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(IJEPC)**www.ijepec.com**A REVIEW OF ONLINE LEARNING IMPACTS DURING
PANDEMIC COVID-19 AMONG UNIVERSITY STUDENTS**Sobihatun Nur Abdul Salam^{1*}, Yap Houn Ying², Yap Houn Minn³, Subashini Annamalai⁴¹ Multimedia Innovation and Digital Humanities Research Unit, School of Multimedia Technology and Communication, Universiti Utara Malaysia, Malaysia

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DOI: 10.35631/IJEPC.850048**This work is licensed under** [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/)**Abstract:**

Due to COVID-19, the education mode has shifted from face-to-face to online learning. This is to decrease close contact with others to protect the university students' and staffs' health. There are two types of online learning which are simultaneous delivery and asynchronous delivery of teaching and learning. This study aims to investigate the impact of online learning in education during pandemic COVID-19 including the advantages and disadvantages of online learning among university students around the world. Systematic review has been identified as the methodology of this study whereby 25 articles were reviewed and analysed. The articles selected are published in year 2020 until 2021 while the content are based on keywords related to the advantages, disadvantages and effectiveness of online learning during the COVID-19 pandemic. Findings of the review implicated that the online learning has advantages such as time flexibility, ease of to access online resources, studying at own pace and the students were able to understand the learning content easily with multimedia elements. Meanwhile, the disadvantages were technical issues such as internet access problems, lack of interaction between the teachers and students, easy distraction, insufficient devices and high expenditure on purchasing data plans. As conclusion, the online learning has given more positive impacts to all university students compared to negative impacts based on the reviewed from 25 studies which involved more than 13 countries. The positive impacts were related with the advantages of OL and vice versa. It is

also found that Whats app has been approved as the most preferred OL tools that has been used by the university students during the pandemic time.

Keywords:

Online Learning Impacts, Covid-19, University Student, Advantages, Disadvantages

Introduction

Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. World Health Organization (W.H.O) has declared it as a pandemic because of its massive spread that has affected many lives (World Health Organization, 2020). Educational programs worldwide have been affected by the COVID-19 pandemic, contributing to the almost complete closing of schools, universities, and colleges. As a result of the COVID-19 pandemic crisis, e-learning has become a necessary feature in all educational establishments such as schools, colleges and universities (Chung, Noor and Mathew, 2020; Shahzad, Hassan, Aremu, Hussain & Lodhi, 2020). Facilitators and students are required to adapt with the online learning method to ensure the teaching and learning process being carried out as usual even though they have challenges in various ways (Thandavaraj, Gani, & Nasir, 2021).

The rapid transitions of COVID-19 pandemic have impacted students and lecturers in higher education institutions critically. Lecturers and students around the world have faced many challenges using online platforms for teaching and learning. Moreover, the effects of this pandemic are unpredictable, and it gives huge impact to the education system whereby most of the countries had to adapt with this new teaching and learning method (Chung, Noor and Mathew, 2020; Shahzad, Hassan, Aremu, Hussain & Lodhi, 2020).

Many studies had discussed about the impacts of online learning during pandemic COVID-19 among university students (Al-Kumaim et al, 2021; Mukhtar, Javed, Arooj, & Sethi, 2020; Salleh, Ghazali, Ismail, Alias, & Rahim, 2020; Dhole, Tiwari, Andhare, Gabhane & Dakhode, 2021). The impacts including the advantages and disadvantages as well as the challenges of its but in the present era this is the most needful requirement of the world.

Therefore, the focus of this study is to:

- i. examine the result of the 25 studies related to the impacts of OL during pandemic Covid-19 as intended outcome.
- ii. investigate the advantages and disadvantages of OL during pandemic Covid-19 among university students.
- iii. identify the online learning tools that have been used.

The selection of 25 studies were selected based on the systematic review technique (Siddaway, Wood, & Hedges, 2019) and also focusing of the study which were related to the impacts of OL during pandemic Covid-19 as intended outcome as well as the advantages and disadvantages of the OL. The details is discussed in the methodology section.

The expected contribution of this study is the practical impacts of OL during pandemic Covid-19 regardless of the advantages and disadvantages among university students. The identified online learning tools that have been used could be applied again if the similar pandemic would happen in the future.

Online Learning (OL) Mode

The teaching and learning process around the world has been transformed from traditional face-to-face classroom to online learning mode for all academic institutions. The online learning involves two modes; asynchronous and synchronous platform (Nazmi, 2020).

