal motivation (M=4.00, SD=.846) and overall motivation (M=3.90, SD=.806) indicated progressively increment in the mean score, together with suitability of online material used. Therefore, the assumption on the effectiveness of Online T&L in KKBDA is justified.

5.0 Conclusion

COVID-19 pandemic has made online learning and teaching an alternative but a primary educational medium. The outcomes of the analysis postulate that there is a high level of effectiveness in Online T&L. Underlying, it also indicates that Online T&L did provide prospects to the new breed of students with a better education and communication opportunities irrespective of time and place. Nevertheless, a thorough study of every aspect of online learning is necessary as Online T&L in KKBDA is still in its early stages, especially the implementation of a holistic assessment. Varying the Online T&L methodologies, such as using Google Classroom, allows the lecturer to know whether the Online T&L effectiveness is achieved. Furthermore, the feasibility, needs, barriers and problems faced in implementing Online T&L shall be identified and addressed urgently. Stakeholders' commitment, including the KKBDA's Management, lecturers, and students, is required to safeguard online learning and teaching effectiveness. Advancement in Information, Communication Technologies (ICT) tools & facilities and internet connectivity have created an opportunity for all students to be progressively involved in learning and teaching activities without conducting a face-to-face class. To ensure the effectiveness of learning and teaching, educators should look at the design or pedagogy of learning, an individual's learning methods, the potential of technology and media, and the ability of educators to involve students in the learning process. Thus, the design of online learning and teaching contributes to one factor that determines the effectiveness of the learning and teaching process. The results of this study are expected to help the relevant parties to take into account the need to improve skills in the use of new information and communication technology needed to implement the transformation of the education system, especially in Community Colleges.

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