



Online Learning and its Impact on Traditional Education in Sabah, Malaysia : A Case Study of High Schools in Tamparuli District with a focus on SMK Tamparuli.

Judith Caroline Ongkili

Faculty of Education and Social Sciences Open University Malaysia

Abstract:

Increasingly in the 21st century online learning has become prevalent in educational settings, offering new opportunities and challenges for traditional educational institutions. This study examines the impact of online learning on traditional education in Sabah, Malaysia, with a focus on high schools also known as Sekolah Menengah Kebangsaan (SMK) in the Tamparuli District, particularly SMK Tamparuli. Through a case study approach, data were collected via surveys to explore students' perspectives on online learning practices and their implications for traditional teaching methods. Findings reveal a mixed response regarding the effectiveness and challenges of online learning, with varying levels of engagement and satisfaction among participants. While online learning is perceived positively as a supplement to traditional education, concerns persist regarding technological barriers, digital literacy skills, and social engagement. The study highlights the importance of addressing infrastructure issues and providing adequate support and resources to enhance the integration of online learning into traditional educational settings. These findings contribute to the ongoing discourse on the role of technology in education and inform recommendations for improving online learning practices in schools around Sabah and beyond.

Keywords: Online Learning, Traditional Education, Challenges of OL, Covid 19, Technology in education

1. Introduction:

As online learning continues to grow, it is important to investigate students' overall experiences in online learning environments. Understanding students' perspective on their online classes or program moves beyond the sole question of student satisfaction to more subtle questions about how factors inside and outside of the classroom impact the online learning environment. Hence, in this analysis which is based on quantitative research it can be generalized those students take online courses for several personal and potential reasons. In its theoretical framework it is thus correct to suggest that it was the absence of physical co presence that changes the nature of interaction. It can be said that the students thus experience their learning environments in a more abstract and intellectual way. Furthermore, it is also important to begin to uncover students' experiences with online learning because doing so can help to show effective online practices, student perceptions of online learning, and student satisfaction in the online environment

In recent years, online learning has emerged as a prominent component of educational systems worldwide, offering new opportunities and challenges for traditional educational institutions. In Sabah, Malaysia, the integration of online learning into high school education has become increasingly prevalent, raising questions about its impact on

traditional teaching methods and educational outcomes. It was also due to the Covid19 pandemic that the shifts toward OL (online learning) became prominent as learning and teaching had to depend on it.

To date, the Malaysian system has yet to convince students on the importance of a good education for their future career. It is primarily the style and method of teaching that has the realization of the relevance of education to occupational futures. Therefore, in order for learners to consider the relevance of education for their prospects, the method of teaching in Malaysian education systems vis a vis will require an extensive transformation as well.

2. Background to study

In Malaysia there is much success and of utter importance on how the online platform is currently being used and available. And it was significantly used and relied upon for distance teaching as well as for facilitation. As such, a good online learning environment consists of a strong course outline, well-organized content, clear instructions, collaborative learning and timely feed backs are just some of the many online learning strategies that work as the building blocks for an online course management plan. Therefore, a **virtual** learning environment is an online-based platform that offers students and professors digital solutions that enhance the learning experience. This is one proper definition of an online learning environment.

Furthermore, the classrooms of today reach outside of the classroom walls to communicate with the community, the country and students alike to enhance learning and collaboration with others outside of the classroom. Inevitably, as learners navigate the digital landscape, they encounter a few online learning challenges that require adaptation and resilience. From technical difficulties to maintaining motivation, online learning presents unique hurdles that must be overcome.

Hence, the advent of online learning (OL) has revolutionized the education landscape worldwide, offering new opportunities and challenges for traditional educational institutions. Particularly in Sabah, the integration of online learning platforms in schools has become increasingly prevalent. This paper thus aims to explore the impact of online learning on traditional education, focusing on a case study of SMK Tamparuli in Sabah as well as some other high schools in the vicinity. Hence, this paper examined the effects of online learning on traditional education in Sabah, with a specific focus on high schools in the Tamparuli District, particularly SMK Tamparuli. It is also a study on investigating how the integration of online learning methods has influenced or changed the traditional educational practices at SMK Tamparuli.