Synchronous mode in which learners/students and educators come together in a virtual environment at the same time. While asynchronous learning can be used when learners or students are offline. Educators send out work to the learners/students to do and receive reports about their performance. The differences between both modes are described in Figure 1.



Figure 1: Synchronous Vs Asynchronous Online Learning (Nazmi, 2020)

Both synchronous and asynchronous mode of OL have been also implemented in the universities and also give impacts in relation with the OL as well (Özdal, Yükselir & Akarsu, 2021 and Wilcox, 2022). Usually, the synchronous mode has been widely used for live video conferencing which the lecturer and students having the online lecture session in real time. While the asynchronous mode has been utilized for the communication medium and interaction purpose between the lecturer and students at their own pace.

Methods

This study employed the systematic review (SR) technique (Siddaway, Wood, & Hedges, 2019) as its methodology. 25 articles were selected via the search databases from Scopus and Google Scholar from the year of 2020 to 2021 (Shin & Yunus, 2021; Alhumaid, Ali, Waheed, Zahid, & Habes, 2020; Dhawan, 2020; Wilcha, 2020; Yee, & Yunus, 2021; Pei, & Wu, 2019; Muangmee et al., 2021; Ramamuthie & Aziz, 2022; Emami, Saeedi & Bahreini, 2022; Çelik, 2020; Shafie et al. 2021; Turnbull, Chugh, & Luck, 2021; Bączek et al., 2021; Obeidat, Obeidat, & Al-Shalabi, 2020; Serhan, 2020; Bahasoan, 2020; Aziza, 2021; Muthuprasad et al., 2021; Zalat, Hamed, & Bolbol, 2021; Butnaru, 2021; Al-Kumaim et al., 2021; Dhole et al., 2021 and Pramana, 2022). The analysis method is a content analysis using frequency analysis which is percentage results.

The findings that were compiled from these articles studied the impacts, advantages, disadvantages, of online learning and preferable tools for online learning during the pandemic Covid19. The selected articles were chosen based on several criteria namely; it was published

in year 2020 until 2021, open source articles and the content are based on keywords about the advantages, disadvantages and effectiveness of online learning during pandemic COVID-19 and from various countries. Figure 2. illustrated the flow chart of SR method used for this study.

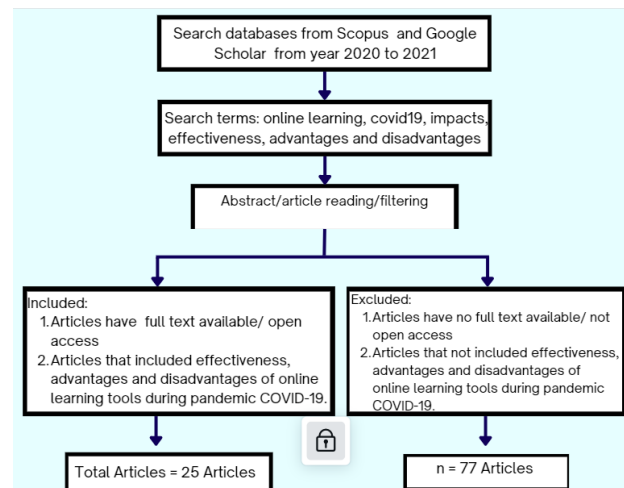


Figure 2: SR Procedure for The Study

Results

This section has revealed the results of this study in achieving the study objectives that includes the category of study, advantages, disadvantages of OL and the Usage of OL tools during pandemic Covid19.

Table 1 describes title of the selected 25 articles that were reviewed and analysed and the country that the study was based.

Table 1. List of Selected and Reviewed Studies

N of Study	Paper Title (Year)	Country
1	A Systematic Review of E-Learning in Teaching And Learning of Speaking Skills (2021)	Malaysia
2	COVID-19 & Elearning: Perceptions & Attitudes Of Teachers Towards E-Learning Acceptance in The Developing Countries (2020)	Pakistan
3	Online Learning: A Panacea in the Time of COVID-19 Crisis (2020)	India
4	Effectiveness of Virtual Medical Teaching During the COVID-19 Crisis: Systematic Review (2020)	United Kingdom
5	Collaborative Tools in Enhancing ESL Writing during Covid 19: A Systematic Review (2021)	Malaysia
6	Does online learning work better than offline learning in undergraduate medical education? A systematic review and meta-analysis (2019)	China
7	Students' use behavior towards e-learning tools during COVID-19 pandemics: Case study of higher	Thailand

