

# Highlights and Challenges Online Learning During COVID-19 Pandemic in Malaysia

Norhafizah Azhar<sup>1</sup>, M. Khalid M. Nasir<sup>2</sup> & Fazlina Nadrah Ismail<sup>3</sup>

Faculty of Education, Universiti Kebangsaan Malaysia (UKM)  
Email: norhafizah9572@gmail.com, fazlina.nadrah@yahoo.com  
Corresponding Author Email: mdkhalid@ukm.edu.my

To Link this Article: <http://dx.doi.org/10.6007/IJARPED/v12-i4/19509> DOI:10.6007/IJARPED/v12-i4/19509

Published Online: 26 December 2023

## Abstract

Teachers and lecturers have opted for online learning classes to mitigate the transmission of COVID-19 and prevent pupils from falling behind in their studies. The shutdown of educational facilities does not impede our ability to persist in acquiring knowledge. Numerous methods exist to continue instructing kids even without professors' physical presence. Teachers produce instructional films and post them to YouTube to enable students to learn anywhere and anytime. Nevertheless, there are challenges associated with managing online education. This review article addresses the problems and challenges faced during the COVID-19 pandemic, including the issue of limited internet connections in rural and inaccessible regions. This paper will also analyze the advantages and disadvantages of online learning experiences for students, educators, and parents during the pandemic

**Keywords:** COVID-19, Online Learning, Challenges, Home-Based Learning.

## Introduction

The effects of the COVID-19 outbreak have not yet subsided, but the learning process will continue to be carried out from home (home-based learning). Online learning is one of the alternatives to continuing learning activities (Nasir et al., 2018) This epidemic has stimulated the world towards developing online teaching (online learning) to become a fundamental part of the education system and good tolerance for its proper use during and after the COVID-19 outbreak (Anugrahana, 2020). Using an online learning system is one of the efforts that can help solve problems and make it easier for students to access learning materials (Elfadni & Abdelrahman, 2020; Writers, 2020). It requires internet connectivity, accessibility, and flexibility (Firman, 2020).

## Issues And Challenges During Covid-19

### *Lack of Access to Internet Facilities*

The repercussions of the COVID-19 pandemic persist; however, education will persist with implementing home-based learning. Online learning serves as a viable alternative for

continuing educational activity. The global pandemic has prompted the integration of online teaching (online learning) as an essential component of the education system, with a strong acceptance of its practical utilization both during and after the COVID-19 outbreak (Anugrahana, 2020). An online learning system is a viable solution to facilitate students' access to learning resources and address various challenges (Elfadni & Abdelrahman, 2020; Writers, 2020). Internet connectivity, accessibility, and flexibility are prerequisites (Firman, 2020).

The epidemic has also had an impact on the education sector. Consequently, a directive was issued to shut down all schools and institutions, necessitating online education to ensure uninterrupted student learning. According to Elfadni and Abdelrahman (2020), there are five crucial lessons from this worldwide crisis. These lessons include: 1. recognizing the significance of online platforms; 2. understanding the value of international mobility and partnerships in higher education; 3. acknowledging the role that nature can play in the higher education experience; 4. appreciating the importance of keeping up with modern technology; and 5. recognizing the value of community.

The main effects of COVID-19 on education in Malaysia are that students find it challenging to understand what their teachers are saying and that their homes are accessible places for distraction. This results from the closure of all schools and higher institutions to mitigate the spread of the epidemic (Rahim, 2020). Consequently, the Ministry of Education Malaysia (MOE) has released a manual for home teaching and learning to aid teachers in effectively adopting online education based on students' and teachers' needs and capabilities.

The Ministry of Education (MOE) recommends three techniques for doing online learning. Firstly, devices and internet connectivity allow students to acquire knowledge in real-time. This method can utilize applications such as Google Meet or Zoom. Offline learning encompasses using physical resources such as textbooks, modules, or other educational materials that teachers distribute. Off-site learning refers to learning in other settings, such as community centers or temporary evacuation shelters designated during catastrophes or epidemics (Ministry of Education Malaysia, 2020).

