

A Critical Review of the Effectiveness of Google Classroom as an Online Learning Medium During the Covid-19 Pandemic

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Abstract

Over time, online education continues to grow and play an essential role in higher education worldwide. Furthermore, the world has been shocked by the outbreak of Covid-19. Until today, the number of patients infected with the Covid-19 virus continues to increase worldwide, and the education sector is the most affected due to this Pandemic. In order to overcome this, the worldwide education sector opts for an online learning or e-learning approach with technology and devices as communication intermediaries to replace face-to-face teaching. Many educational applications have been introduced as solutions to this, one of which is using the Google Classroom application. Google Classroom is one of the instruments that is free of charge and has earned recognition within a short period. However, online learning can be isolating and disengaging for learners. Sitting in front of a computer screen for hours may prompt a student to leave out a lesson altogether. The study's primary purpose is to explore the teachers' perceptions of the effectiveness of Google Classroom as an Online Learning medium during the Covid-19 Pandemic through a qualitative analysis of the language used about feedback in leading research journals. The primary approach to conducting a literature review is through a critical review approach. The results obtained based on sample collection through the interview gives some information, which could be an eye-opener for enhancing the implementation of online teaching learning among the learners, especially teachers, who can further help implement the large.

Keywords: Google Classroom, Online Learning, Covid-19 Pandemic, Effectiveness

Introduction

Online learning has shown results similar to traditional classroom teaching, as in schools and universities. The current method of learning and teaching is where learning is teacher-centred and uses visual aids in the form of presentation slides, whiteboards, and a visualizer. Today, online teaching applied similar methods like slide presentations, visualizers, sketches, and

other interactive methods. The only difference was that the class was implemented virtually online.

We are shocked by the spread of the infectious disease known as the Covid-19 virus. Until today, the number of Covid-19 virus-infected patients continues to grow worldwide. All governments worldwide are still trying to adapt to the new norms in their country. The education sector is one of the most impressed with this outbreak. The education sector worldwide has adopted an online teaching approach to address this. The method uses technology and devices to enable face-to-face teaching between students and the teacher. Online learning is the most popular alternative to curb the spread of Covid-19.

Siti Asmah and Mastura (2020) explain that Google Classroom is a free teaching space provided by the Google application. Through this room, teachers and students can conduct teaching sessions and learn and assign students without presenting themselves in classes such as traditional teaching methods. In addition, Google Classroom also has good functionality that enables lecturers, teachers, and students to share files and notes related to the subject. Among the advantages, another provided by Google Classroom is integrating applications with Google Drive, documents for task distribution, calendars, tables, and many more. Therefore, teachers make class implementation by only inviting students to attend classes through the code (Dabbour, 2016). Teachers also can provide assignments and receive assignments that students have completed for evaluation.

Critical Review

A systematic review is valuable in collecting the critical scientific evidence necessary for developing evidence-based guidelines, making programmatic decisions, and guiding future research (Mullins et al., 2014). A systematic review is an essential tool for researchers, practitioners, and policymakers who want to remain current with the evidence in the field. A systematic review must adhere to strict standards, as its results can provide a more objective appraisal of evidence for making scientific decisions (Gough & Thomas, 2016). The systematic review follows tight protocols like QUOROM, PRISMA, or AMSTAR to ensure complete transparency and reproducibility. These protocols ensure an uncovering of substantial evidence that can aid the research community in identifying what has been investigated, how it has been examined, and what should be studied (Mullins et al., 2014).

The Google Classroom platform is not a static domain. It is not always easy and secure. Thus, Google classroom policymakers must make decisions based on frequently inconsistent research findings, and Google classroom researchers must identify existing research gaps and build upon new research. The primary objective of the current systematic study is to examine the effectiveness of Google Classroom as an online learning platform during the Covid-19 pandemic. Utilising the illustration provided by Egger et al. (1997), the issue at hand can be formulated as the following question: to what extent do recent and reputable papers discuss the effectiveness of google classroom in the context of the Covid-19 pandemic?

This critical review had been made based on fifteen papers and publications from websites such as SCOPUS and World of Science was utilised to identify five variables: (1) perceived usefulness, (2) comprehension of Google Classroom, (3) perceived ease of use, (4) effectiveness, and (5) online learning medium. Nonetheless, just three factors were employed to classify the selected papers in this systematic review. The paper indicated that most (80%) of the articles are about Google Classroom and the Covid-19 pandemic, whereas just 10% are on online learning. This finding demonstrates that current information on the Effectiveness of Google Classroom within these two aspects needs to be improved in these two areas.