3. Literature Review:

Online learning is commonly defined in contradistinction to F2F learning (e.g., Ryan et al., 2016). Its most prominent feature is the absence of the physical classroom, which is replaced by the use of web-based technologies offering opportunities for out-of-class learning independent of time, place and pace (Bernard et al., 2014; Chigeza and Halbert, 2014; Northey et al., 2015; Israel, 2015; Potter, 2015). Ryan et al. (2016) pointed out that “in the context of higher education, the phrase online learning is often interpreted as referencing courses that are offered completely online; [..]” (p. 286). Typically, the online learning setting is launched through so-called learning management systems (LMS) or virtual learning environments (VLE) such as Moodle and Blackboard (Pellas and Kazanidis, 2015).

Hence, what is known as **digital literacy** requires the ability to produce and analyze knowledge utilizing technology that incorporates electronic literacy skills. It thus works together to develop the talents and literacy of learners and educators. Significantly, digital literacy has become a fundamental definition of literacy in the media education sector. Literacy, data, digital and technology also facilitate better learning for students. Currently, most learners who enter the educational environment make the learning process meaningful by using digital devices in the digital environment. Today, in our own educational environment, school administrations, learners and educators have an important role to play in preparing future generations to mingle with a rapidly changing global society. Digital technologies have penetrated into educational and professional activities, and may completely replace traditional teaching methods in the long run (Qureshi et al., 2021).

As literacy development and educational methods move forward in the new millennium, it becomes clear that the 21st century classroom needs are very different from the 20th Century classroom needs. In the 21st century classroom, studies have shown that teachers are facilitators of student learning and creators of productive classroom environments in which students can develop the skills they will need in the workplace. Indeed, the focus of the 21st century classroom is on students experiencing the environment they will enter as 21st century workers.

20th century teaching strategies are no longer effective whereby teachers must embrace the new teaching strategies that are radically different from those employed in the 20th century classroom. The big change is not adding technology to the current design of the classroom, but changing the culture of teaching and learning and fundamentally changing the job descriptions of teachers and learners. The curriculum must become more relevant to what students will experience in the 21st century workplace.

As Hallerman, Lewis and Dresbach state “the role of educators in the 21st century should be helping every student learn how to learn. It is inspiring creativity, encouraging collaboration, expecting and rewarding critical thinking, and teaching children not only how to communicate, but also the power of effective communication. These are skills students need to develop in order to thrive in today’s and tomorrow’s dynamic workplace (2019).

In the article on *Online Learning Revealing the Benefits and Challenges* by **Brittany Gilbert** she emphasized that it is important for potential online learners to understand the differences between a traditional classroom setting and an online classroom setting, since there are benefits and drawbacks to both environments that can possibly affect their overall performance as a student. And her conclusions in this research paper outlined that “online courses offer an excellent way for students to broaden their educational opportunities and stay competitive in the ever-demanding realm of education. Students embarking on the path of higher education through online coursework need to be self-motivated, independent, and responsible learners. Understanding one’s learning style and skills will allow students to more accurately determine if online learning is suitable for them. Instructors and course designers will also benefit from understanding the aspects of a course that increase students’ understanding and participation. Communication in terms of supportive comments, constructive criticism, and prompt feedback from instructors to students is a key component of online courses. Clear directions and an easily navigable course are also elements of a well-structured course. Overall, online learning environments allow for learning to occur in a setting that is not restricted by place or time. Online learning can disassemble barriers that have been constructed by poverty, location, disability, as well as other factors” (2015:p27).

Brittany Gilbert’s article was an extensive research done in a school situation about how to best support high school in an online courses. One type of online environment can be referred to as “interactive learning online” (**ILO**). Brittany reiterates that the benefits and challenges of online learning can prepare students for an environment which permits learning despite of circumstances for as long as technological markets and advancements allow it to happen. As she discovered that **ILO** collects data from a large number of students and uses the collection of data to provide feedback and guidance that is directed for a particular student. Thus, machine guided instruction does not appear to be replacing face-to-face instruction, but it does seem to be a tool that instructors can utilize for rapid feedback and student tracking.” (Brittany, 2015, p7)

According to Glanella L. in *Power of Online Learning* she exclaimed that “online learning can be challenging because of social isolation. This can be overcome by creating an online community where the social presence of both educators and students can become central to the educational experience. This has been shown to positively influence engagement, satisfaction and peer support. These are just a couple of aspects professionals developing a course need to consider and it is not an exhaustive list. Online learning is a powerful tool, but it can also be complicated to embed in everyday teaching, or use to completely replace traditional education”. (2017; p42)