Despite the apparent simplicity of the online learning process, its implementation still needs to be improved for teachers, lecturers, students, and parents alike. Teachers' failure to utilize interactive teaching and learning materials may lead to a loss of students' concentration during online learning (Hamat et al., 2020). Students need help with self-control, appropriateness of educational resources, availability of internet connection, and the absence of a conducive learning environment while alone at home (Bao, 2020). During their initial experience with online learning, students are susceptible to experiencing feelings of loneliness due to a perceived sense of isolation from society. This phenomenon can create a novel and unfamiliar setting for the online learning community (Taeho & Richardson, 2015).

This review paper addresses explicitly the various problems and difficulties encountered during the COVID-19 pandemic. This essay will address the benefits and drawbacks of online learning for kids, instructors, and parents during the pandemic.

### ***Teachers' Readiness and Skills***

Educators and lecturers should also enhance their knowledge of pedagogy, online assessment, and information technology. Ghavifekr and Rosdy (2015) assert that teachers' preparedness and technological proficiency greatly influence technology usage in education. According to Winzenried, Dalgarno, and Tinkler (2010), instructors who have completed

Information and Communications Technology (ICT) courses are more proficient in using technology in the classroom than those who have yet to.

ICT is a tool widely utilized in the modern world, and students are training to use it in their education in the twenty-first century. Gilakjani (2013) asserts that using technology in the classroom can support students' self-expression, the development of communication skills, and the creation of instructional materials. The integration of ICT in education is also an excellent opportunity for educators and students to learn through technology. With the shift from in-person to virtual instruction (Soni, 2020), educators must leverage their technology expertise to facilitate remote learning.

Even with this, some educators could find it challenging to employ technology if unfamiliar. For instance, Irish educators who needed more confidence avoided utilizing ICT. Similar cases have occurred in Canada, where some educators were reluctant to employ ICT for fear of embarrassing themselves in front of pupils who were more tech-savvy than they were (Hennessy et al., 2005). Therefore, teachers should take training courses to learn about ICT in the teaching and learning process to apply it confidently.

### **The Benefits Of Online Learning During Covid-19**

#### ***Online learning offers a high degree of flexibility.***

The COVID-19 pandemic has catalyzed a paradigm shift towards online learning in the global education sector. Rejecting this option becomes challenging due to its efficacy in facilitating continued learning and teaching during the pandemic, enabling students to persist in their studies. Many schools are now implementing the delivery of online course content, which includes online student participation and assessment. Online learning enables colleges to maintain and execute their academic schedules, even if students cannot attend in-person sessions, to control the development of the COVID-19 epidemic (Olasile & Emrah, 2020).

Furthermore, online education is experiencing significant growth amid an ongoing epidemic. Amidst a pandemic, this form of learning proves to be a highly effective alternative educational activity (Handarini & Wulandari, 2020). By employing interactive and pragmatic teaching methods, students derive enjoyment (Pujiasih, 2020) and experience a heightened sense of relaxation (Anugrahana, 2020), as online learning proves to be more efficient and comprehensible (Demuyakor, 2020). Moreover, online learning fosters students' responsibility, creativity, discipline, and independence (Ramanta & Widayanti, 2020). Student achievement, through its student-centered approach (Handarini & Wulandari, 2020), promotes self-regulated learning (SLR), requiring students to take an active role in organizing their learning process (Ramanta & Widayanti, 2020).

In addition, online learning offers greater flexibility as students can learn from their homes or any location (Sadikin & Hamidah, 2020). Furthermore, it allows for time-saving benefits. Online learning offers the flexibility to complete tasks at any suitable moment (Anugrahana, 2020). In addition, these learning strategies can enhance students' comprehension of technology utilization (Handarini & Wulandari, 2020) and optimize digital efficiency. In addition, online learning offers the benefit of enhancing students' capacity to learn in a non-traditional setting, particularly for those who are averse to face-to-face classroom instruction (Kareem & Eidan, 2020). Furthermore, students acquire novel experiences associated with this mode of learning (Anugrahana, 2020).

#### ***Enhanced Pedagogy and Acquisition of Knowledge***

Incorporating online learning has enhanced student attainment by employing diverse

methodologies educators employ to deliver instruction (Dhawan, 2020) and enhanced teachers' pedagogical practices (Thamarana, 2016). As stated by Suryaman et al. (2020), numerous research studies have demonstrated that online learning is more efficient for learning and teaching as it reduces time and effort. Teachers are also satisfied as they have enhanced their proficiency in utilizing technology, a feat that would have been unattainable in a conventional classroom setting. Furthermore, most institutions prioritize the development of planning techniques to enhance the effectiveness and excellence of online learning. Dhawan (2020) states that contemporary universities focus on pedagogical approaches prioritizing learning, such as collaborative, case-based, and project-based learning. These forms of education are delivered online.