Systematic reviews can therefore serve as a fundamental and secure research tool for Google classroom researchers and policymakers, allowing them to keep up with the latest research trends, produce new research, and make intelligent decisions. Importantly, systematic reviews adhere to rigorous rules to eliminate bias. The incorporated performance review and reflected in the final publication to achieve complete openness (Gough & Thomas, 2016; Mullins et al., 2014).

Formulation of the Problem to be Addressed

The development of advanced technology and enhanced tools allows a high level of flexibility in the learning process. Since the Covid 19 outbreak, online learning has become more concentrated in the classroom. For example, schools, colleges, and universities have used online learning platforms to enhance student learning performance. However, there is a problem with technology related to the teachers involved where the teacher has the problem of accepting digital technology as a technology facility in teaching. There are views from researchers such as Motaghian, Hassanzadeh & Moghadam (2013) claiming that this failure was due to the technology's acceptance.

In addition, online learning can be isolating and disengaging for learners. Another issue is that sitting in front of a computer screen for hours may prompt a student to leave out a lesson. Moreover, the students seem tired and need more motivation due to sitting in front of gadgets for learning. This learning method causes the learning process to slow down, and some students skip online classes by giving unnecessary reasons. Besides that, some students need gadgets like laptops and smartphones to enhance their learning. Gadgets' inadequacy makes it harder for teachers to carry out their teaching activities. In the sense of consequences, the acceptance of Google Classroom by school teachers might be less effective than we expected.

The management or administration of educational institutions plays a crucial role in integrating technology in the classroom as they must manage the process and eventually decide how much they plan to use that technology. Öznacar & Dericioğlu (2017) conducted high school research on administrators' role in using technology and found that administrators had a positive belief in technological integration in the classroom. One of the many reasons for the failure to succeed in integrating technology is that administrators believe that 80% of their teachers are unaware of the technology to use it. All these challenges show that there is a need for further investigation to explore the teachers' perceptions of the effectiveness of Google Classroom as an Online Learning medium during the Covid-19 Pandemic.

Data Collection and Analysis

The data was collected through a qualitative analysis of the language used about feedback in leading research journals—articles and journals from websites such as SCOPUS and World of Science. The collected data is then analysed to find facts about online learning media for teachers' perceptions of Google Classroom. The stages of data analysis are organising, sorting, synthesising, and finding patterns using interpretation. Based on article 1, titled Teacher's experience on the Use of Google Classroom, states that Google Classroom empowers teachers to create and post content material and assignments in the form of pictures, videos, and documents for students. Moreover, teachers and students can easily access Google Classroom with any gadget, such as smartphones and laptops. It also promotes 21st-century

learning, a collaboration between teachers and students in discussion. Besides, using Google Classroom creates better interaction between students and teachers.

Secondly, studies show that teachers used several learning media platforms such as Google Classroom, Zoom, Google Meet, and WhatsApp during the pandemic. Google Classroom was the most popular platform educators used to teach students creatively by giving them assignments, learning videos, conferences, and material links. However, online learning using Google Classroom may differ and need some methods that can minimise things that cannot be reached with Google Classroom.

Thirdly, studies explain EFL teachers' perception of Google Classroom. They found reports that Google Classroom has excellent benefits for learning English. It could work as a learning management system and provide a virtual space for students to communicate with each other.

Fourth, studies show that teachers' acceptance of Google Classroom is high. It stated that Google Classroom helps students in learning and that the learning process can be done anywhere at any time. It also stated that Google Classroom connects among them easily. Teachers also can assist their students easily using this platform. Fifth, based on the available literature, using Google classroom would go a long way in engaging the students, increasing the attention rate, and improving their academic achievement positively across all the fields of study, according to research in Nigeria.

Reporting of Critical Review of Literature

We have read and critically reviewed the 15 articles, and five have been explained here. These remaining articles have been categorized based on the variable as can be seen in Table 1.

