

Teacher Readiness in Using Google Classroom Application in Mathematics Subjects

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ABSTRACT--- *This study aimed to look at the readiness of teachers in the use of Google Classroom application in mathematics subjects. The use of the Google Classroom application which is an M-learning platform in teaching and learning was implemented intensively after our government introduced the Social Distancing Policy. The methodology of this study is quantitative and questionnaires are distributed to respondents in the form of Google Forms. A total of 99 primary and secondary school teachers were selected as study respondents. Study data were analyzed using SPSS (Statistical Package for Social Science) version 26. Statistical analysis used was descriptive statistics involving frequency, mean score and percentage, while inferential statistics involved t-test at a significance level of $p < 0.05$. The results showed that gender factors did not affect the level of readiness of teachers from all aspects studied, namely knowledge, skills and attitudes. Overall, the aspect of teachers' knowledge and skills towards the use of Google Classroom application is high, while from the aspect of teachers' attitude towards the use of Google Classroom application is moderate.*

Keywords : Readiness, Google Classroom, Mathematics

1. INTRODUCTION

In the era of globalization, the education system in Malaysia has undergone various drastic changes from time to time. The Education System in Malaysia is no longer isolated from the use of Information and Communication Technology. Moreover, at present our country is struggling with the spread of the Covid-19 pandemic. The Covid-19 pandemic has changed the education system in Malaysia. The education process in our country is carried out face to face. However, now the teaching and learning process is implemented in a new norm (new norm of teaching and learning) where teaching and learning activities for all levels regardless of kindergarten or university, conducted at the residence of each student and conducted online (online) so that all educational institutions are temporarily closed.

Here, teachers play an important role in ensuring that the teaching and learning process is implemented even when students are in their homes by ensuring that the teaching and learning process is continued so that students do not lag behind in their studies due to the Covid-19 Pandemic. In line with the current situation, teaching and learning is implemented online to be in line with the Social Distancing Policy launched by the government on 18 March 2020. Therefore, teachers are asked to master technology to ensure the online teaching and learning process continues and learning activities are not defendant. Online teaching and learning using the Google Classroom app has been a commonplace among educators and students since April 2020.

'Google Classroom' is an online teaching and learning software operated by Google which is a platform used by the Ministry of Education Malaysia (MOE) as an alternative virtual learning platform (MOE, 2019). Google Classroom is a teaching and learning platform that was developed for free by Google in 2014 to plan, implement and assess assignments or student work paperless (Ulum, Fantiro, & Rifa'i, 2019). This platform is a very useful Education platform especially nowadays where online learning is implemented.

2. STATEMENT OF PROBLEM

The integration of information and communication technology (ICT) in Education, especially in mathematics subjects in a thoughtful, planned and appropriate manner is important to increase the efficiency and effectiveness of the PdPc process.

In the era of globalization, ICT is no longer isolated from the education system in Malaysia. This is evidenced by the application of ICT modules in all subjects starting from primary school level which aims to ensure students are able to apply skills, strengthen knowledge and appreciate values and ethics in the use of ICT to produce students who can create and innovate (MOE, 2016).

The explosion of various technological advances in life in the present and the future, then the MOE through the Malaysian Education Development Plan (PPPM 2013-2025) has spent more than RM 60 billion to increase the mastery of ICT among educators. Although various initiatives have been undertaken and implemented by our government for students and teachers, but these efforts have not been fully manifested by educators, especially mastering online learning skills. According to a study by Nor Aniza and Lay Nee Chua (2015), teachers make less use of all internet and ICT facilities to master online learning.

The Covid-19 pandemic has transformed the conventional and face-to-face PdP process into online or M-learning. According to Bekti Mulatsih (2020), e-learning is the use of learning media that use the internet to deliver a network of solutions that can improve knowledge and skills. One of the most convenient and easy-to-use M-learning in this time of pandemic is Google Classroom. Google Classroom replaces Frog VLE following a media statement issued by KPM on 27 June 2019. With the end of the 1BestariNet service, KPM decided to use the Google Classroom learning platform to replace Frog VLE. According to Mutiara et. al. (2021), Google Classroom is an application dedicated to Learning so that it can make it easier for teachers to create, share and measure assignments without using paper.