Moreover, using forums and social media platforms enables teachers to engage in more dynamic interactions with students. Effective communication is essential for achieving success in the process of learning. Akcaoglu and Lee (2018) highlighted that social media platforms like Facebook allow students to engage with teachers by forming groups. These groups serve as supplementary platforms for online teaching and learning activities amidst the Covid-19 pandemic.

### ***Enhanced Student Satisfaction and Increased Self-Directed Learning***

According to the research conducted by Demuyakor (2020), the introduction of online learning programs was highly successful. The majority of the participants in the study expressed their support for this initiative. Additionally, Fitriyan, Fauzi, and Sari (2020) found that 80.27% of students were motivated to engage in online learning amidst the Covid-19 pandemic. In a study conducted by Sadikin and Hamidah (2020), they discovered that most students expressed satisfaction with the flexibility of the online learning implementation. Additionally, he claims that online learning has the potential to foster self-directed learning and inspire students to engage more actively in the learning process. In the words of Handarini and Wulandari (2020), online learning has fostered greater autonomy and motivation among students. The investigation conducted by Krishnapatria (2020) revealed that all students, representing 100% of the sample, actively engage in online learning.

Furthermore, about 96.4% of most students reported having easy access to online learning resources. Additionally, this study revealed that some students preferred online learning due to its alignment with their learning style. These studies demonstrate that online learning exerts a beneficial influence on students. Online learning fosters student autonomy by promoting self-directed study.

In addition, Mukhtar et al. (2020) asserted that two research studies conducted at Dow University of Health Sciences in Karachi and Lahore Medical and Dental College in Lahore have indicated a rise in the adoption of online learning approaches that effectively meet the needs of their students. The study evaluated the viability of online education among students, trainees, and faculty members. Researchers have observed that students with proficient technological skills, adeptness in online platforms, and a willingness to engage in online debates demonstrate positive outcomes while participating in educational networks. Furthermore, the faculty at each university plays a crucial role in ensuring that online learning facilitates distance education, is effectively administered, and enables students to access instructors and educational resources readily. Online learning alleviates administrative burdens, such as physical attendance in lectures and the need for manual attendance tracking.

In addition, Mukhtar et al. (2020) found that students and instructors believed these learning methods could promote student centralization in instances where lockdowns are in effect. Students progressively develop greater autonomy and engage in continuous learning throughout the day. Furthermore, this global health crisis has also allowed educators to acquire expertise in online teaching methods, create alternative methods for evaluating student performance, and apply principles for transferring knowledge. The results of a study by Uma Gaur et al. (2020) show that students and teachers expressed high levels of satisfaction and active engagement in online learning activities during the pandemic.

### **Drawbacks of remote education within the covid-19 pandemic.**

#### ***Families with Low Incomes***

While online education offers numerous advantages during the COVID-19 pandemic, kids, educators, and parents encounter different limitations. Regarding technology, it is worth noting that not all pupils possess smartphones and laptops, particularly those from low-income families (Ramanta & Widayanti, 2020). As a result of the COVID-19 pandemic, numerous parents, particularly those engaged in small-scale trading, experienced a loss of the primary source of financial support. Consequently, some parents need help to purchase internet data allowances for pupils to engage in online education. Moreover, the exorbitant cost of high-priced internet data plans significantly hinders students from participating in online learning sessions (Rasmitadila et al., 2020).

Students in higher education institutions frequently rely on the Internet to participate in online classes, which can be particularly challenging for students from low-income backgrounds. Although they have obtained the school financing, more is needed to meet the expenses associated with their studies and daily living fully. Rasmitadila et al. (2020) found that most students from the University of Jambi, Indonesia, reported that they allocate a significant portion of their expenses towards purchasing internet data packages to participate in video conferencing-based learning. This type of learning requires a substantial amount of internet data. On average, students reported spending approximately Rp100,000 (RM29.25) to Rp200,000 (RM58.48) per week, contingent upon their utilization of online educational programs. Moreover, the efficacy of this online learning modality is contingent upon a robust internet connection, posing challenges for students residing in geographically isolated regions (Sadikin & Hamidah, 2020).