Table 1

Frequency of articles on the theme of Google Classroom (GC), Online Learning (OL) and the Covid-19 Pandemic

<i>GC</i>	<i>N.</i>	<i>OL</i>	<i>N.</i>	<i>Covid-19 Pandemic,</i>	<i>N.</i>
<i>GC Experience & Acceptance</i>	<i>3</i>	<i>OL Perception & Experiences</i>	<i>2</i>	<i>The use of GC during CVD-19</i>	<i>1</i>
<i>GC Perception</i>	<i>2</i>	<i>OL Satisfaction</i>	<i>1</i>	<i>Impact GC during CVD-19</i>	<i>2</i>
<i>The use of GC</i>	<i>2</i>	<i>OL during Covid-19 Pandemic</i>	<i>1</i>	<i>Flipped classroom during CVD-19</i>	<i>1</i>
<i>Collaborative Learning through GC</i>	<i>1</i>	<i>Impact of GC as an Online Learning</i>	<i>1</i>	<i>The Post CVD-19 pandemic era</i>	<i>1</i>
<i>GC as an online Learning</i>	<i>1</i>				
<i>Total</i>	<i>9</i>		<i>5</i>		<i>5</i>

The article shows that the larger majority (80%) of the articles are reported on Google Classroom where only (10%) are accounted for Online learning and Covid-19 Pandemic. This finding shows that these two aspects clearly represent a gap in the current knowledge of the Effectiveness of Google Classroom with these two aspects.

Based on the review also, we have concluded that the teacher's perception of the effectiveness of Google Classroom during Covid 19 Pandemic is interesting and has played an important role in the learning process. We believe that online learning has become a critical requirement in instruction, particularly amid the widespread Covid-19. This critical review

clearly shows the deficiency of articles that relates to all three aspects of the current research: Google Classroom, Online Learning, and the Covid-19 Pandemic.

One stage that's broadly utilised as a learning medium is Google Classroom. To sum up, teachers perceive the Google Classroom application positively and that it brings good to their students' learning activities. Teachers found it effective to promote collaborative learning, minimise problems, organise students' documents, and save time. The suggestion to use Google Classroom is not only because of the useful utility tool, but it also encourages teachers to be more creative in using the features to create better teaching in the future.

The main implication that resulted from the critical review was the discovery of two gaps in the literature. These were (1) the absence of findings on online learning medium using Google Classroom during the Covid-19 Pandemic, and (2) the virtual absence of research on Google Classroom as an online learning medium. Although a single knowledge gap would be sufficient justification for conducting research, accumulating two strengthens the need for additional investigations. Although identifying these gaps paved the way for additional research on this topic, further research is necessary, particularly in digital learning.

Table 2

Frequency of articles on the theme of Google Classroom, Online learning and COVID-19 pandemic

Authors	Year	Journal	ISI / WOS	GC	OL	C19P	MY	COUNTRY	METHODS
Almio Susetyo Harjanto, Sri Sumarni	2021	Teacher's experience on the use of google classroom	✓	✓	✓	✓		Indonesia	interview, online questionnaire
Mohd Izani Othman, Suraya Sulaiman, Mohd Nadzri Mohd Najib, Wan Nordini Hasnor Wan Ismail	2022	Forced Online and Distance Learning during COVID-19 Pandemic: Students' Perceptions and Experiences	✓		✓	✓	✓	Malaysia	cross-sectional survey through online questionnaires. Questionnaires
Noornadiah Md. Sari, Khoo Yin Yin, Zainizam Zakariya, Ramlee Ismail	2022	User Acceptance of Google Classroom-Assisted Learning: The Case of Malaysian Form Six Economics Students	✓	✓	✓	✓	✓	Malaysia	questionnaire
Mohamad Syafiq Ya Shak, Nurul Ain Hasni, Norasyikin Abdul Malik, Mohd Haniff Mohd Tahir	2022	The use of Google Classroom among Students during the COVID-19 Pandemic: A Review	✓	✓	✓	✓	✓	Malaysia	Review- identification, screening, and eligibility processes.
Agus Nuryatin, Alfian Rokhmansyah, Anni Malihatul Hawa, Indah Rahmayanti, Bayu Aji Nugroho	2023	Google Classroom as an Online Learning Media for Indonesian Language Learning During COVID-19 Pandemic	✓	✓	✓	✓		Indonesia	qualitative - obtained from documents in the form of journal articles, proceedings, books, and articles on the internet that are relevant to the topic

