ISSN: 2289-7844 | e-ISSN: 0127-9750
DOI: https://doi.org/10.37134/jictie.vol11.2.6.2024

Journal of ICT in Education (JICTIE)
Volume 11, Issue 2, Pages 66-76, 2024

Research Article

Digital Divide: Facilitating Conditions and Usage of Google Classroom for Teachers in Rural and Urban Secondary Schools in Malaysia

Phoebe Soong Yee Yap[1], Priscilla Moses[2*], Phaik Kin Cheah[1], Mas Nida Md Khambari[3], Su Luan Wong[3], Fu-Yun Yu[4]

[1]*Faculty of Arts and Social Science, Universiti Tunku Abdul Rahman, Perak, Malaysia; phoebeyap0498@gmail.com, cheahpk@utar.edu.my*
[2]*Faculty of Creative Industries, Universiti Tunku Abdul Rahman, Selangor, Malaysia; priscilla@utar.edu.my*
[3]*Faculty of Educational Studies, Universiti Putra Malaysia, Selangor, Malaysia; khamsnida@upm.edu.my; suluan@upm.edu.my*
[4]*Institute of Education, National Cheng Kung University, Tainan, Taiwan; fuyun.ncku@gmail.com*

Received: 25 July 2024; Revised: 6 September 2024; Accepted: 2 October 2024; Published: 15 October 2024

**corresponding author*

Abstract

Online teaching and learning have caused many students and teachers with unprecedented challenges, leading to a phenomenon known as the digital divide, which is the disparity between individuals who have access to Information and Communication Technologies (ICT) and those who do not. Therefore, this study aims to investigate the significant difference in facilitating conditions (network connection, technical issues, school infrastructure) and usage of Google Classroom for teachers in rural and urban teachers. In this study, 395 responses were collected from secondary school teachers through an online survey, that included demographic information and 22 survey items. Descriptive statistics and *t*-test analysis were used to analyze the data. Findings found that there are significant differences in technical issues and usage of Google Classroom for teachers in rural and urban schools. This research offers valuable insights for educational stakeholders especially the schools and government, to provide tailored technical support and ongoing training to the teachers in Malaysia, especially those in rural areas. By strategically allocating educational resources and executing policies that cater to the varying needs of these different environments, it is believed that policymakers and educational stakeholders can bridge the digital divide and create educational equity nationwide.

Keywords: digital divide, facilitating conditions, Google Classroom, rural and urban schools, Malaysia

INTRODUCTION

The advent of new technology has fundamentally transformed the educational landscape, especially with the coronavirus disease strike in 2019 (COVID-19). Studies reported that online studies have caused many students and teachers with unprecedented challenges, thus, leading to a phenomenon known as the digital divide (Ahmad et al., 2019; Van De Werfhorst et al., 2022). The digital divide is defined as the disparity between individuals who have access to ICT and those who do not (Van Dijk, 2017). In this context, the digital divide is conceptualized as the teachers' access to ICT and those who lack it.

Access to ICT often varies between rural and urban areas due to population density. Urban areas commonly exhibit higher densities, more advanced education, and diverse economic activities beyond agriculture, and as a result, offer better business ventures and working opportunities along with improved community facilities compared to rural areas (Mahmoud et al., 2022). According to Wood (2023), schools in urban areas tend to have better educational facilities than those in rural areas. This disparity can lead to reduced access to digital resources and educational tools, aggravating the digital divide between urban and rural schools. Recognizing the cruciality and importance of bridging the gap in digital access has been consistently emphasized by the Ministry of Education Malaysia (2013). The Ministry acknowledges the value of online learning in the current era, regardless of geographic location, especially in the wake of the pandemic, and has adopted Google Classroom to ensure that education can be accessed easily.

Google Classroom is one of the widely adopted educational platforms that can be accessed by all users (Shak et al., 2022). However, several studies reported similar challenges during the integration of Google Classroom in teaching and learning (Abdin & Saputro, 2020; Moses et al., 2022). Therefore, if the problems still exist, the teachers in rural areas will continue to struggle to integrate new technologies into the lessons, thus limiting their abilities and opportunities to improve education quality. Hence, there is an urgent need to investigate the facilitating conditions and usage of Google Classroom among teachers in rural and urban schools. Therefore, this study seek to fulfil two primary research objectives as follows:

1. To investigate the significant difference in facilitating conditions (network connection, technical issues, school infrastructure) for teachers in rural and urban schools in the use of Google Classroom.
2. To determine the significant difference in usage of Google Classroom among teachers in rural and urban schools.

Research Questions

1. Is there a significant difference in facilitating conditions (network connection, technical issues, school infrastructure) for teachers in rural and urban schools on the use of Google Classroom?
2. Is there a significant difference in the usage of Google Classroom among teachers in rural and urban schools?

Hypotheses

H1: There is a significant difference in network connection for teachers in rural and urban schools on the use of Google Classroom.
H2: There is a significant difference in technical issues for teachers in rural and urban schools on the use of Google Classroom.
H3: There is a significant difference in school infrastructure for teachers in rural and urban schools on the use of Google Classroom.
H4: There is a significant difference in the usage of Google Classroom among teachers in rural and urban schools.