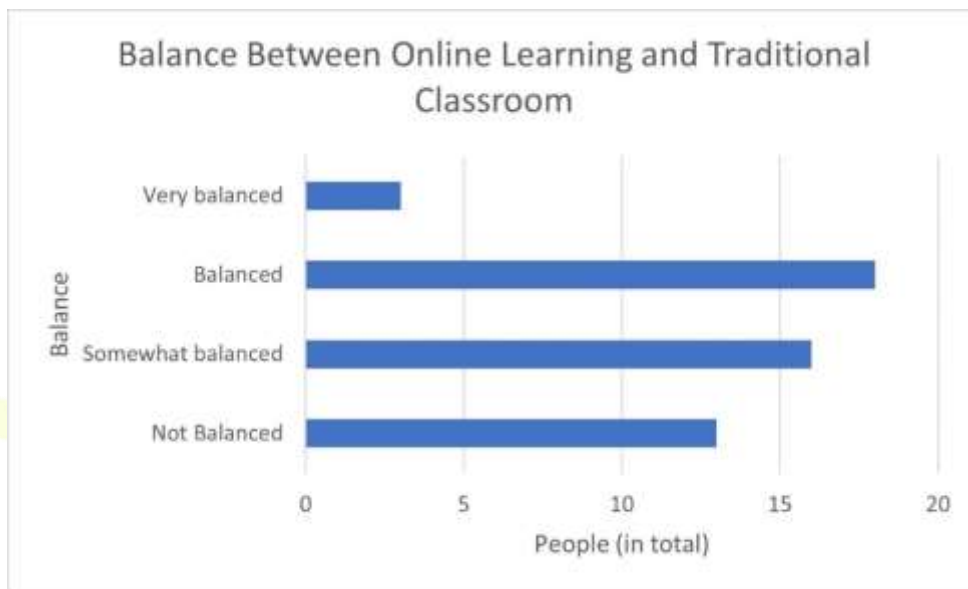
Hence, the realization is that online learning is the ‘way to go’ in our educational scenarios today in particular as globally all learners in and around all the countries in this world have been faced with a pandemic known as the Covid 19 epidemic. Inevitably, the trend has shifted to using a method of study and comprehending learning through an online learning which encapsulates the fact that according to Gomeseria R.V. in his article *The Challenges of Online Learning as an Online eLearner in Today’s Environment* pertains to “The difference between the online and the tradition....is that online eLearner will develop critical thinking....vision & the characteristic of being independent in doing write-up topics in alignment with the subject matter incurred as well the habit of researches.” (2018; p.1)

4. Overview of Findings:

An overview of the study's focus and methodology, as well as a summary of the key findings regarding student engagement, educator perspectives, challenges, and implications for traditional teaching methods are here presented. As analysed the findings of this study shed light on the perceptions, experiences, and challenges associated with online learning among students and educators at SMK Tamparuli. Through surveys conducted among 50 participants, a nuanced understanding of the impact of online learning on traditional education practices has emerged. These are varied and have been designated as:

(i) Student Engagement and Participation:

The survey results indicate varying levels of student engagement with online learning activities at SMK Tamparuli. While some students reported frequent participation and attendance in online events and learning sessions, others expressed less consistent involvement. Factors such as internet connectivity, digital literacy skills, and personal motivation were identified as influencing student engagement with online learning initiatives.



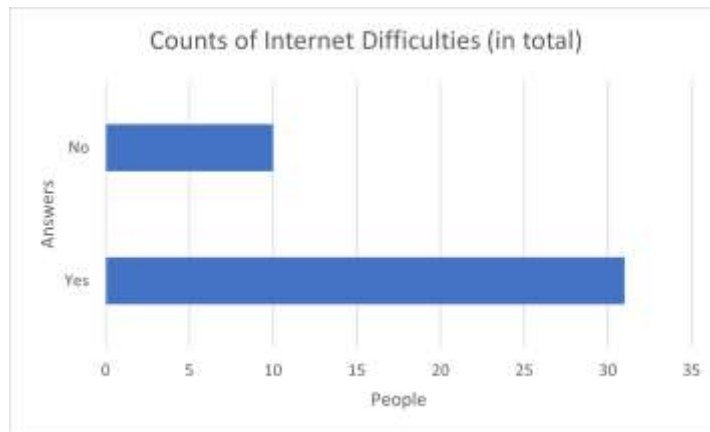
(ii) Educator Perspectives and Practices:

Educators at SMK Tamparuli expressed mixed views on the effectiveness of online learning as a pedagogical tool. While many recognized the potential benefits of online learning in enhancing student engagement, access to resources, and flexibility in instructional delivery, others raised concerns about the challenges of adapting teaching methods to digital platforms and addressing technical barriers.