	educational institutions of Thailand (2021)	
8	Systematic Review: The Effectiveness of Digital Tools to Improve Writing Skill of ESL Students (2022)	Malaysia
9	Worldwide Students' Satisfaction with Virtual Education during the COVID-19 Pandemic: A Systematic Review (2022)	Iran
10	A systematic review on examination of e-learning platforms in sports education (2020)	Turkey
11	A Systematic Review of Youth Online Learning in ASEAN Countries (2021)	Malaysia
12	Transitioning to E-Learning during the COVID-19 pandemic: How have Higher Education Institutions responded to the challenge? (2021)	Australia
13	Online learning amid the COVID-19 pandemic: Students' perspectives (2020)	Pakistan
14	Students' Perception of Online Learning during COVID-19 pandemic: A Survey Study of IT Students (2020)	India
15	The Effectiveness of Adopting e-Learning during COVID-19 at Hashemite University (2020)	Jordan
16	Transitioning from Face-to-Face to Remote Learning: Students' Attitudes and Perceptions of using Zoom during COVID-19 Pandemic (2020)	USA
17	Effectiveness of Online Learning In Pandemic Covid-19 (2021)	Indonesia
18	Online Learning during Covid-19: What is the Most Effective Platform for Teaching and Learning Mathematics? (2021)	Indonesia
19	Students' perception of online learning during the COVID-19 pandemic: a survey study of Polish medical students (2021)	Poland
20	Students' perception and preference for online education in India during COVID-19 pandemic. (2021)	India
21	The experiences, challenges, and acceptance of e-learning as a tool for teaching during the COVID-19 pandemic among university medical staff (2021)	Egypt
22	The Effectiveness of Online Education during Covid 19 Pandemic—A Comparative Analysis between the Perceptions of Academic Students and High School Students from Romania (2021)	Romania
23	Exploring the Impact of the COVID-19 Pandemic on University Students' Learning Life: An Integrated Conceptual Motivational Model for Sustainable and Healthy Online Learning (2021)	Malaysia
24	COVID 19 And Academics-Advantages And Disadvantages	India

25	Nursing Students' Perceptions and Acceptance of Online Learning during the COVID-19 Pandemic in Indonesia	Indonesia
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Category of Study

This study has been categorized into three categories. Table 2 summarizes the result of the reviewed studies.

Table 2. Studies Category

Result (Impact)	Study (N)	Total	Percent
Positive	1,2,4,5,7,8,9,11, 14,15,18,19,20,21,22, & 24	16	64%
Partially Positive	3,6, 25, 17	4	16%
Negative	10, 12, 13, 16, 23	5	20%

The result is categorized into three types of impacts; positive, partially positive and negative impacts. In summary, a total of 16 studies reported positive impacts of online learning during Pandemic COVID-19 among university students. This results comprised 64% of the reviewed studies. Countries involved with positive impacts were Malaysia, Indonesia, Thailand, United Kingdom, Pakistan, Iran, India, Jordan, Poland, Egypt and Romania.

While partially positive result were reported in 3 studies comprised 12%. Countries involved with partially positive impacts were Indonesia, India and China.

Whereas six studies (24%) have discussed the outcome of studies with negative impacts. Countries involved with negative impacts were Malaysia, Indonesia, USA, Pakistan and Australia.

Interestingly, three studies in Indonesia (17, 18, 25) were resulted in the two categories- positive impacts and partially positive impacts. It might be due to the acceptance of OL learning implementation in Indonesia and resulted in positive learning environment particularly in nursing, mathematics and management studies (Pramana et al., 2022; Aziza, 2021 and Bahasoan et al., 2020).

However, Indonesia and other countries also had faced some challenges of the different geographical location which online learning performance was unstable and affects the Internet access at the different level of Internet coverage. This implicates that the online learning in Indonesian gives impacts as a global context.

Advantages of OL during Pandemic Covid19

Table 3 reports the result of the reviewed studies based on the advantages of OL during the pandemic. Overall, from the articles reviewed, time flexibility is the most reported advantages of OL which encompassed 44%. The other advantages that was described in the studies was the ease of access/interaction which was reported by 40% of the studies, self-pacing/efficacy

and motivation which encompassed 40%, and conservation and community/social (16%). Although, implementation of the multimedia learning contents is also embedded as normal in OL, the findings indicated that it was not to understand with multimedia contents are availability of online lecture recordings are the lowest which was only 28%).