Raed Latif Uгла, Mohammed Najim Abdullah	2022	Iraqi EFL teachers' perception towards Google Classroom	✓	✓	✓	✓	Iraq	qualitative - case study, semi-structured interview
Oyarinde, Oluremi Noah and Komolafe, Olaide Gbemisola	2020	Impact of Google Classroom as an Online Learning Delivery during COVID-19 Pandemic: The Case of a Secondary School in Nigeria		✓	✓	✓	Nigeria	Online questionnaire, online Semi-Structured Interview
Mike Okmawati	2020	The Use of Google Classroom during Pandemic		✓		✓	Indonesia	The method used in this research was library research
Prais Joy, Rajeev Panwar a, R.Azhaqiri, Asha Krishnamurthy a, Mallikarjun adibatti a.	2023	Flipped classroom – A student perspective of an innovative teaching method during the times of pandemic	✓		✓	✓	India	Pre-test questionnaire
Vanessa Ratten	2023	The post COVID-19 pandemic era: Changes in teaching and learning methods for management educators			✓	✓	Australia	traditional methodologies such as interviews, case studies and experiments
Reut Gruber, Sujata Saha, Gail Somerville, Johanne Boursier, Merrill S. Wise	2020	The impact of COVID-19 related school shutdown on sleep in adolescents: a natural experiment				✓	Canada	A qualitative study was conducted between April 28 and June 3, 2020 with 45 adolescents using one-on-one semi-structured phone interviews
Tariq Abu Hilal, Ala' Abu Hilal, Hasan Abu Hilal	2022	Social Networking Applications: A Comparative Analysis for a Collaborative Learning through Google Classroom and Zoom	✓	✓			United Arab Emirates	conducted a questionnaire with different universities, schools, and college students and organized the results, and performed DeLone and McLean's model analysis.
Mais Al-Nasa'h, Luae' Al-Tarawneh, Ferial M. Abu Awwad, Ikhlas Ahmad	2021	Estimating students' online learning satisfaction during COVID-19: A discriminant analysis			✓	✓	Jordan	cross-sectional survey design to collect potential respondents' data through surveys at one time with one respondent type
Dien Thi Bui, Thuy Thi Nhan, Hue Thi Thu Dang, Trang Thi Thu Phung	2022	Online learning experiences of secondary school students during			✓	✓	Vietnam	The cluster sampling method was used to collect the data

		COVID-19 – Dataset from Vietnam						
Qiong Zhang, Qing-zhi Yuan, Peng-qiang Ma, Yue Li, Meng-hui Zhao, Rong-xia Chen, Zhen-gang Tang, Bei Zhang e, Bing Liu, Xiang Liu e, Fei-feng Li	2023	Perceptions towards online learning among medical students during the COVID-19 pandemic	✓		✓	✓		China
								Collected information from participants in relation to their evaluation and satisfaction of their online learning or lesson by using the questionnaire

ISI= INSTITUTE OF SCIENTIFIC INFORMATION JOURNAL ,WOS= WORLD OF SCIENCE, GC=GOOGLE CLASSROOM , OL=ONLINE LEARNING , C19P=COVID-19 PENDEMIC , MY=MALAYSIA , NA=NOT AVAILABLE

Conceptual Framework

Based on the literature review of previous research, a conceptual framework was modified (Figure 1.0) by referring Technology Acceptance Model (TAM) in Figure 2.0. The TAM measures user acceptance of technology (especially information technology). The TAM model was initially developed by Davis (1989) based on TRA (Rational Action Theory) model to close the abyss, which explains the influencing factors or encourages users to use technology. Among these factors is the ease of use and benefits of service, where these two factors together affect usage demand and then affect the use of the system or technology. According to the results of the studies, these two factors make a significant impression on user acceptance of the technology. Various studies or other studies have demonstrated its effectiveness through several other studies (Al-Busaidi and Al-Shihi, 2010). In other words, the TAM model successfully measures the technology's acceptance based on its users' perceptions. The TAM model forms the basis for using this technology to evaluate user behaviour.

However, in this research, three main factors have been emphasised: the perceived usefulness of Google Classroom, knowledge of Google Classroom and perceived ease of use can change the perception of the use of Google Classroom. A new conceptual framework has been workup for this study, and it reflects the perceived usefulness of Google Classroom, knowledge of Google Classroom, and perceived ease of use is directly propositional to the use of Google Classroom.