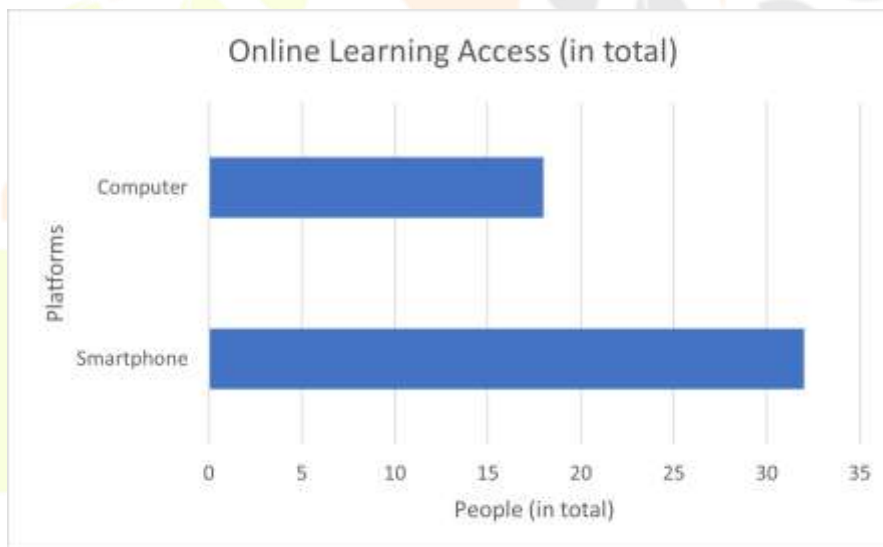


(iii) Challenges and Limitations:

Technical difficulties emerged as a significant challenge for both students and educators engaging in online learning at SMK Tamparuli. Issues such as internet disruptions, gadget problems, and limited access to digital resources were cited as barriers to effective online learning experiences. Additionally, concerns were raised about the social isolation and lack of interpersonal interaction inherent in online learning environments.

**4.1 Implications for Traditional Teaching Methods:**

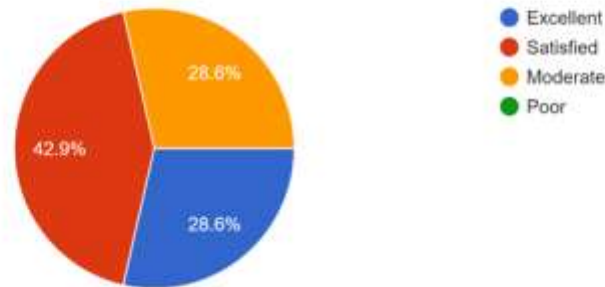
The findings of this survey have several implications for traditional teaching methods at SMK Tamparuli and other high schools in the District. These factors were considered essential for maximizing the benefits of online learning while mitigating its challenges as well and which includes: **(i)** Addressing infrastructure issues, **(ii)** providing digital literacy training, and **(iii)** fostering a supportive online learning environment. Thus, it can be summarized that integrating online learning into traditional teaching practices requires careful consideration of pedagogical strategies, student needs, and community engagement to ensure equitable access and quality educational experiences for all students. Subsequently, for future research to look into these areas for communal good and continuing effort on educational development would be beneficial for all other secondary schools as well.



4.2 Challenges Faced by Educators and Students:

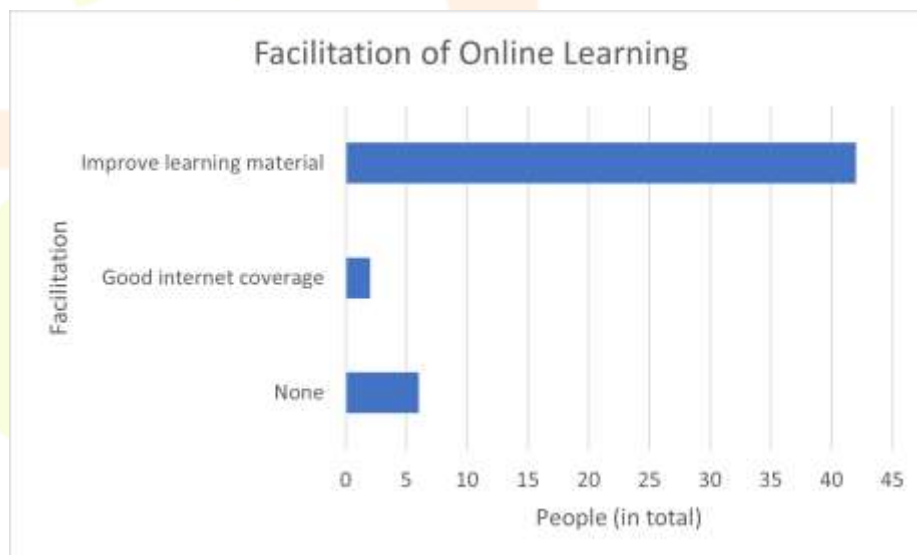
Despite the benefits, online learning also presents several challenges for educators and students, including:

