

Article

The Impact of Covid-19 on Online Teaching and Learning (TnL) Towards Teachers in Malaysia

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Abstract— As COVID-19 hits the world shockingly, most nations worldwide have agreed to put educational institutions temporarily close. However, education has not stopped, but to go fully online as schools and universities could provide remote education. In this case, teachers have been struggling to adapt to the new norm to stop disease transmission. Thus, this study was conducted to investigate the impact of Online Teaching and Learning (OTL) on teachers during COVID-19. The questionnaire was distributed randomly online among 320 teachers in Malaysia. SPSS has been used to analyse the completed questionnaire to obtain descriptive and inferential statistics. Three variables that have been used in this study were effectiveness, challenges, and school reopening using Cronbach's alpha, hypothesis testing, t-test, ANOVA, Pearson correlation, and multiple linear regression. This study has shown that most teachers were affected by using online as a new method of teaching. A negative correlation between effectiveness and challenges has implied that increasing challenges would decrease online teaching effectiveness. Besides, many of the components show a significant difference in the variables in terms of socio-demographic profiles. The findings obtained would help the higher administration tackle challenges the teachers face and know the effectiveness of online teaching and learning.

Keywords— teachers; impact; effectiveness; challenges; school reopening

I. INTRODUCTION

The world now is facing a deadly infectious disease caused by an extreme acute respiratory syndrome of coronavirus 2 (SARS-CoV-2), known as coronavirus disease 2019 (COVID-19). Starting at the beginning of December 2019, the disease has spread rapidly among Wuhan City residents, Hubei Province, China. The COVID-19 outbreak has truly impacted businesses of all sizes and sectors of all sorts. This includes education sectors which have abruptly disturbed the learning

process of students from various level. Many countries have agreed to shut the educational institution, which has denied social student life and learning.

As schools worldwide had been closed due to the pandemic, various resources were used to aid students in their learning process. This includes instructional packages, educational television, radio education, and online instructional resources. However, nearly most countries have used online platforms to keep the interaction of students with the teachers. Online

learning resources range from educational content that students can explore and formalise their own pace of learning to real-time courses led by their teachers through virtual meeting platforms. For example, in France, they already had their existing online learning programme called “*Ma classe à la maison*” (My classes at home), which is available for all students in primary or secondary schools. In Estonia, the government collaborated with the private sectors to provide students with a wealth of educational content during school closure [1].

Other countries, such as Bangladesh, Brazil, and Jordan, had used their television broadcast to provide education for the students [2]. In Spain, five subjects include Spanish, Mathematics, Social Science, Natural Science and Arts, and Physical Education, were covered in two channels in a one-hour slot per day [1]. Besides, education services through radio broadcasts had also been used in some countries. For instance, Fiji’s The Minister of Education, Heritage and Arts has launched supplemental radio programs, which were aired exclusively during weekdays for the students. In Ethiopia, services through radio broadcast were used for primary school while secondary and tertiary schools provide through digital technology [2].

For Malaysia, The Ministry of Education has outlined administrators, teachers, parents, and students’ roles and responsibilities to ensure smooth delivery of teaching and learning during the MCO period. He also added that teaching and learning platform (TnL) guidelines would include access to communications technology among teachers, students, and parents [3]. The teachers were advised to plan and give instructions, assignments, and homework using several types of online platforms or social media that were deemed appropriate. If internet access is limited, teachers could ask students to go through their textbooks, revision books, or exercise books to learn.

The ministry also provided a learning platform called MoE-DL. Teachers can refer to this platform through a website given by the ministry, which links to various platforms such as Google Classroom, Microsoft Teams, digital textbooks, EduwebTV, CikgooTube, Edpuzzle, Quizizz, and Kahoot. Besides teachers, parents could also help with their children’s education by accessing EduwebTV and CikgooTube given by the ministry [3].

Another approach used by the government was broadcasting education using television viz; TV Okey, an educational channel to deliver education to all students, particularly those who have problems accessing the internet. Despite being live streams on the RTM website, the programs shall also be broadcast on MyFreeview TV, Astro, and Astro NJOI for 2 hours a day. The channel’s schedule can be found on the Ministry of Education website and the RTM’s website [2]. The Malaysian government had taken the initiative to introduce multiple mediums and approaches in assuring continuous learning among school students even when the schools were closed.