Subsequently, the researchers provide a literature review of past studies related to the digital divide in education, followed by the theoretical framework to support the current study. Next, the researchers explained the methodology of the study and the results found through the analysis. Lastly, the discussion and conclusion with implications and recommendations were discussed.

LITERATURE REVIEW

Digital Divide in Technology

The digital divide also known as digital inequality, refers to the gap between the communities that live in urban areas and rural settlements (Steele, 2019). According to Van Dijk (2017), the digital divide can be explained using three levels: access to technology, the ability to use technology, and the outcomes of the technology use. Firstly, access to technology pertains to the physical access of personal computers and the Internet among the communities, influenced by factors such as income, education, age, and gender (Van Dijk, 2017). Once physical access is obtained, individuals also require digital literacy or skills to effectively use the technology. This is followed by technology usage, which can be measured by the amount of time spent using technology and the number of applications that are used in daily life (Van Dijk, 2017).

Disparities Between Urban and Rural Schools

Studies by Chuah and Mohamad (2020), Daar and Nasar (2021), Junaidi and Hashim (2021), and Saidi et al. (2022) have shown that there are disparities between rural and urban areas during the implementation of online teaching and learning. According to Chuah and Mohamad (2020), a noteworthy concern among the 50 teachers investigated in Malaysia was the limited Internet and computing access in rural areas where technological resources or capabilities were insufficient for the teachers to implement remote teaching. Besides, a qualitative study using a phenomenological approach conducted by Daar and Nasar (2021) revealed that domicile locations and lack of educational support infrastructure access hindered teachers from implementing online lessons effectively. This aligns with the findings of Junaidi and Hashim (2021), who argued that these issues contribute to educational inequality. Based on these studies, it is evident that there are disparities in technology access between rural and urban schools. Without addressing these disparities, the goal of achieving equity in education, as outlined in the Malaysia Education Blueprint remains a significant challenge to achieve (Ministry of Education Malaysia, 2013).

Implementation of Google Classroom for Online Learning Environments

Since the government implemented Google Classroom in 2019 (Ministry of Education, 2019), all schools have been required to use the application during online learning. Google Classroom offers various benefits, including facilitating teachers' workload through its user-friendly interface and integration with other Google applications (Sudaryani et al., 2023; Hasbullah et al., 2022). However, the effectiveness of Google Classroom is hindered by several facilitating conditions, including Internet connections (Jean et al., 2021; Moses et al., 2022; Tsegba et al., 2024; Zakaria et al., 2021), and the availability of infrastructure (Daar & Nasar, 2021; Kumar et al., 2020). Furthermore, a recent systematic review conducted by Qibtiya et al. (2024) on the use of Google Classroom revealed various challenges such as the digital divide and technical difficulties. Qibtiya et al. (2024) also emphasized that Google Classroom has its own challenges and sufficient technical support is needed to fully realize and make the most of this platform's potential.

Facilitating Conditions Derived from the UTAUT2 Framework

In this study, the researchers used the Unified Theory of Acceptance and Use of Technology 2 (Venkatesh et al., 2012) by focusing on the facilitating conditions and the use of Google Classroom among secondary school teachers. According to Venkatesh et al. (2003), facilitating conditions refer to "individual perceptions of the availability of technology such as knowledge, resources, and opportunities that can remove barriers to using the system". In this study, facilitating conditions refer to the network connection,

technical issues, and school infrastructure for the use of Google Classroom among teachers in rural and urban schools.

A network connection is defined as a measure of the strength of connections formed by a node with other nodes in a network to share resources among individuals (Ventura et al., 2020). In this study, network connection refers to the strength of Internet connectivity such as a poor internet connection during the implementation of Google Classroom in teaching and learning. According to Tahir et al. (2022), the strength and reliability of the network connection influence teachers to effectively use Google Classroom. Next, technical issues refer to the hardware and software issues an individual encounters in online learning, such as glitches, bugs, and complicated interfaces that hinder smooth navigation (Rahman, 2024). Qibtiya et al. (2024) defined it as technical difficulties that the teachers face, such as software glitches while utilizing the system which may interrupt the lessons. In this study, technical issues refer to the hardware and software problems that teachers faced while integrating Google Classroom into teaching and learning, such as tracing files and organizing students' work in Google Classroom. Thus, it is important to resolve this issue to ensure teachers can effectively use Google Classroom for their instructional purposes. School infrastructure is defined as the facilities to support the learning process and help achieve educational goals (Nugroho & Wibowo, 2020). In this study, the school's infrastructure refers to the lack of facilities available in secondary schools for the teachers to utilize. According to Ambarwati et al. (2020), online teaching requires the availability of resources such as Internet access, and easily accessible mobile tools. Therefore, facilitating conditions play a pivotal role as they directly address the necessities that the teachers need to effectively implement online teaching and learning.