#### ***Lack of proficiency and expertise.***

The utilization of technology is experiencing tremendous growth in the 21st century, particularly in the realm of education, and has emerged as an essential requirement in the aftermath of the COVID-19 pandemic. Online learning utilizes technology and online applications, each with distinct functions and interfaces. Hence, the progress of these internet-based apps results in a deficit where not all students and teachers possess the proficiency and expertise to utilize technology (Abdulkareem & Eidan, 2020), impeding seamless learning.

In addition, educators have challenges while utilizing technology to facilitate remote instruction. The study by Mulenga and Marbán (2020) revealed that the variations in clustering for online mathematics learning activities might cause teachers' inadequate proficiency and understanding in utilizing online platforms. Therefore, data shows that online learning also negatively affects students and teachers. Moreover, individual pupils possess varying levels of aptitude and self-assurance, which can lead to discomfort and bewilderment

during the learning process. The insufficient expertise and experience of teachers and students have led to a greater emphasis on exploring the functionalities of the online platform rather than dedicating time to studying lessons.

The teacher's lack of proficiency in managing online learning is also a challenge. According to Lie et al. (2020), teachers need experience implementing online learning. When the COVID-19 pandemic began to spread rapidly, the government directed school closures, posing a challenge for teachers transitioning to online home-based learning. According to the researchers, certain teachers must distribute assignments to students on the final day before school closures. Teachers also reported the necessity of contacting kids who lacked internet connectivity or smartphones. Ultimately, most students need to complete the duties imposed by their teachers.

### ***Insufficient supervision***

Teachers need help in online learning as they need direct monitoring of students' activities during the learning process. Therefore, teachers cannot ascertain if students are attentive to their instruction. Based on Sadikin and Hamidah's (2020) research, students tend to daydream more during online classrooms than in traditional classes. Moreover, the absence of instructor supervision during online learning exacerbates the decrease in students' academic performance compared to traditional in-person classroom learning (Sadikin & Hamidah, 2020). The training and assignments provided are beyond the typical learning experience, leading students to experience a sense of burden (Ramanta & Widayanti, 2020) and stress related to online assignments (Pujiasih, 2020).

In addition, students encountered challenges comprehending their assignments due to the absence of direct communication with the instructor and inadequate explanations provided by certain professors regarding the assignment requirements. A study by Dhawan (2020) showed that most students prefer a two-way interaction approach when carrying out tasks. They prefer this interaction because they value the opportunity to get explanations and observe examples from educators, particularly in practical assignments. However, pandemic breakouts have posed challenges for students in their online learning, particularly in independently completing practical assignments. Online information can often be overly theoretical and fail to offer optimal instruction for students in their learning process. According to Dhawan's (2020) study, students reported that online learning diminishes their willingness to collaborate on group assignments and frequently encounters technological difficulties, significantly hindering their progress.

In addition, most students exhibit greater motivation and engagement in traditional classroom instruction than online learning. As stated by Adnan and Anwar (2020), the majority of students, about 71.4%, exhibit higher levels of motivation in traditional classroom settings compared to online learning.

### ***Insufficient network infrastructure***

Additionally, significant obstacles to implementing online learning are the need for network infrastructure and appropriate online platforms that possess the necessary functionality to integrate with existing Learning Management Systems (LMS) (Uma Gaur et al., 2020). University students are provided with an account to access LMS that the university registers. This access enables them to receive teaching materials readily, unlike pupils in secondary and primary schools who need a platform to access educational resources. Additional drawbacks of this online learning approach encompass the absence of proficient IT personnel, resulting



in escalated expenses, time limitations, deficient computer proficiency among pupils and educators, insufficient infrastructure, and inadequate resources.

Inadequate internet coverage and the utilization of obsolete devices can also hinder the effectiveness of online learning. According to Adnan and Anwar (2020), their research demonstrates that online learning is ineffective in impoverished nations like Pakistan. This ineffectiveness is because most students in these countries need help accessing the Internet due to technical and financial constraints. In addition, Lie et al. (2020) reported that a survey by the Indonesia Internet Providers Association (APJII) 2018 revealed that 64.8% of the population in Central Java, Indonesia, has complete internet access. However, certain rural areas outside Java still need electricity and Internet access. The COVID-19 pandemic has significantly affected human capital growth in Indonesia, particularly in distant areas where students lack internet connection to participate in online programs. Teachers outside the Central Java region had to personally visit students' homes to facilitate access to the Internet and provide them with digital gadgets, owing to their limited internet availability.