During this challenging time, teachers have been working more hours than before. Rapid movement to online delivery modes has dramatically increased workloads for teachers as they work to shift teaching content and materials into online space and become adequately adept at managing the software needed [4]. A study had shown that teachers working from

home juggled the rising demands of their job; 68% of primary teachers and 75% of secondary teachers report working more hours a week while switching to remote teaching. Nearly half of all teachers claim they worked almost an entire extra day during this time, and some reported working over 20 extra hours per week [5].

Online teaching has indeed come with many challenges. Teachers need to identify the needs, audience, resources, and digital infrastructure to support their delivery. For instance, the most common problem facing online learning is the internet connection and the availability of devices. Admittedly, not every home has a secure internet service or a laptop for students to use easily. Some even have to share their devices with siblings. Plus, lacking reliable high-speed internet has not only been an issue for students but teachers also. For teachers who use mobile data as their connectivity, paying a high bill every month will also be one of the problems. With a high charge of data per user, teachers will have to pay extra money for online learning. This has forced teachers to work in sterile environments, including having more stress to communicate with students.

The U.N Secretary, General Antonio Guterres said, due to the ongoing school closure, the world faces a “general catastrophe,” which is the largest disruption of education ever. In a policy brief, Guterres also highlights that the single significant step for the leaders to take forward is reopening the school [6]. According to UNESCO, by the end of June 2020, some degree of school closure was effective for at least seven weeks in 2 countries (4%), 8-12 weeks in 6 countries (13%), 12-16 weeks in 24 countries (52%), 16-18 weeks in 13 countries (28%) and more than 18 weeks in China. The best is to minimise the spread of COVID-19 while striving to ensure students on engaging in education.

Now that Malaysia has reached a level where the pandemic is under control, it’s time for the government to plan the next steps to reopen the schools. After three months of strict restriction of movement, Malaysia moves into a recovery phase implemented in three phases [7].

The first phase goes for students who are currently taking their public examination, namely as Malaysian Certificate of Education (SPM), Malaysian Higher School Certificate (STPM), Malaysian Vocational Certificate (SVM), Malaysian Higher Religious Certificate (STAM), and equivalent international school examinations. It will take place on 24th June 2020 for 500,444 students from over 2,500 schools in the country. For the second phase, starting from 15th July 2020, the involvement will include students from Form 6, Form 1 to Form 4, Year 5 to Year 6, and remove class [7]. The last phase will be held on 22nd July 2020, including students at primary school from Year 1 to Year 4 [8].

A survey by the Ministry of Education (MOE) has shown that among 900,000 students, 37% of students do not acquire appropriate devices. For a well-being family, this issue may not be a problem. Still, they typically prioritise purchasing food rather than getting a new device or purchasing access to the internet for the poorer families. Another MOE survey shows that 46% have ownership of the smartphone [9]. This makes the smartphone to be the most common device used by teachers to deliver their lessons. Given the unprecedented schooling scenario in Malaysia, it is understandable that resources used as teaching materials and homework are

unlikely to be standardised for some time. Learning materials via Google Classroom, Zoom, WhatsApp, and Telegram can be provided. Though, it still depends on the teacher's initiative and creativity to prepare e-learning for the students.

Aside from these challenges, having slow or no internet connection access also disrupts teachers to run a smooth and effective e-learning process. Lacking fibre optic cables has made the internet slow and undermine the country [9]. Besides, even the government has provided free 1GB mobile data. It is still inadequate to support heavy video streaming in e-learning [9]. As for the reopening school, teachers will have the challenge to teach while ensuring a safe distance between students. Another concern is whether teachers are sufficiently prepared to enforce the new norms environment and SOP. Even in this crisis, the quality of education should not be ignored. A pandemic is short-term, but a student's education is a long-term endeavour. Thus, this paper intends to survey the impact of this pandemic on schools and teachers, discussing online teaching, teachers' impact and challenges, and school reopening.