While several systematic reviews have explored the subject of Google Classroom in a different context (Sari et al., 2022; Zakaria, 2023), however, there are limited studies that specifically focus on secondary school teachers in Malaysia representing each state and federal territory. Based on the systematic review conducted by Sari et al. (2022), out of the 23 articles reviewed, only one article was published in the Malaysian context by Badiozaman et al. (2022) which adopted a quantitative approach by studying 136 primary and secondary teachers explicitly from Sarawak. On the other hand, Zakaria's review paper (2023) identified 11 articles published between 2018 and 2021 that examine users' perspectives on the implementations of Google Classroom, but mostly focusing on students, with a lack of studies addressing teachers' perspectives (Zakaria, 2023). Moreover, Chuah and Mohamad (2020) recommended a nationwide survey study to be conducted on the disparity between urban and rural schools on the implementation of online learning. Therefore, to address the research gap, the researchers in this study aim to investigate the facilitating conditions and usage of Google Classroom among teachers in rural and urban schools in Malaysia, thereby contributing to a better understanding of how to bridge the digital divide in this educational context. The research framework of this study is illustrated in Figure 1, to examine the significant difference in facilitating conditions (network connection, technical issues, school infrastructure) and usage of Google Classroom for teachers in rural and urban teachers.

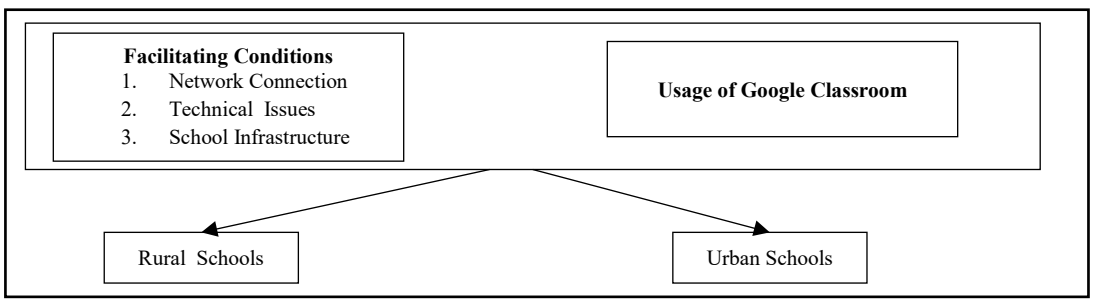

Figure 1: Research framework

METHODOLOGY

This study employed a quantitative method, which involved 395 secondary school teachers in Malaysia to answer the two research questions using a stratified sampling method. A quantitative approach was adopted in this study due to the scarcity of studies that focus on this method particularly exploring Google Classroom, measuring the inequality between rural and urban secondary schools nationwide (Chuah & Mohamad, 2020). The researchers used an online questionnaire using Google Forms to gather the data needed to investigate the significant difference in facilitating conditions (network connection, technical issues, school infrastructure) for teachers in rural and urban schools on the use of Google Classroom, and to determine the significant difference in usage of Google Classroom. The items were formulated by the researchers based on a review of the existing literature and insights gained from secondary school teachers. To ensure content validity, the researchers invited two experts in the field of educational technology and a quantitative approach to validate the research instrument. The first section aimed to gather the respondents' demographic information, which consists of 4 items. The second section comprised 13 items to measure the facilitation conditions (network connections, technical issues, and school infrastructure), and the last section comprised 5 items to measure the usage of Google Classroom. A five-point Likert scale (strongly disagree, disagree, neutral, agree, and strongly agree) was used to measure the items for facilitating conditions, while the usage of Google Classroom was measured on a seven-point Likert scale (never, rarely, occasionally, sometimes, frequently, usually, and every time). Approvals from the relevant authorities were sought by the researchers before the data collection.

A pilot test was conducted with 31 secondary school teachers before the actual study to ensure the clarity and reliability of the instrument items. In this study, the researchers employed both Cronbach's Alpha (α) and McDonald's Omega (ω) to assess the reliability of the questionnaire. Hayes and Coutts (2020) recommended to use ω, because α is influenced by the number of items in the questionnaire. As mentioned by Hayes and Coutts (2020), "if the number of items is large, the α could be large even though the intercorrelation between the items is small". This is also supported by Sidek et al. (2019), claimed that Cronbach is biased, proposing McDonald's Omega as an alternative. However, the researchers adopted both methods to assess internal consistency. As depicted in Table 1, all dimensions were above the acceptable value of Cronbach's alpha and McDonald's Omega, 0.70. Kalkbrenner (2021) deemed Cronbach's alpha values ranging from .70 to .84, and McDonald's Omega values ranging from .64 to .80 as acceptable, proving that the internal consistency of the research instrument used in this study is robust. Descriptive statistics and independent samples *t*-tests were adopted to analyze and report the data.