The use of the Google Classroom app has given educators a new role. To develop the potential of teachers in the use of the Google Classroom application, teachers must work with colleagues or experts who are talented in learning programming using the Google Classroom application. This is because the use of Google Classroom application in mathematics subjects requires in-depth knowledge of lesson content, PdP process, communication skills with students and most definitely communication skills with information technology. Moreover, nowadays, teachers must have the ability, knowledge and skills in operating the latest gadgets and ICT applications because it plays an important role in guiding their students.

According to the findings of the study of Zuraida et.al. (2019), teachers are not fully available to implement online learning due to lack of training, time management problems and no plans to improve infrastructure facilities. However, researchers found that there is still a lack of studies that focus on the level of readiness of teachers in the use of Google Classroom applications, especially in mathematics subjects. Therefore, this study was conducted to provide important input in an effort to improve the quality of professionalism development programs. Thus, this study aimed to identify the readiness of primary and secondary school teachers in the use of *Google Classroom application* in mathematics subjects.

3. RESEARCH METHODOLOGY

Research design is important for a study as a guide to ensure that the objectives of the study are achieved and then answer the research questions. In general, this study uses a survey research method by using a questionnaire instrument. Survey research is one of the best ways to measure perceptions, attitudes, beliefs, opinions, practices and orientations for a large population size (Creswell, 2012). In addition, this study is also a descriptive quantitative study to identify and study the readiness of teachers in the use of Google Classroom in the subject of Mathematics. Descriptive design is used to collect descriptive information to determine the distribution of selected variables.

In this study, the population refers to primary and secondary school teachers in Bentong district, Pahang. The total population of primary and secondary school teachers in Bentong district is 129 people. The researcher chose Bentong district as the study location because the researcher is easy to deal with the school due to Bentong district which is the researcher's place of work. Since the Social Distancing policy is still being implemented due to the Covid-19 pandemic, the researcher conducted this study in the district of the researcher on duty. This also saves time, cost and energy for researchers. The study was conducted among 99 primary and secondary school teachers who teach Mathematics in Bentong district. The selection of respondents was done at simple random based on the list of names of teachers who teach mathematics obtained from PPDB.

The study of teacher readiness in the use of Google Classroom in this mathematics subject uses a survey method that uses a questionnaire instrument. A questionnaire is a research method used in the design of a survey completed by the study respondents. Respondents select answers to questions and supply basic personal or demographic information (Creswell, 2012).

The questionnaire in this study contains five parts, namely Part A which is personal and demographic information, Part B is an assessment of teachers' knowledge on the use of Google Classroom application in mathematics, Part C is an assessment of teachers' skills on the use of Google Classroom application in mathematics. and Part D assessment of teachers' attitudes toward the use of the Google Classroom application in mathematics subjects. In this study, the researcher has adapted some of the questionnaire instruments of previous researchers to suit the objectives and questions of the study.

The researcher used two methods to analyze the data in this study namely descriptive statistical analysis and inferential statistical analysis. Data obtained through the questionnaire instrument were collected quantitatively and analyzed using SPSS version 26. To answer questions about demographic information such as gender, age, race, academic qualifications, subject options, work experience, school, Google Classroom course attendance and Gmail account ownership, then the researcher will use descriptive analysis. Respondents in this study consisted of primary and secondary school mathematics teachers in Bentong district, Pahang. In determining the level of knowledge, skills and attitudes of teachers in the use of Google Classroom application for mathematics subjects, descriptive analysis and mean scores will be used to determine the level. Table 1 shows the interpretation of the mean scores used to determine the level of knowledge, skills and attitudes of teachers in the use of the Google Classroom application for mathematics subjects.

Table 1: Interpretation of mean scores of teachers' level of knowledge, skills and attitudes in the use of Google Classroom application for mathematics subjects

Min Score	Level
1.00 - 2.33	Low
2.34 - 3.66	Simple
3.67 - 5.00	Height

In addition, inferential analysis was used in this study to describe the relationship between variables and sample characteristics selected from the population to make a generalization of sample characteristics about the population. The authors tested the null hypothesis of this study by using an independent t-test.

4. FINDINGS

Table 2 show the results of the analysis of the level of knowledge of teachers on the use of Google Classroom application in mathematics showed that the majority of teachers, 63 people (63.6%) have a high level, while 31 people (31.3%) have a moderate level and only 5 people (5.1%) have a level low on the use of Google Classroom applications in math subjects.