II. METHODOLOGY

For this study, data collection was carried out using online questionnaires by distributing the link to the teachers via convenience sampling. The questionnaire given included four main part of questions: demographics (age, gender, race, religion, state, email, type of school, comfort level with online teaching), online teaching (9 items), teachers impact and challenges (14 items), and school reopening (9 items). The 5-point Likert scale is as follows (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree). An open-ended question was also included in the questionnaire.

In this study, data collected was analysed using Statistical Package for Social Science (SPSS) software. The dependent variable for this research was the impact of COVID-19 on schools, while online teaching, teachers' impact and challenges, and school reopening were defined as the independent variable. Descriptive statistic, hypothesis testing using independent sample t-test, one-way analysis of variance (ANOVA), Pearson correlation coefficient, and multiple linear regression (MLR).

A content validation study by the expert review was performed, and the questionnaire was pilot tested. Table I shows the Cronbach's Alpha for the pilot study (30 respondents). All variables manage to produce Cronbach's alpha (>0.6) which is considered acceptable. Of note, the school reopening achieves an excellent value of 0.912. This validates the questionnaire is consistent thus feasible enough to be used in a larger-scale study.

TABLE I
RELIABILITY ANALYSIS FOR PILOT STUDY (N=30)

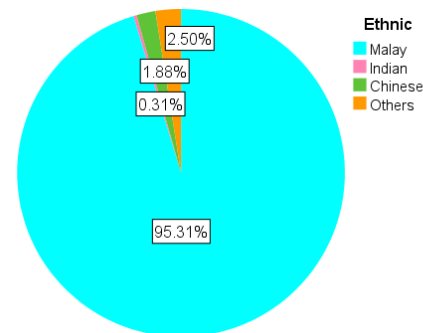
Variables	Cronbach's alpha	N of items
Online Teaching	0.688	9
Challenges	0.692	14
School Reopening	0.912	9

III. RESULTS AND DISCUSSION

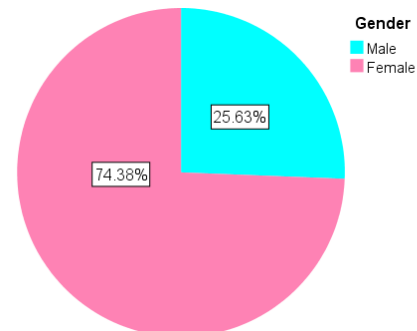
A. Socio-demographic Profile

Figure 1 shows the percentages of respondents according to the socio-demographic profiles by age, gender, race, religion, states, and type of school they teach. Based on the result, many of the respondents were from age 41 to 50 years old (32.2%), and it seems that 74.4% of respondents were female while others 25.6% were male. The respondents' participation also shows that most Malay (95.3%) and Islam (97.2%). Meanwhile, in terms of the type of school they teach, the majority of the respondents were from secondary school (70.3%), which mostly live in Perak (23.1%), Melaka (17.8%), and a small percentage live in either Perlis, Wilayah Persekutuan Putrajaya or Wilayah Persekutuan Labuan.

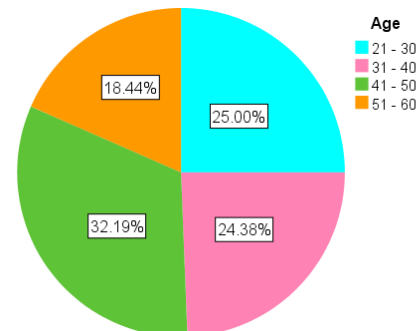
(a)



(b)



(c)