Moreover, the shift from a traditional classroom setting to a residential environment leads to isolation, stress, diminished concentration, decreased peer interaction, and disruptions from family members as classes progress. These factors are the primary causes for the need for improvement in academic performance among students in online learning. Moreover, the present state of growing apprehension pertains to the well-being of pupils, as the excessive and uninterrupted use of computers leads to fatigue and dizziness (Pujiasih, 2020). Furthermore, the need for more social connection and conversation in physical settings leads to passive learning among pupils.

## **Conclusion**

This review paper examines the obstacles, benefits, and drawbacks of online learning amidst the Covid-19 pandemic. Despite the challenges posed by the abrupt shift to online learning, teachers are more motivated to explore various technological tools for educational purposes. Online learning has been utilized as an educational method during the COVID-19 pandemic, resulting in enhanced student performance (Dhawan, 2020) and the development of teachers' technological proficiency (Suryaman, 2020). Nevertheless, despite the favorable effects of online learning during the COVID-19 pandemic, there were adverse consequences (Febrianto et al., 2020). Instances that can hinder the effectiveness of online learning include teachers' deficiency in ability and knowledge (Mulenga & Marbán, 2020), inadequate internet coverage, and the utilization of obsolete gadgets (Adnan & Anwar, 2020), as well as the absence of support from low-income parents (Pratama & Firmansyah, 2021).

Online schooling offers advantages, particularly amid the Covid-19 pandemic. Today, online learning has transitioned from an optional choice to a vital necessity. This study also highlighted the drawbacks and obstacles of online learning. Furthermore, responsible parties must take immediate action to address these difficulties, ensuring that they are ready and that the learning and teaching process may proceed uninterrupted, notwithstanding the closure of schools and institutions. The responsible parties must undertake various initiatives to implement Home-Based Learning through online platforms, enabling all students to engage in their studies actively and preventing any student from being excluded. However, numerous areas still require enhancement to ensure uninterrupted implementation of online learning, particularly regarding technological advancements and infrastructure. Thus, this review paper highlights several positive and negative issues contributing to the literature. At the same time, it may alarm stakeholders in the particular field.

## References

- Abdulkareem, T. A. & Eidan, S. M. (2020). Online Learning for Higher Education Continuity (during Covid-19 Pandemic): The Challenges, Advantages, Disadvantages and How to Overcome. *International Journal of Youth Economy* 4(2), 125–134. DOI: 10.18576/ijye/040206.
- Adedoyin, O. B. & Soykan, E. (2020). Covid-19 Pandemic and Online Learning: The Challenges and Opportunities. *Interactive Learning Environments*. 1-13. DOI: 10.1080/10494820.2020.1813180.
- Adnan, M. & Anwar, K. (2020). Online Learning Amid The COVID-19 Pandemic: Students' Perspectives. *Journal of Pedagogical and Psychology*, 2(1), 45–51. DOI: <http://www.doi.org/10.33902/JPSP.2020261309>.
- Akcaoglu, M., & Lee, E. (2018). Using Facebook groups to support social presence in online learning. *Distance Education*, 39(3), 334–352. <https://doi.org/10.1080/01587919.2018.1476842>.
- Anugrahana, A. (2020). Hambatan, Solusi dan Harapan: Pembelajaran Daring Selama Masa Pandemi Covid-19 Oleh Guru Sekolah Dasar. *Jurnal Pendidikan dan Kebudayaan*, 10(3), 282–289.
- Bao, W. (2020). COVID-19 and online teaching in higher education: A case study of Peking University. *Human Behavior and Emerging Technologies*. <https://doi.org/10.1002/hbe2.191>.
- Bozkurt, A. & Sharma, R. C. (2020). Emergency remote teaching in a time of global crisis due to Corona Virus pandemic. *Asian Journal of Distance Education*, 15(1), i–iv.
- Demuyakor, J. (2020). Coronavirus (COVID-19) and Online Learning in Higher Institutions of Education: A Survey of the Perceptions of Ghanaian International Student in China. *Online Journal of Communication and Media Technologies*, 10(3), e202018. DOI: 10.29333/ojcm/8286.
- Dhawan, S. (2020). Online learning: A panacea in the time of COVID-19 crisis. *Journal of Educational Technology Systems*, 49(1), 5–22.
- Di Pietro, G., Biagi, F., Costa P., Karpiński Z. & Mazza, J. (2020). *The Likely Impact of Covid-19 On Education: Reflections Based On the Existing Literature and Recent International Datasets*, EUR 30275 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-19937-3. DOI:10.2760/126686, JRC121071.
- EDUP2083 Teknologi dan Media Pengajaran (AUTISME). (1 July, 2019). *Konsep dan Jenis-Jenis Pembelajaran dalam Talian*. Retrieved from <https://edup-2083.blogspot.com/2019/07/konsep-dan-jenis-jenis-pembelajaran.html>
- Elfadni, M., & Abdelrahman, M. (2020). The Positive Impact of Coronavirus Pandemic on Lifelong Learning. *Asian Journal of Research in Education and Social Sciences*, 2(3), 117–124.
- Febrianto, P. T., Mas'udah, S. & Megasari, L. A. (2020). Implementation of Online Learning during the Covid-19 Pandemic on Madura Island, Indonesia. *International Journal of Learning, Teaching and Educational Research*, 19(8), 233–254. DOI: <https://doi.org/10.26803/ijlter.19.8.13>.
- Firman, S. (2020). Pembelajaran Online di Tengah Pandemi Covid-19. *Indonesia Journal of Education Science (IJES)*, 2(2), 81–89.
- Fitriyan, Y., Fauzi, I. & Sari, M. Z. (2020). Motivasi Belajar Mahasiswa Pada Pembelajaran Daring Semasa Pandemi Covid-19. *Jurnal Kependidikan: Jurnal Hasil Penelitian dan*