Table 1: Reliability statistics of the variables

Variable	Cronbach's Alpha		McDonald's Omega		Number of Items	
	Pilot Test *n* = 31	Actual Test *n* = 395	Pilot Test *n* = 31	Actual Test *n* = 395	Pilot Test *n* = 31	Actual Test *n* = 395
Network Connection	.864	.835	.888	.871	4	4
Technical Issues	.785	.850	.777	.848	5	5
School Infrastructure	.910	.896	.927	.896	4	4
Google Classroom Usage	.975	.948	.976	.949	5	5

RESULTS AND DISCUSSION

Demographic Information

The demographic information collected from the respondents included gender, age group, years of teaching experience, and areas of school (Table 2). In this study, 395 responses were collected from

secondary school teachers. The respondents were 94 (24.1%) male and 300 (75.9%) female teachers. Participation is unevenly distributed due to gender disparity in the teaching profession, as the profession is largely female-dominated in Malaysia (Salahudin et al., 2021). For the age group distribution, 79 (20.0%) of the respondents were 25 to 35 years old, 183 (46.3%) were 36 to 45 years old, 104 (26.3%) were 46 to 55 years old, and 29 (7.3%) were above 56 years old. Hence, most respondents who participated in this study were between 36 and 45 years old. As for the years of teaching experience, 112 (28.4%) teachers have above 21 years of working experience, followed by 111 (28.1%) teachers with 11 to 15 years of working experience, 89 (22.5%) teachers with under 10 years of working experience, and 83 (21.0%) teachers with 16 to 20 years of working experience. Based on the geographical locations, 175 (44.3%) teachers were from rural areas, while 220 (55.7%) teachers were from urban areas. Thus, the majority of the respondents who participated in this study were from urban schools since there are more urban schools in Malaysia compared to rural schools (Ministry of Education Malaysia, 2020).

Table 2: Demographic information

	Measure	Frequency (*f*)	Percent (%)
Gender	Male	95	24.1
	Female	300	75.9
Age group	25 – 35	79	20.0
	36 – 45	183	46.3
	46 – 55	104	26.3
	56 and above	29	7.3
Years of teaching experience	Under 10	89	22.5
	11 – 15	111	28.1
	16 – 20	83	21.0
	21 and above	112	28.4
Area	Rural	175	44.3
	Urban	220	55.7

Findings from the *t*-test

To determine the digital divide existences among secondary school teachers, independent sample *t*-tests were conducted to investigate the significant difference in facilitating conditions (network connection, technical issues, school infrastructure), and usage of Google Classroom for teachers in rural and urban schools.

Table 3: Descriptive statistics

Variables	Area of School	Mean	Std. Deviation
Network Connection	Rural Area	3.129	0.890
	Urban Area	3.105	0.899
Technical Issues	Rural Area	2.839	0.789
	Urban Area	3.003	0.803
School Infrastructure	Rural Area	4.204	0.974
	Urban Area	4.075	1.101
Usage of Google Classroom	Rural Area	3.342	1.381
	Urban Area	3.858	1.335

Based on Tables 3 and 4, for the network connection, the results showed that there was no significant difference in scores for the rural (M = 3.129, SD = 0.890), and urban (M = 3.105, SD = 0.899; t (393) = -.265, p = .791, two-tailed) schools on the use of Google Classroom. Thus, the H1 is not supported. For the technical issues for teachers on the use of Google Classroom, the results showed that there is a significant difference in scores for rural (M = 2.839, SD = 0.789), and urban schools (M = 3.003, SD = 0.803; t (393) = 2.030, p = .043, two-tailed). Hence, the H2 is supported. For the school infrastructure on

the use of Google Classroom, the results showed that there is no significant difference in scores for rural (M = 4.204, SD = 0.974), and urban schools (M = 4.075, SD = 1.101; t (388.59) = -1.236, p = .217, two-tailed). Therefore, the H3 is not supported. Lastly, for the Google Classroom usage among teachers in rural (M = 3.342, SD = 1.381) and urban schools (M = 3.858, SD = 1.335), the results showed that there is a significant difference (t (393) = 3.762, p < .001, two-tailed). Thus, the H4 is strongly supported.

Table 4: Independent samples *t*-test

		Levene's Test for Equality of Variances		*t*-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	*t*	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Network Connection	Equal variances assumed	.210	.647	-.265	393	.791	-.024	.091	-.202	.154
	Equal variances not assumed			-.265	374.964	.791	-.024	.091	-.202	.154
Technical Issue	Equal variances assumed	.114	.736	2.030	393	.043	.163	.081	.005	.323
	Equal variances not assumed			2.034	376.047	.043	.163	.081	.005	.322
Schools Infrastructure	Equal variances assumed	7.317	.007	-1.219	393	.223	-.129	.106	-.338	.079
	Equal variances not assumed			-1.236	388.587	.217	-.129	.105	-.335	.076
Usage of Google Classroom	Equal variances assumed	.268	.605	3.762	393	.000	.516	.137	.247	.786
	Equal variances not assumed			3.747	367.453	.000	.516	.138	.245	.787

Discussion

Based on the findings, it was empirically found the network connection did not have a significant difference among the teachers in rural and urban schools on the use of Google Classroom. Previous studies found that there was a significant difference in terms of network connection (Chuah & Mohamad, 2020; Junaidi & Hashim, 2021). Teachers in rural areas generally have limited access to network connections, which hinders them from using Google Classroom for teaching and learning (Daar & Nasar, 2021) however, this study was found to be contradicted. This might have stemmed from the initiatives provided by the Telekom Malaysia Berhad (2021) such as free connectivity for more than 1,000 community Internet centres, especially in suburban and rural areas for online learning. Besides, government programs or policies focusing on improving network connections could have successfully targeted rural schools which helped to bridge the connectivity gap. Furthermore, technological advancements in wireless technology and networking equipment would have made it more efficient to deploy reliable connections for the use of Google Classroom even in remote areas.