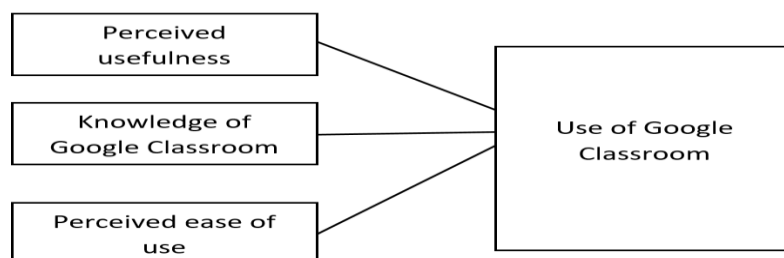


Figure 1.0. Conceptual Framework

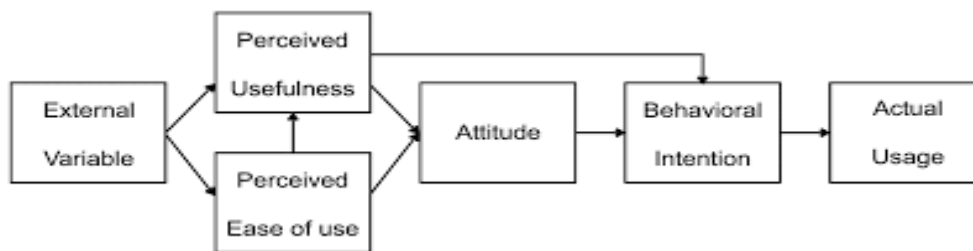


Figure 2.0. Conceptual Framework

As a response to the critical review results, a brief qualitative study examines Google Classroom's performance as an online learning tool during the Covid virus-19 pandemic. Using Google Meet interviews, four experienced teachers (with at least four years of teaching experience) were questioned on the viability of Google Classroom as an online learning platform during the Covid-19 Epidemic. Any instructor who had used Google Classroom was included in the study's population, and four of these teachers made up the sample.

Three parts interview questions were used to get information from teachers about their backgrounds and the value of Google Classroom as an online teaching tool during the Covid-19 Epidemic and lastly their suggestions for improvement (shown in Appendix 1). The interview had been conducted in Bahasa Malaysia and follow all the interview protocols to minimize the error in the congregation. After receiving the approval of two education technology specialists, the questions were then pilot-tested with four teachers from the original sample to find any potential protocol issues before the actual data collection. The final analysis did not include the piloted data. The interview protocol was then addressed with the professors and made slightly different. Researchers decided that all interviews would be conducted in Malay to reduce the likelihood of giving inaccurate information. Probes were added to the protocol to extract detail from interviewees. The researcher conducted, audio-recorded in Malay. Then, the collection of qualitative data was then analysed using QSR NVivo.

After the interviewees sanctioned the translated transcripts, the researcher read and reread the transcripts, noting any preliminary concepts—the coded NVivo data by segmenting and labelling the transcripts. The initial in vivo codes were then refined by grouping similar principles into overarching and sub-thematic themes. To ensure the reliability of the coding process, the researcher repeated the coding process every two weeks to calculate the intra-coder agreement index.

Results and Discussion

Four participants were involved in examining Google Classroom's performance as an online learning tool during the Covid virus-19 pandemic. The participants with at least four year-experiences and experience in Google Classroom are involved in this study. The participants with any ethnicity, gender, and year of using Google-classroom requested are all recorded. The following respondents were involved:

Table 3

Demographic of four participants were involved in examining Google Classroom's performance as an online learning tool during the Covid virus-19 pandemic

Respondent	Ethnic	Gender	Working Experience	GC Experience
1	Chinese	37	12 years	4 years
2	Iban	44	20 years	3 years
3	Kadazan Dusun	37	12 years	4 years
4	Malay	37	12 years	4 years

All participants were between the ages of 35 and 45 and had more than ten years of teaching experience. The ethnic groups represented were all 25% Chinese, Iban, Kadazan Dusun, and Malay. 75% of respondents have used Google Classroom for four years, while 25% have used it for only three years.

According to the research findings, when participants were asked about using Google Classroom, most informants said it was very effective because they saw it as their primary teaching approach. *"I feel that without Google Classroom, it is difficult for me to carry out teaching, and it is very effective and helps me give assignments to students,"* said the first respondent. Furthermore, some respondents stated, *"I cannot deny that Google Classroom is extremely useful for student training. This feature offers simplicity and ease of use."* Participants also stated, *"Even though face-to-face learning after MCO, the effectiveness of teaching using Google Classroom remains the same. As a result, it is still relevant today "*. Some of them also believe that the success of using Google Classroom is very high, and only a few thought that it is a tool that is not friendly to users and harms teaching.