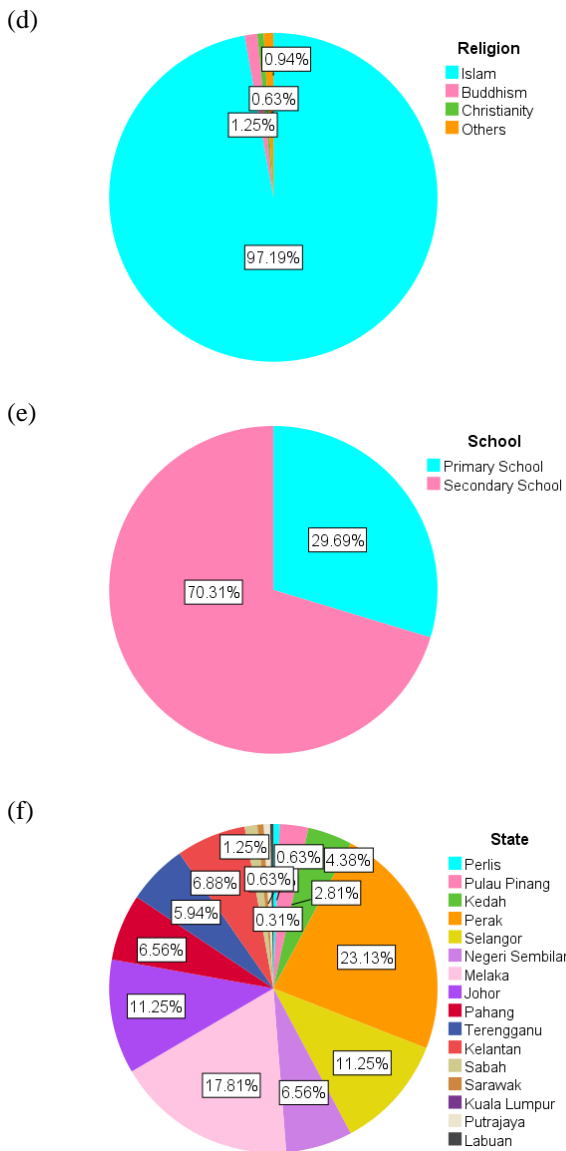


Fig. 1 Sociodemographic profile of respondents in this study by (a) age, (b) gender, (c) ethnic, (d) religion, (e) school and (f) state

Figure 2 portrays the online teaching skills before and during COVID-19. As shown in the figure above, there is an increasing percentage of online teaching skills at scale 5 (very skilful) for before (10%) and during (17.5%) COVID-19. The same result was also shown on scale 4 (skilful), increasing from 33.4% to 55%. This indicates that teacher has been adapting and improving themselves on online teaching due to the pandemic.

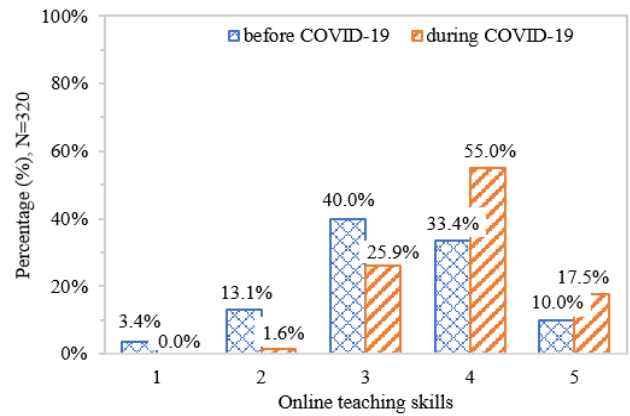


Fig. 2 Online teaching skills before and during COVID-19

B. Hypothesis Testing

Based on the result from Table II, for variable effectiveness, the mean scores across age, gender, state, and school have shown a significant difference with a p-value <0.05. Table III presented the result of hypothesis testing. The mean for age 21 to 30 shows a higher (15.73) amount compared to age 51-60 (13.42), while for gender, male teachers have indicated a higher mean (15.50) than female teachers (14.27). Across states, Wilayah Persekutuan Putrajaya (16.50) teachers scored higher in effectiveness than those in Perlis (10.50).

From the presented result, male teachers aged 21 to 30 years old manage to handle online teaching effectively. A young male teacher seems to be well adapted more than young females in conducting online teaching and learning. Findings

in [10] revealed that the level of education, the program of study, age and gender were significant in the effectiveness of e-learning.