Interestingly, the researchers found that there is a significant difference in technical issues for teachers in rural and urban schools with the use of Google Classroom. This is supported by the study conducted by Wood (2023). In this current study, the researchers found that secondary school teachers faced technical issues in terms of access, performance, and compatibility problems such as accessing the hardware, problems tracing files in Google Classroom, difficulties in organizing students' work in Google Classroom, difficulties in marking students' work online, and hard to mark students' work using a small phone. The findings show that the mean value of the rural area is lower as compared to the urban area. This indicates that teachers in rural schools face more technical issues compared to the teachers in urban schools. Teachers in rural schools struggled with issues like difficulties accessing hardware or using

incompatible devices that affected their integration of Google Classroom in teaching and learning. Therefore, educational stakeholders especially the schools and government must acknowledge specifically the problems that rural schools face and provide technical personal assistance or technical experts to assist the teachers in rural areas to resolve technical issues for optimum use of Google Classroom. They can provide tailored or customized technical support and help troubleshoot problems to ensure the smooth use of Google Classroom for teaching. Additionally, technical personal assistance could also offer proactive monitoring via maintenance and updates to optimize teachers' Google Classroom performance by averting upcoming technical issues.

Next, there is no significant difference found in the school infrastructure of the teachers in rural and urban schools on the use of Google Classroom. This could be attributed to the efforts and initiatives of the government. Throughout the years, the government has been allocating funds for upgrading and maintenance across the schools (Ministry of Finance, 2023). For example, RM100 million is allocated to maintain and upgrade the school computer labs, as well as to provide new equipment to facilitate teaching and learning (Official Portal of Ministry of Finance, 2023).

Nevertheless, there is a significant difference in the usage of Google Classroom among teachers in rural and urban schools. Taufik and Effendy (2022) contributed viewpoints indicating that both teachers in rural and urban schools encountered different kinds of challenges during the implementation of online learning. For instance, teachers in rural schools find it difficult to integrate Google platforms in online teaching, thus switching to WhatsApp to communicate with students; while urban school teachers encounter the challenges of creating interactive slides for the lessons to be more engaging (Taufik & Effendy, 2022). Based on the results found in this study, the usage of Google Classroom in urban areas is higher as compared to rural areas. Urban teachers use Google Classroom more than rural teachers despite improved network connectivity in rural areas possibly due to cultural factors where they face social obstacles that hinder the integration of technological tools. Urban teachers might have stronger parental and student support systems to utilize online platforms compared to rural environments where the teachers encounter more resistance or unfamiliarity with online learning (Mohamad et al., 2022). Teachers in urban schools could also be more inclined to use Google Classroom in their pedagogical practices due to the higher demand and prominence of technology in urban settings compared to rural areas (Samuri et al., 2016). Therefore, the educational stakeholders must acknowledge the problems that exist in rural and urban schools separately to better identify the problems that the teachers are facing. Besides, when there are limited training opportunities provided for teachers related to digital tools and platforms, it becomes difficult for them to integrate Google Classroom effectively. Zakaria et al. (2021) emphasized the importance of training for teachers to be proficient in using Google Classroom and to motivate them in using the application.

CONCLUSION

In conclusion, the findings of this study highlight the digital divide between rural and urban secondary schools in Malaysia. Given the crucial role of digital tools in 21st-century education, it is imperative to acknowledge the challenges faced by secondary school teachers, especially those in rural areas on the technical issues and usage of Google Classroom. Among the three constructs of facilitating conditions, technical issues emerged as a prominent issue, with secondary school teachers in rural areas facing more access, performance, and compatibility problems as compared to urban schools. Thus, there is a need for the educational stakeholders to provide tailored technical support and ongoing training for the teachers, especially for the teachers in rural areas.

This study highlights several implications of the use of Google Classroom among teachers in rural and urban schools. One of the most prominent findings is the need for policymakers and educational

stakeholders to continuously support teachers with professional development. This helps them develop their knowledge, skills, and expertise, keeping them updated with the latest developments (McChesney & Aldridge, 2019). According to Tai et al. (2022), professional development programs for teachers can improve teacher quality and thereby enhance teaching quality, leading to more meaningful teaching and learning experiences in the era of Education 4.0. Google also offers a website, designated as 'Google for Education', which helps teachers refine and enhance their instructional methods (Sinha, 2021). In addition, teachers can partake in a professional training program provided by Google referred to as 'Google for Education Champions' that certifies teachers as innovators, trainers, and coaches, helping them to improve their skills in Google tools (Google for Education, n.d.).