- Kajian Kepustakaan di Bidang Pendidikan, Pengajaran dan Pembelajaran* 6(2), 165-175.  
DOI: <https://doi.org/10.33394/jk.v6i2.2654>.
- Ghavifekr, S. & Rosdy, W.A.W. (2015). Teaching and learning with technology: Effectiveness of ICT Integration in Schools. *International Journal of Research in Education and Science (IJRES)*, 1(2), 175-191.
- Gilakjani, A. P. (2013). Factors contributing to teachers' use of computer technology in the classroom. *Universal Journal of Educational Research*, 1(3), 262-267.
- Hamat, M., Mahlan, S. B., & Ch'ng, P. E. (2020). Adaptasi pengajaran dan pembelajaran secara maya dalam kebiasaan baharu semasa pandemik covid-19. 23–30.
- Handarini, O. I. & Wulandari, S. S. (2020). Pembelajaran Daring Sebagai Upaya Study from Home (SFH). *Jurnal Pendidikan Administrasi Perkantoran (JPAP)* 8(3), 496-503.
- Hennessy, S., Ruthven, K., & Brindley, S. (2005). Teacher perspectives on integrating ICT into subject teaching: Commitment, constraints, caution, and change. *Journal of Curriculum Studies*, 37(2), 155–192. DOI: 10.1080/0022027032000276961.
- Krishnapatria, K. (2020). From 'lockdown' to letdown: Students' perception of e-learning amid the COVID-19 outbreak. *ELT in Focus*, 3(1), 1–8, DOI: 10.35706/eltinf.v3i1.3694.
- Lie, A., Tamah, S. T., Gozali, I., Triwidayati, K. R., Utami, T. S. D., & Jemadi, F. (2020). Secondary School Language Teachers' Online Learning Engagement During the Covid-19 Pandemic in Indonesia. *Journal of Information Technology Education: Research*. Vol.19. 803-823
- Ministry of Education Malaysia. (2020). Manual pengajaran dan pembelajaran di rumah (PdPR).
- Mukhtar, K., Javed, K., Arooj, M. & Sethi, A. (2020). Advantages, Limitations, and Recommendations for online during COVID-19 pandemic era. *Pakistan Journal of Medical Sciences*. Vol.36.
- Mulenga, E. M., & Marbán, J. M. (2020). Prospective Teachers' Online Learning Mathematics Activities in The Age of COVID-19: A Cluster Analysis Approach. *Eurasia Journal of Mathematics, Science and Technology Education*, 16(9), em1872. DOI: <https://doi.org/10.29333/ejmste/8345>.
- Mustapah, J. & Rosli, R. (2021). Tahap kepuasan matematik atas talian semasa pandemik covid-19. *Malaysian Journal of Social Sciences and Humanities*, 6(4), 1-20. <https://doi.org/10.47405/mjssh.v6i4.752>.
- Nasir., M. K. N., Mansor, A. Z., & Rahman, M. J. A. (2018). Measuring Malaysian online university student social presence in online course offered. *Journal of Advanced Research in Dynamical and Control Systems*, 10(12), 1442 – 1446.
- Olasile, B. A. & Emrah, S. (2020). Covid-19 pandemic and online learning: the challenges and opportunities. *Routledge Taylor & Francis Group*.
- Pratama, A. R., & Firmansyah, F. M. (2021). Disengaged, Positive, or Negative: Parents' Attitudes Toward Learning from Home Amid COVID-19 Pandemic. *Journal of Child and Family Studies* 30, 1083-1812, DOI: <https://doi.org/10.1007/s10826-021-01982-8>.
- Pujiasih, E. (2020). Membangun Generasi Emas Dengan Variasi Pembelajaran Online Di Masa Pandemi Covid-19. *Jurnal Karya Ilmiah Guru*, 5(1), 42-48. DOI: 10.51169/ideguru.v5i1.136.
- Rahim, M. S. (8 December, 2020). *Sekolah, institusi pendidikan KPM tutup hingga 17 Disember*. Retrieved from Utusan Malaysia:  
<https://www.utusan.com.my/nasional/2020/11/sekolah-insitutsi-pendidikan-kpm-tutup-hingga-17-disember/>