In terms of age, older people have relatively slower perceptual learning than younger ones. Plus, with the new and modern technology applied, older people would rather use traditional teaching methods. Meanwhile, in terms of gender, the research had mentioned that supposedly males generally have higher levels of an effect than female students in classroom scenarios where instructors used no technology. In contrast, female students reported higher initial effect levels than male students in classroom scenarios where instructors used moderate amounts of technology.

As for the state of living, the research showed no significant effect on the effectiveness of e-learning. However, in this case, the connectivity factor of the internet needs to apply as Putrajaya is in an urban area. Hence, this implies Putrajaya to be the highest mean score compared to Perlis. The mean score for primary school (15.05) is higher than the mean score for secondary school (14.39). This implies that teachers who teach online for primary school were more effective than teaching secondary school students. Most students in primary school were controlled and guided by their parents, thus affect the effectiveness of online teaching in primary schools. Overall, in this research, it can be concluded that age, gender, state, and type of school impact the effectiveness of online teaching during COVID-19.

For teachers' challenges, the result also reveals a significant difference in age with a p-value <0.05. It seems that age 31 to 40 (81.06) has a higher mean than age 51 to 60 (76.68). This indicates that teachers aged 31 to 40 have dealt with online teaching and learning during COVID-19. Factors of balancing the responsibilities between being a teacher, a mother, and a housewife need to be considered at that time of age. For example, giving the necessities for their children, cleaning the house, and at the same time, learning on which method or platform is the best to deliver education to students online. With such responsibilities, schools need to play their parts to support teachers who are also a parent. In previous

research, Amber Garbe described that parents have difficulties balancing responsibilities, learner motivation, accessibility, and learning outcomes [11].

Students from secondary school (80.15) have a higher mean score for socio-demographic type of school than primary school (76.98). As some student's behaviour in secondary school was out of teachers' control, this has been caused the teachers to face more significant challenges in delivering education. Thus, conclude that age and type of school impact the challenges faced during COVID-19.

TABLE III
EFFECTIVENESS, CHALLENGES, AND SCHOOL REOPENING MEAN SCORE WITH SIGNIFICANT VALUE FOR ANOVA AND T-TEST BASED ON THE SOCIO-DEMOGRAPHIC BACKGROUND AT SIGNIFICANCE LEVEL OF 95%

Item	Categories	N	(%)	Effectiveness			Challenges			School Reopening		
				Mean	SD	Sig.	Mean	SD	Sig.	Mean	SD	Sig.
Age	21 to 30	80	25.0	15.73	2.97	0.00*	80.65	7.77	0.01*	26.90	3.42	0.02*
	31 to 40	78	24.4	14.55	2.90		81.06	8.12		27.01	3.53	
	41 to 50	103	32.2	14.39	2.46		78.11	9.83		26.11	4.16	
	51 to 60	59	18.4	13.42	2.28		76.68	10.96		25.00	4.36	
Gender	Male	82	74.4	15.50	3.06	0.00*	80.56	9.59	0.13	26.49	3.55	0.64
	Female	238	25.6	14.27	2.60		78.73	9.17		26.26	4.06	
Races	Malay	305	95.3	14.56	2.82	0.52	79.19	9.34	0.99	26.20	3.93	0.02*
	Chinese	6	1.9	14.83	1.94		79.67	5.09		27.67	4.76	
	Others	9	2.5	15.11	1.27		79.11	10.91		29.67	0.71	
Religion	Islam	311	97.2	14.57	2.80	0.88	79.21	9.41	0.93	26.26	3.92	0.00*
	Buddha	4	1.2	15.25	2.36		77.50	4.93		27.00	6.00	
	Others	4	0.9	14.80	0.84		79.80	3.83		29.60	0.55	
State	Perlis	2	0.6	10.50	0.71	0.00*	80.50	0.71	0.24	22.00	1.41	0.01*
	Pulau Pinang	9	2.8	15.22	2.64		76.67	10.49		28.44	3.21	
	Kedah	14	4.4	13.29	2.92		80.29	9.15		27.14	4.02	
	Perak	74	23.1	13.89	2.69		78.36	9.04		26.53	3.54	
	Selangor	36	11.2	14.89	2.41		80.11	9.28		26.56	3.14	
	Negeri Sembilan	21	6.6	14.95	2.36		80.43	10.02		27.24	2.83	
	Melaka	57	17.8	15.51	2.30		76.09	10.19		24.26	5.03	
	Johor	36	11.3	14.97	3.09		80.97	7.32		27.69	3.31	
	Pahang	21	6.6	14.81	3.84		83.19	8.27		25.62	3.56	
	Terengganu	19	5.9	14.16	2.79		81.00	10.21		25.74	3.91	
	Kelantan	22	6.9	13.59	2.15		79.55	9.75		26.86	3.96	
	Sabah	4	1.2	15.25	.96		74.75	6.45		27.50	4.36	
	Sarawak	2	0.6	16.33	6.36		85.00	2.83		28.00	2.83	
Putrajaya	3	0.6	16.50	2.33	80.00	9.17	29.33	1.16				
Type of school	Primary school	95	29.7	15.05	2.92	0.05*	76.96	9.39	0.01*	25.56	4.86	0.05*
	Secondary school	225	70.3	14.39	2.69		80.15	9.12		26.64	3.43	