Despite comparing it to other types of technological media, they discovered that they had developed a strong trust in Google Classroom. The respondent believed that *"the frequency with which other teachers and I use Google Classroom throughout the teaching is the primary reason we all believe in Google Classroom."* According to the fourth respondent, *"the school's encouragement, such as providing device equipment and also high internet access, are driving factors to the effectiveness of the use of Google Classroom technology. Only when it comes to outside the school grounds, I have a problem with mobile internet, and the area where I live has less-than-satisfactory internet access, making me unable to access Google Classroom."*

According to one participant, *"communicating online with students allows him to focus on giving assignments individually, where by using this Google Classroom, each student can be given assignments more easily without having to meet or explain in class."* Some also stated that *"when schools make Google Classroom mandatory, it helps teachers to be more efficient in using this platform."* When frequently used, the teacher finds it more manageable.

Conclusion

Utilisation of Google Classroom has had a big impact on schoolwide learning, and thanks to this effective technology, teachers may post student assignments in a methodical manner. Although there are some restrictions on the capabilities that are available due to Google Classroom's widespread use, it still provides a fantastic platform for student interaction. However, Google Classroom's efficacy is mostly dependent on an internet connection. The interviewees generally concur that internet connectivity is a motivator for utilising Google Classroom, which is demonstrated when the institution has enough internet access. Yet, returning home will be very difficult. The free service that Google Classroom offers

encourages teacher members to continue using it. This aspect becomes crucial to how effectively Google Classroom is perceived.

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Appendix

Soalan Pengenalan

1. Boleh cikgu perkenalkan diri cikgu.. Nama, Umur, Pengalaman kerja, Kelayakan akademik dan subjek yang cikgu mengajar?
2. Adakah cikgu menggunakan Teknologi Google Classroom dan jika ia, Berapa lama cikgu mengajar dengan menggunakan teknologi Google Classroom?
3. Cikgu telah mengajar menggunakan teknologi Google classroom di sekolah ini selama tempoh yg cikgu telah terangkan. Boleh ceritakan sedikit pengalaman cikgu sepanjang mengajar menggunakan Teknologi Google Classroom? Berkesan, susah, mudah? Kenapa cikgu kata begitu?
4. Jika dibandingkan dengan pelbagai jenis multimedia yang lain, seperti platform Microsoft dan sebagainya, adakah cikgu masih percaya dan ingin meneruskan penggunaan Google Classroom?
5. Bagi cikgu penting atau tidak Google Classroom ini di dalam melakukan pengajaran. Ianya membantu cikgu?

Soalan Transisi

1. Sepanjang mengajar dengan menggunakan teknologi Google Classroom, pernahkah cikgu mengikuti kursus atau training penggunaan Google Classroom ini?
2. Adakah cikgu menghadapi masalah dalam mengaplikasikan teknologi Google Classroom di dalam pengajaran yang di jalan kan?
3. Pada pendapat cikgu, mudah atau tidak untuk mengajar dengan menggunakan teknologi Google Classroom
4. Apakah cabaran utama sepanjang menggunakan teknologi Google Classroom di dalam pengajaran ?
5. Apa pandangan cikgu tentang penggunaan Teknologi Google Classroom ini?
6. Adakah pihak pentadbir sekolah seperti Jabatan ICT membantu dan menyokong cikgu di dalam penggunaan Google Classroom ini?

Soalan Kunci

1. Apakah elemen atau penambahbaikan yang diperlukan oleh cikgu di dalam memahirkan lagi penggunaan teknologi Google classroom ini?
2. Bagaimana dengan cadangan melaksanakan latihan Google Classroom setiap minggu selepas waktu sekolah, adakah cadangan ini penting dan perlu dilaksanakan?
3. Adakah ianya masih relevan penggunaan Google Classroom memandangkan pembelajaran secara atas talian telah berkurangan dan lebih kepada pembelajaran secara bersemuka?
4. Adakah penggunaan manual pengajaran Google Classroom berupaya memudahkan guru terhadap penggunaan Google classroom?
5. Adakah penggunaan manual ini dapat meningkatkan motivasi guru?
6. Selain daripada penggunaan manual, apakah cadangan untuk meningkatkan lagi keberkesanan penggunaan Google Classroom ini?