Table 3. Advantages of OL

Advantages	N of Study	Total	Percent
Time flexibility	3,5,9,11,14,16,18,19, 20, 21,24	11	44%
Ease of access/interaction	1,2,4,5,10,14,15,16,18, 19	10	40%
Self-pacing/ motivation	efficacy/ 1,2,3,4,7,8,14,20,21,24	10	40%
Easy to understand with multimedia contents/ availability of online lecture recordings	3, 9, 11, 14, 16, 17, 25	6	28%

Disadvantages of OL during Pandemic Covid19

Table 4 reports of the result of the reviewed studies based on the disadvantages of OL during pandemic.

Overall, from the studies examined, technical problem with Internet access/ poor/ unstable internet access is the most disadvantages reported by the researchers which encompassed 64% of the articles. The second most disadvantages were lack of interaction/ stress/ motivation/ loneliness/ anxiety (44%), followed by easy distraction (28%), high cost, expensive data plan/hardware (20%) and insufficient proper devices/PC/laptop (8%).

Table 4. Disadvantages of OL

Disadvantages	Study (N)	Total	Percent
Lack of interaction/ stress/ motivation/ loneliness/ anxiety	3, 4, 5, 9, 13,16, 18, 20, 23, 24, 25	11	44%
Easy distraction	3, 5, 9, 13,16, 23, 25	7	28%
Technical problem with Internet access/ poor/ unstable internet access	3,4,5, 9,12, 13, 14, 15,16,17,18,19, 20, 21, 23, 25	16	64%

Insufficient devices/PC/laptop	proper4,21	2	8%
High cost, expensive data plan/hardware	3, 9, 13, 17, 18	5	20%

Usage of OL Tools during Pandemic Covid19

Table 5 shows the result of the reviewed studies based on the OL tools that have been used during the pandemic. Overall, from the studies examined, Whats App is the most preferred OL tools 32% by the researchers. The second most preferred was Google Meet/ Google Classroom/ Google Workspace (28%), followed by Zoom (24%), Other tools like Padlet, Kahoot, Blogs, YouTube, Tik Tok (12%), Microsoft Teams, Instagram/ FB/ Telegram/ Twitter were less preferred (8%) and Cisco Webex as least preferred which was reported only by one study (4%).

Table 5. OL Tools That Have Been Used

OL Tools	Study (N)	Total	Percent
Whats App	5,8,10,16, 17,18,20, 25	8	32%
Zoom	4, 12, 16, 21, 24, 25	6	24%
Google Meet/ Google Classroom/ Google Workspace	5, 8, 9, 16, 21, 24, 25	7	28%
Microsoft Teams	15, 21	2	8%
Cisco Webex	18	1	4%
Instagram/ FB/ Telegram/ Twitter	5,8	2	8%
Others (Padlet, Kahoot, Blogs, YouTube, Tik Tok)	5, 8, 25	3	12%

Conclusion

Findings has shown that from the articles analysed, the advantages of online learning are time flexibility, ease of to access online resources, studying at own pace and understanding easily through learning with multimedia elements. Meanwhile, the disadvantages are technical issues such as internet access problems, lack of interaction, easy distraction, insufficient devices and high expenditure on purchasing data plans.

The online learning has given more positive impacts to all university students compared to negative impacts based on the reviewed from 25 studies (Shin & Yunus, 2021; Alhumaid, Ali, Waheed, Zahid, & Habes, 2020; Dhawan, 2020; Wilcha, 2020; Yee, & Yunus, 2021; Pei, & Wu, 2019; Muangmee et al., 2021; Ramamuthie & Aziz, 2022; Emami, Saeedi & Bahreini, 2022; Çelik, 2020; Shafie et al. 2021; Turnbull, Chugh, & Luck, 2021; Bączek et al., 2021;

Obeidat, Obeidat, & Al-Shalabi, 2020; Serhan, 2020; Bahasoan, 2020; Aziza, 2021; Muthuprasad et al., 2021; Zalat, Hamed, & Bolbol, 2021; Butnaru, 2021; Al-Kumaim et al., 2021; Dhole et al., 2021 and Pramana, 2022) which involved more than 13 countries. The positive impacts were related with the advantages of OL and vice versa. It is also found that Whats app has been approved as the most preferred OL tools that has been used by the university students during the pandemic time as illustrated in Figure 3.



Figure 3: Summary of Findings

Moreover, this study has contributed to the theory and practice whereby policy makers and education practitioners could apply and benefits its findings.

Hence, the continuous or future study also should be conducted in the endemic of Covid-19 instead of during the pandemic of Covid-19 among countries that have been affected. More research techniques can be applied such as relationship and inferential studies so that more rigorous results can be achieved.

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