Lastly, the result showed that most items (age, race, religion, state, and type of school) show a significant difference for school reopening. Again, age 31 to 40 has the highest mean score (27.01) compared to other ages. From the previous result, teachers had to face a lot of challenges. Therefore, they prefer for school to reopen even there are tied with SOP procedure. The mean score for 'others' displayed the highest score mean compared to other items in terms of race and religion. 'Others' that include Indian (29.67) and Christian (29.60) have shown that they are more determined to go to school to prioritise education.

In addition, the mean score for teachers in Wilayah Persekutuan Putrajaya (29.33) also indicates a higher mean compared to Sarawak (28.00) and Johor (27.69). For score mean in school, secondary school (26.64) resulted in a higher mean than primary school (25.56). Secondary school consists of many public examinations, such as SPM, STPM, and STAM, teachers would want schools to be reopened for their students' sake.

TABLE III
RESULTS OF HYPOTHESIS TESTING FOR SOCIO-
DEMOGRAPHIC ITEM AND VARIABLE

Variable	Item	p-value	Null hypothesis
Effectiveness	Age	0.000	Rejected
	Gender	0.000	Rejected
	Race	0.516	Fail to reject
	Religion	0.876	Fail to reject
	State	0.001	Rejected
	Type of school	0.0049	Rejected
Challenges	Age	0.012*	Rejected
	Gender	0.125	Fail to reject
	Race	0.992	Fail to reject
	Religion	0.926	Fail to reject
	State	0.236	Fail to reject
	Type of school	0.005	Rejected
School reopening	Age	0.017	Rejected
	Gender	0.637	Fail to reject
	Race	0.023	Rejected
	Religion	0.000	Rejected
	State	0.006	Rejected
	Type of school	0.049	Rejected
	State	0.006	Rejected

In other words, teachers have been adapting to online teaching as time goes by. However, if the challenges faced are to increase. Hence the effectiveness of online teaching among teachers is decreasing. This was supported by [12], who conducted a study to determine the effectiveness of teachers' perception of online learning during this pandemic.

TABLE IVV
CORRELATION BETWEEN EFFECTIVENESS,
CHALLENGES AND SCHOOL REOPENING

	Effectiveness	Challenges	School Reopening
Effectiveness	1.000	-0.239**	0.058
Challenges	-0.239**	1.000	0.317**
School Reopening	0.058	0.317**	1.000

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

D. Multiple Linear Regression

Tables V-VII provide the regression results to identify the relationship between the three variables: effectiveness, challenge, school reopening. From these results, there are significant relationships between challenge and both effectiveness and school reopening. However, since the R^2 is

TABLE V
MULTIPLE LINEAR REGRESSION ANALYSIS FOR EFFECTIVENESS

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	18.577	1.429		13.002	.000	15.766	21.388
	Challenge	-.085	.017	-.287	-5.037	.000	-.119	-.052
	School reopening	.105	.040	.149	2.622	.009	.026	.184

a. Dependent Variable: Effectiveness

R=0.278; R²=0.077; Adjusted R squared=0.071; SSE=2.670

C. Correlation

The result of the correlation between variables for this research is shown in Table 3. Pearson's correlation was used to examine the relationship between online teaching effectiveness, challenges faced and school reopening. A positive value of r indicates a positive relationship, while a negative value of r indicates a negative relationship between both variables.