Table 2: Frequency and percentage of teachers' knowledge level on the use of *Google Classroom application* in mathematics subjects

Min Value	Frequency	Percent	Level
<2.33	5	5.1	Low
2.34 - 3.66	31	31.3	Simple
> 3.67	63	63.6	Height

Table 3: Frequency and percentage of teachers 'skill levels on the use of Google Classroom applications in mathematics subjects

Min Value	Frequency	Percent	Level
<2.33	7	7.1	Low
2.34 - 3.66	38	38.4	Simple
> 3.67	54	54.5	Height

Table 3 show the results of the analysis of the skill level of teachers showed that the majority of teachers, 54 people (54.5%) were at a high level, while 38 people (38.4%) had a moderate level and only 7 people (7.1%) had a low level of use of Google Classroom application. in mathematics subjects.

Table 4: Frequency and percentage of teacher attitude levels towards the use of Google Classroom applications in mathematics subjects

Min Value	Frequency	Percent	Level
<2.33	5	5.1	Low
2.34 - 3.66	44	44.4	Simple
> 3.67	50	50.5	Height

Table 4 show the results of the analysis for the level of teacher attitude showed that the majority of teachers, namely 50 people (50.5%) were at a high level, followed by 44 people (44.4%) had a moderate level and only 5 people (5.1%) had a low level of application use Google Classroom in math subjects.

Three hypotheses have been carried in this study. All hypotheses were tested using an independent-samples T-Test to determine whether they were accepted or rejected.

Table 5: Analysis of t-test for the level of knowledge of teachers on the use of applications Google Classroom based on gender factors

Gender	Min	Standard deviation	t	Df	Sig. (2-tailed)
Men	49.50	12.17	-0.43	97	0.672
Women	50.41	8.20			

Note: $p > 0.05$; $n = 99$

From the analysis that has been conducted, the mean score of the test of the knowledge aspect of male teachers is ($m = 49.50$; $sd = 12.17$). While the mean score of the knowledge aspect test of female teachers is ($m = 50.41$; $sd = 8.20$). The findings of this study show that the mean score of the knowledge aspect test of female teachers is higher than the mean score of the knowledge aspect test of male teachers. This finding also accepts the first hypothesis that there is no significant difference in the mean score of the knowledge aspect of teachers on the use of Google Classroom application based on gender factors ($t = -0.43$; $p = 0.672$) (Table 5).

Table 6: Analysis of t-test for teachers' skill level on the use of Google Classroom application based on gender factors

Gender	Min	Standard deviation	t	Df	Sig. (2-tailed)
Man	51.96	14.23	-0.35	97	0.972
Women	52.05	10.59			

Note: $p > 0.05$; $n = 99$

From the analysis that has been conducted, the mean score of the male teacher skills aspect test is ($m = 51.96$; $sp = 14.23$). While the mean score of the female teacher skills aspect test was ($m = 52.05$; $sp = 10.59$). The findings of this study show that the mean score of the skills aspect test of female teachers is higher than the mean score of the skills aspect test of male teachers. This finding also accepts the first null hypothesis that there is no significant difference in the mean score of teachers' skills aspects of the use of Google Classroom application based on gender factors ($t = -0.35$; $p = 0.972$) (Table 6).

Table 7: Analysis of t-test for the level of teachers' attitudes towards the use of Google Classroom application based on gender factors

Gender	Min	Standard deviation	t	Df	Sig. (2-tailed)
Man	69.38	17.78	-1.35	97	0.181
Women	73.78	12.85			

Note: $p > 0.05$; $n = 99$

From the analysis that has been conducted, the mean score of the attitude test of male teachers is ($m = 69.38$; $sp = 17.78$). While the mean score of the female teacher attitude aspect test was ($m = 73.78$; $sp = 12.85$). The findings of this study show that the mean score of the attitude aspect test of female teachers is higher than the mean score of the attitude aspect test of male teachers. This finding also accepts the first null hypothesis that there is no significant difference in the mean score of teachers' attitudes towards the use of Google Classroom application based on gender factors ($t = 1.35$; $p = 0.181$) (Table 7).