Furthermore, by addressing the needs of the rural areas, educational stakeholders – including school leaders, policymakers and governments can foster greater community involvement to better understand issues that the teachers face. For example, 'Teach for Malaysia' is a non-profit organization that supports teachers in rural schools and aims to bridge the learning gap between high and low-income communities (The Star News, 2022). Besides, programs like EDUtech Malaysia Roadshow, held in 2023, provide a platform for school leaders, teachers, and policymakers to exchange ideas and share insights on the latest trends in education (Asia Research News, 2023). Partnership programs with NGOs could be a valuable initiative, allowing urban teachers to share their ICT knowledge and skills with teachers in rural schools. By strategically allocating educational resources and executing policies that cater for the varying needs of these different environments, it is believed that policymakers and educational stakeholders can bridge the digital divide and create educational equity nationwide.

This study has certain limitations that need to be addressed. The data was collected solely from secondary school teachers in Malaysia. Besides, the researchers only employed a quantitative method which may be inadequate for the data to be more comprehensive. Therefore, future research could benefit from exploring parental and student support via interviews or focus groups which may offer valuable insights and understanding of any resistance towards the implementation. Besides, forthcoming studies can consider conducting a more rigorous research method by doing mixed method design or longitudinal studies by comparing the results to produce more interpretive findings on the use of Google Classroom.

ACKNOWLEDGMENTS

This research was funded by the Ministry of Higher Education (MoHE), Malaysia through the Fundamental Research Grant Scheme (FRGS/1/2021/SSI0/UTAR/02/2).

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

AUTHOR CONTRIBUTIONS

Phoebe Soong Yee Yap: Conceptualization, Data curation, Formal analysis, Writing - original draft. **Priscilla Moses**: Conceptualization, Formal Analysis, Funding acquisition, Methodology, Supervision, Writing – original draft, reviewing & editing. **Phaik Kin Cheah**: Funding acquisition, Supervision, Writing – reviewing & editing. **Mas Nida Md Khambari**: Funding acquisition, Supervision, Writing – reviewing & editing. **Su Luan Wong**: Funding acquisition, Supervision, Writing – reviewing & editing. **Fu-Yun Yu**: Writing – reviewing & editing.

DECLARATION OF GENERATIVE AI

During the preparation of this work, the authors used ChatGPT to enhance the clarity of the writing. After using ChatGPT, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

DATA AVAILABILITY STATEMENT

Data is available on request from the authors.

REFERENCES

Abdin, Z., & Saputro, T. M. E. (2020). Google Classroom as a Mathematics learning space: Potentials and challenges. *Journal of Physics: Conference Series*, *1567*(2), 1–6. https://doi.org/10.1088/1742-6596/1567/2/022094

Ahmad, N. 'Atikah, Ayub, A. F. M., & Khambari, M. N. (2019). Gender digital divide: Digital skills among Malaysian secondary school. *International Journal of Academic Research in Progressive Education and Development*, *8*(4). https://doi.org/10.6007/ijarped/v8-i4/6692

Ambarwati, R., Harja, Y. D., & Thamrin, S. (2020). The role of facilitating conditions and user habits: A case of Indonesian online learning platform. *Journal of Asian Finance, Economics and Business*, *7*(10), 481–489. https://doi.org/10.13106/jafeb.2020.vol7.no10.481

Asia Research News. (2023). *EDUtech Malaysia 2023*. https://www.asiaresearchnews.com/content/edutech-malaysia-2023

Badiozaman, I. F. A., Leong, H. J., & Wong, W. (2022). Embracing educational disruption: a case study in making the shift to a remote learning environment. *Journal of Applied Research in Higher Education*, *14*(1), 1–15. https://doi.org/10.1108/JARHE-08-2020-0256

Chuah, K.-M., & Mohamad, F. S. (2020). Emergency remote teaching scenarios, struggles and soundboxes: A case study on Malaysian teachers. *Interaction Design and Architecture(s) Journal*, 13–28. https://ixdea.org/wp-content/uploads/IxDEA_art/46/46_1.pdf

Daar, G., & Nasar, I. (2021). Teachers challenges in the learning process during the COVID-19 pandemic in rural areas. *JINOTEP (Jurnal Inovasi Dan Teknologi Pembelajaran): Kajian Dan Riset Dalam Teknologi Pembelajaran*, *8*(2), 186–193. https://doi.org/10.17977/um031v8i22021p186

Google for Education. (n.d.). *Google for education champions*. Retrieved September 5, 2024, from https://edu.google.com/intl/ALL_us/for-educators/communities/?%7B%7Bmy.utm_code%7D%7D

Hasbullah, N. H., Rahmatullah, B., Mohamad Rasli, R., Khairudin, M., & Downing, K. (2022). Google Meet usage for continuity and sustainability of online education during pandemic. *Journal of ICT in Education*, *9*(2), 46–60. https://doi.org/10.37134/jictie.vol9.2.4.2022

Hayes, A. F., & Coutts, J. J. (2020). Use omega rather than Cronbach's alpha for estimating reliability. But…. *Communication Methods and Measures*, *14*(1), 1–24. https://doi.org/10.1080/19312458.2020.1718629

Jean, L. H., Sidhu, G. K., Yean, L. F. Y., & Chin, C. S. (2021). Google Classroom as a teaching and learning tool: Issues and challenges. *Review of International Geographical Education (RIGEO)*, *11*(11), 171–177.