The results show that only the challenges and school reopening have a positive correlation, which is 0.317 with a significant level of 0.01. This indicates that most of the teachers affected by online teaching challenges want the school to be reopened. Though, teachers still need to follow the Standard Operating Procedure (SOP) if the school reopens. As in [11], Schleicher proposed how and when to reopen schools. One of the suggested steps is to perform a risk assessment for teachers, establish a clear protocol on social distancing, and ensure proper training for teachers.

As for the correlation between effectiveness and challenges, a negative sign (-0.239) indicates that both variables move in the opposite direction. This means that if the effectiveness of online teaching increases, teachers' challenges are decreasing.

relatively low, many other factors are not included in the regression model explaining the dependent variable. For example, in Table III, the R^2 is 0.167, which implies that effectiveness and school reopening only explain 16.7% of the variable 'challenge', and 84.3% comes from other variables not included in this regression. The p-value, however, is very small for both effectiveness and school reopening. This verifies that these two independent variables are significantly affecting the dependent variable.

From the result mentioned, it can be discussed that effectiveness and school reopening affect the challenge. Even though the beta coefficient for effectiveness appeared to be a negative sign, still the result shown as expected.

TABLE VI
MULTIPLE LINEAR REGRESSION ANALYSIS FOR CHALLENGE

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
2	(Constant)	71.187	3.980		17.885	.000	63.355	79.018
	Effectiveness	-.868	.172	-.259	-5.037	.000	-1.207	-.529
	School reopening	.785	.122	.332	6.461	.000	.546	1.025

a. Dependent Variable: Challenge

R=0.409; R²=0.167; Adjusted R squared=0.162; SSE=8.515

TABLE VII
MULTIPLE LINEAR REGRESSION ANALYSIS FOR SCHOOL REOPENING

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
3	(Constant)	11.644	2.361		4.931	.000	6.998	16.290
	Effectiveness	.202	.077	.142	2.622	.009	.050	.353
	Challenge	.148	.023	.351	6.461	.000	.103	.193

a. Dependent Variable: School reopening

R=0.346; R²=0.119; Adjusted R squared=0.114; SSE=3.698

Previous research found that online learning does significantly benefit some schoolteachers [13]. Nevertheless, other teachers still did not feel confident and were more secure teaching through traditional methods, including physical interaction with the students. As for the school reopening, the model describes that teachers will have to face more challenges and issues, especially when monitoring social distancing among students. This is supported by [14], which has conducted a study to discuss the impact of school reopening. This concludes that school reopening in any form lead to further mixing between students, especially in secondary school.

IV. CONCLUSIONS

In conclusion, this study revealed most teachers were affected by implementing online teaching and learning during COVID-19, especially among female teachers age 31 years old and above. They are most likely to be unprepared for the new method of teaching for students. Not to mention that they need to balance their multiple responsibilities in the house. Besides, this study has also discovered that online teaching's effectiveness negatively correlates with teachers' challenges. This is further explained as teachers who faced more challenges will not proceed with online teaching smoothly. Plus, they rather want face-to-face interaction in school despite relying on online teaching to deliver education. As for effectiveness, challenges, and school reopening, although the value of R² does not include much of other variables, the p-value shows a strong significance level. There are several limitations to this research. As this research focuses on teachers who perform online teaching, there are challenges to get the respondents due to MCO and school closure. This may not be sufficiently large to include all respondents equally from different states and with a wide variety of ethnic groups.

Besides, more other variables such as attitude or conveniences still need to be included in this study to get better and clearer results. In future studies, this study recommends furthering this research as this pandemic is not yet over. Most countries were still struggling to bend the curve of COVID-19. Thus, with further research conducted, one can know how COVID-19 impacts the teachers in online teaching and learning.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this paper.

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