5. DISCUSSION OF STUDY FINDINGS

Descriptive analysis was conducted by taking into account the mean value. A total of 13 items were surveyed to identify teacher knowledge. The overall mean value obtained in table 4.2 found that the level of knowledge of teachers is at a high, which is 3.86. This shows that mathematics teachers in Bentong district have a high level of knowledge on the use of Google Classroom application in mathematics subjects. These findings show that there are similarities with the findings of a study conducted on teachers on teaching and learning History based on Google Classroom application is at a high level (mean = 3.91).

A total of 14 items were surveyed. Based on the 14 items surveyed, it was found that the overall level of teachers' skills on the use of Google Classroom application in mathematics subjects showed high (mean = 3.72). The findings of this study are supported by the study conducted by the study conducted by Yogeswary and Helmi (2021). The analysis of their study shows that the technological skills of implementing teaching and learning online during the pandemic era among teachers in Tamil primary schools are high.

From the findings of this study, researchers found that mathematics teachers are skilled in using applications in Google Classroom to provide teaching aids, generate online questions, share information with students using databases, and upload materials to improve the teaching and learning process. However, the researchers found that teachers need to be more prepared in further honing their skills on the Google Classroom application because question items 3, 5, 10, 11, 12, 13, and 14 show that teachers' skill levels are at a moderate level.

A total of 20 items were surveyed. Based on the 20 items surveyed, it was found that the overall level of teachers' attitudes towards the use of Google Classroom applications in mathematics subjects showed high (mean = 3.63). This shows that mathematics teachers are moderate towards the use of Google Classroom application in mathematics subjects. This finding is supported by Muhammad Syafiq and Megat Azman (2021) who stated that the level of teacher acceptance of Google Classroom in terms of attitude showed to be at a moderate level.

From this study, researchers found that teachers face time constraints in applying Google Classroom in subjects, using icons and interactive elements and less sharing strategies with colleagues. Teachers were also found to face shortages in terms of internet facilities at home. However, the findings show that teachers are highly motivated and highly motivated in receiving, learning and using the Google Classroom application. Researchers also found that teachers are always better prepared to face challenges in the use of Google Classroom as well as consistent and not easily discouraged with technological changes that mandate online learning.

Based on data analysis using t -test found that there is no significant difference in the mean score of teachers' knowledge aspects on the use of Google Classroom application based on gender factors ($t = -0.43$; $p = 0.672$). These findings are in line with a study conducted by Isabel and Cristina (2021) showing that there is no significant difference between the first digital gender.

Based on data analysis using t -test found that there is no significant difference in the mean score of teacher skills aspects on the use of Google Classroom application based on gender factors ($t = -0.35$; $p = 0.972$). The findings of this study are supported by the study of Muhammad Ajwa and Dr. Aaron (2021) who showed that there was no significant difference in the skill level of Google Classroom Virtual Learning by gender.

Based on data analysis using t -test found that there is no significant difference in the mean score of aspects of teachers' attitudes towards the use of Google Classroom application based on gender factors ($t = -1.35$; $p = 0.181$). The findings of this study are in line with the study of Fatima (2019) who showed that there are no significant gender differences in aspects of attitudes towards the use of ICT. These findings also conclude that effective use of technology in PdP should be expected of all teachers regardless of their gender.

6. IMPLICATIONS OF THE STUDY

Based on the findings of the study, it can be concluded that teachers play an important role in integrating an online learning application in their teaching and learning process. Thus, the readiness of teachers in applying an M-learning with new technologies is an important element in realizing the effectiveness of the platform. Every educator must improve their knowledge, skills and competencies in the integration of new technologies in order to compete globally with the Education systems of developed countries and not be left behind in the highly digital world.

Based on the study conducted. Researchers found that our teachers have a high level of readiness in the use of the Google Classroom application that was introduced and implemented in our country's Education system recently. According to Syafiq and Megat (2021), teachers are always ready to learn how to use new technologies in the classroom regardless of age or gender.

In line with that, the researcher advised teachers to further improve their knowledge, skills and attitudes towards the use of Google Classroom from time to time. Even 'practice makes perfect', training and continuous use will make a teacher skilled, knowledgeable and efficient in integrating Google Classroom applications in their respective subjects.

Finally, the MOE should also further enhance the training on the use of the Google Classroom application in various mediums, whether online or offline, widely and continuously so that the level of readiness of our teachers will not decrease. The researcher thinks that the continuous support and guidance from the MOE will increase the motivation and attitude of teachers towards the use of Google Classroom in our country's education system.

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