Junaidi, Y., & Hashim, H. (2021). A review on the implementation of remote teaching: Highlighting the experience of primary school ESL teachers. *International Journal of Academic Research in Business and Social Sciences*, *11*(2), 450-460. https://doi.org/10.6007/ijarbss/v11-i2/8560

Kalkbrenner, M. T. (2021). Alpha, omega, and h internal consistency reliability estimates: Reviewing these options and when to use them. *Counselling Outcome Research and Evaluation*, *14*(1), 77–88. https://doi.org/10.1080/21501378.2021.1940118

Kumar, J. A., Bervell, B., & Osman, S. (2020). Google Classroom: Insights from Malaysian higher education students' and instructors' experiences. *Education and Information Technologies*, *25*(5), 4175–4195. https://doi.org/10.1007/s10639-020-10163-x

Mahmoud, Z. A., Nordin, N. A., Dali, M. M., SH, Y. A., Rawashdeh, T. M., & Mahmoud, S. A. (2022). Redefining urban-rural boundaries from the digital disparity perspective. *Planning Malaysia: Journal of the Malaysian Institute of Planners, 20*(5), 438-451. https://doi.org/10.21837/pm.v20i24.1218

McChesney, K., & Aldridge, J. M. (2019). A review of practitioner-led evaluation of teacher professional development. *Professional Development in Education*, *45*(2), 307–324. https://doi.org/10.1080/19415257.2018.1452782

Mohamad, A. I., Rahmatullah, B., Ibrahim, L. F. M., Saari, E. M., & Downing, K. J. (2022). Exploring parents' perception of online learning through a systematic literature review. *Borneo International Journal*, *5*(1), 8–15.

Ministry of Education. (2019, July 1). *Kementerian Pendidikan Malaysia: Google Classroom.* MoE. https://www.moe.gov.my/en/pemberitahuan/announcement/google-classroom-gc

Ministry of Education Malaysia. (2013). *Malaysian Education Blueprint 2013-2025 (Preschool to Post-Secondary Education)*.

Ministry of Education Malaysia. (2020). *List of schools*. https://www.moe.gov.my/sekolah-menengah-kebangsaan-harian

Ministry of Finance. (2023). *Budget Speech 2023*. https://belanjawan.mof.gov.my/en/budget2023

Moses, P., Cheah, P. K., Yap, P. S. Y., Khambari, M. N. M., & Wong, S. L. (2022). Behind-the-Scenes: Challenges to integrate Google Classroom in teaching and learning. *30th International Conference on Computers in Education Conference, ICCE 2022 - Proceedings*, *2*, 164–172.

Nugroho, A. A., & Wibowo, U. B. (2020). The influence of school infrastructure on student learning activeness: A research study. *Advances in Social Science, Education and Humanities Research*, *397*, 607–612.

Official Portal of Ministry of Finance. (2023). *Budget 2024: RM1.9 billion to upgrade, maintain schools*. https://www.mof.gov.my/portal/en/news/press-citations/budget-2024-rm1-9-bln-to-upgrade-maintain-schools-pm-anwar

Qibtiya, M., Amaliyah, N., Anindya, F., Fatimah, D., & Tarihoran, N. (2024). The use of Google Classroom in effectiveness in ELT: Systematic review. *Educational Journal: General and Specific Research*, *4*(2~~Juni~~), 282–291. https://adisampublisher.org/index.php/edu/article/view/701

Rahman, S. A. U. (2024, June 20). *Technical issues and their Impact on online learning*. https://www.shiksha.com/online-courses/articles/how-technical-issues-impact-online-learning-blogId-169785

Saidi, N. A., Mohd Radzi, N. A., Saidi, N., Ab Ghaffar, S. F., Hasbollah, H. R., & Ibrahim, M. (2022). Online learning during pandemic COVID-19: An insight from a rural area. *International Journal of Education, Psychology and Counseling*, *7*(46), 707–716. https://doi.org/10.35631/ijepc.746054

Salahudin, S. N., Ramli, H. S., Razak, M. H., Abdullah, M. S., & Masum, A. (2021). Determinants of career success: A case study of male teachers in secondary schools. *Estudios de Economia Aplicada*, *39*(4). https://doi.org/10.25115/eea.v39i4.4167

Samuri, S.M., Abdul Ghani, H., Rahmatullah, B., & Ab Aziz, N. S. (2016). Sistem sokongan keputusan untuk menilai dan memantau prestasi guru: Kajian rintis di SMK Bachok, Kelantan. *Journal of ICT in Education, 3*, 55–72.