- Ramanta, D. & Widayanti, F., D. (2020). Pembelajaran Daring di Sekolah Menengah kejuruan Putra Indonesia Malang pada Masa Pandemi COVID-19. *Prosiding Seminar Nasional Bimbingan dan Konseling*. 61-67.
- Rasmitadila, Rusi R. A., Reza, R., Achmad, S., Ernawulan, S., Nurtanto, M., & Anna. R. S. T. (2020). The Perceptions of Primary School Teachers of Online Learning during The Covid-19 Pandemic Period: A Case Study in Indonesia. *Journal of Ethnic and Cultural Studies*. 7(2), 90–109.
- Sadikin, A. & Hamidah, A. (2020). Online Learning in the Middle of the Covid-19 Pandemic. *Jurnal ilmiah Pendidikan Biologi*, 6(2), 214-224. DOI: <https://doi.org/10.22437/bio.v6i2.9759>.
- Soni, V. D. (2020). Global Impact of E-learning during COVID-19.
- Suryaman, M., Cahyono, Y., Muliensyah, D., Bustani, O., Suryani, P., Fahlevi, M., & Munthe, A. P. (2020). COVID-19 Pandemic and Home Online Learning System: Does it Affect the quality of pharmacy school learning? *Syst. Rev. Pharm*, 11, 524-530.
- Taeho, Y., & Richardson, J., C. (2015). An exploratory factor analysis and reliability analysis of the student online learning readiness (SOLR) instrument. *Online Learning Journal*, 19(5), 120–141. DOI: <http://dx.doi.org/10.24059/olj.v19i5.593>.
- Thamarana, S. Role of E-learning and Virtual Learning Environment in English language learning. *Teaching English Language and Literature: Innovative Methods and Practices, ELTAI Tirupati*, 61–62.
- Uma Gaur, Md Anwarul, A.M., Bidyadhar Sa, Sarkar, S., & Williams, A. (2020). Challenges and Opportunities of Preclinical Medical Education: COVID-19 Crisis and Beyond. *Springer Nature Switzerland AG 2020*. 1992 – 1997.
- Winzenried, A., Dalgarno, B. & Tinkler, J. (2010). The interactive whiteboard: A transitional technology supporting diverse teaching practices. *Australasian Journal of Educational Technology*, 26(4), 534-552.
- Worldometer. (2020). *Covid-19 Coronavirus Pandemic*. Retrieved from Worldometer: <https://www.worldometers.info/coronavirus/>
- Writers, S. (2020). *Semua sekolah ditutup hingga tahun depan*. Retrieved from Malaysia Now: <https://www.malaysianow.com/berita/2020/11/08/semua-sekolah-ditutup-hingga-tahun-depan/>