Sari, N. M., Khoo, Y. Y., & Zakariya, Z. (2022). Systematic literature review of Google Classroom assisted learning: Effects, strengths and challenges. *Journal of Contemporary Social Science and Educational Studies*, *2*(1), 26–42. https://www.jocss.com/index.php/multidiscipline/article/view/89

Shak, M. S. Y., Hasni, N. A., Abdul Malik, N., & Mohd Tahir, M. H. (2022). The use of Google Classroom among students during the COVID-19 pandemic: A review. *International Journal of Emerging Technology and Advanced Engineering*, *12*(8), 36–44. https://doi.org/10.46338/ijetae0822_05

Sidek, N., Ali, N. A., & Rosman, R. (2019). Internet of things-based smart facilities management services successful implementation instrument development, validity, and reliability. *6th International Conference on Research and Innovation in Information Systems*. https://doi.org/10.1109/ICRIIS48246.2019.9073655.

Steele, C. (2019). *What is the digital divide?* Digital Divide Council. http://www.digitaldividecouncil.com/what-is-the-digital-divide/

Sudaryani, H., Rukmini, D., & Ardiasih, L. S. (2023). Students' perceptions on benefits and challenges in using Google Classroom for online English learning during pandemic COVID-19. *Jurnal Pendidikan Bahasa Inggris Undiksha*, *11*(1), 24–32. https://doi.org/10.23887/jpbi.v11

Tahir, M. H. M., Adnan, A. H. M., Shak, M. S. Y., Shah, D. S. M., & Piaralal, S. D. (2022). Secondary ESL teachers use of Google Classroom during COVID-19 pandemic. *Malaysian Journal of Social Sciences and Humanities (MJSSH)*, *7*(5), e001502. https://doi.org/10.47405/mjssh.v7i5.1502

Tai, M. K., Khalip, M., & Omar, A. K. (2022). Measuring teacher competency for the era of education 4.0 in Malaysian secondary schools. *Asian Journal of University Education*, *18*(4), 966–980. https://doi.org/10.24191/ajue.v18i4.20006

Taufik, M., & Effendy, M. B. (2022). "The absence of student-teacher emotional closeness", rural and urban English teachers' voices during COVID-19 pandemic. *Journal of English Language Teaching and Linguistics*, *7*(1), 43. https://doi.org/10.21462/jeltl.v7i1.707

Telekom Malaysia Berhad. (2021). *TM extends free connectivity to more than 1,000 community centres nationwide*. TM Your Next Is Now. https://www.tm.com.my/news/tm-extends-free-connectivity-to-more-than-1000-communities

The Star News. (2022). *Bridging the learning gap*. The Star News. https://www.thestar.com.my/news/education/2022/09/25/bridging-the-learning-gap

Tsegba, S. T., Fayomi, O. I., & Swande, P. I. (2024). Extent of awareness and utilization of Google Classroom in teaching and learning of agricultural education in Joseph Sarwuan Tarka Uniersity, Makurdi, Nigeria. *Applied Sciences Research Periodicals*, *2*(1), 96–121. https://hspublishing.org/ASRP/article/view/340/284

Van De Werfhorst, H. G., Kessenich, E., & Geven, S. (2022). The digital divide in online education: Inequality in digital readiness of students and schools. *Computers and Education Open*, *3*, 1–15. https://doi.org/10.1016/j.caeo.2022.100100

Van Dijk, J. A. G. M. (2017). Digital divide: Impact of access. In *The International Encyclopedia of Media Effects*. Wiley. https://doi.org/10.1002/9781118783764.wbieme0043

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. In *Quarterly* (Vol. 27, Issue 3).

Venkatesh, V., Thong, J. Y. L., Xu, X., & Walton, S. M. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *Source: MIS Quarterly*, *36*(1), 157–178.

Ventura, R. B., Richmond, S., Hasanyan, J., & Porfiri, M. (2020). On the relationship between network connectivity and group performance in small teams of humans: Experiments in virtual reality. *Journal of Physics: Complexity*, *1*(2), 1–15. https://doi.org/10.1088/2632-072X/ab916f

Wood, R. M. (2023). A review on education differences in urban and rural areas. *International Research Journal of Educational Research*, *14*(2), 1–3. https://doi.org/10.14303/2141-5161.2023.254

Zakaria, M., Ahmad, J. H., Bahari, R., Hasan, S. J., & Zolkaflil, S. (2021). Benefits and challenges of adopting Google Classroom in Malaysian university: Educators' perspectives. *Ilkogretim Online: Elementary Education Online, 20*(1), 1296–1304. https://www.bibliomed.org/mnsfulltext/218/218-1611664617.pdf?1708562890

Zakaria, M. I. (2023). A systematic review of Google Classroom in Mathematics education. *International Journal of Academic Research in Progressive Education and Development*, *12*(1). https://doi.org/10.6007/ijarped/v12-i1/16535