Rate your level of satisfaction with the online learning experience at SMK Tamparuli. (Nilaiakan tahap kepuasan anda dengan pengalaman pembelajaran dalam talian di SMK Tamparuli.)
49 responses



i. Technological Barriers: Access to reliable internet connectivity and digital devices remains a significant challenge, particularly in rural or underserved areas. Limited access to technology can hinder students' ability to participate fully in online learning activities and access course materials. According to data from UNESCO, as of 2020, about 46% of households worldwide still lacked internet access, with significant disparities across regions and income levels. Hence, this is still an issue in the developing countries of the world although common challenges of online learning have been apparent in all sectors of the learning and teaching scenarios of schools and higher education institutions.

ii. Digital Literacy Skills: Effective participation in online learning requires strong digital literacy skills, including the ability to navigate digital platforms, evaluate online information, and communicate effectively in virtual environments. Many students and educators may lack the necessary digital skills to fully engage with online learning tools and resources.



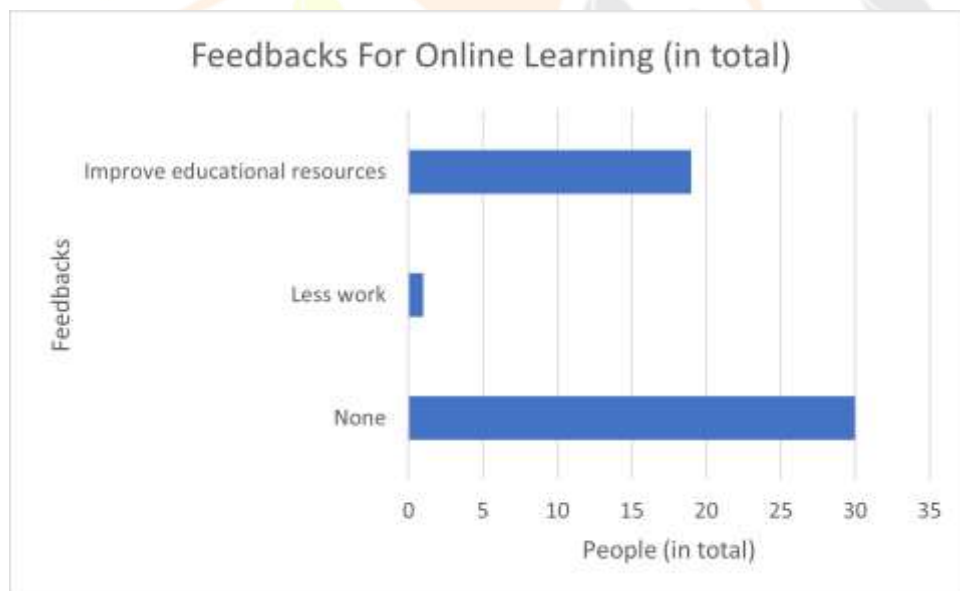
iii. Social Isolation: Online learning can lead to feelings of social isolation and disengagement, as students may miss out on the social interactions and sense of community that traditional classroom environments provide. Building a supportive online learning community and fostering meaningful interactions among students and educators is essential for mitigating feelings of isolation and promoting student engagement. A study published in the Journal of Educational Computing Research in 2020 found that social isolation was a common concern among students in online learning environments, with implications for mental health and academic performance.

iv. Self-Regulation and Motivation: Online learning places greater responsibility on students to manage their time effectively, stay motivated, and take initiative in their learning. However, research published in the International Journal of Educational Technology in Higher Education in 2021 suggests that some students may

struggle with self-regulation and motivation in the absence of direct supervision and face-to-face interactions with educators.



(v) **Equity and Access:** Online learning exacerbates existing inequities in education, as students from low-income households or marginalized communities may lack access to the necessary technology and resources to fully participate in online learning activities. According to a report by the World Bank, as of 2021, about 1.6 billion children worldwide were affected by school closures due to the COVID-19 pandemic, highlighting the urgent need to address issues of equity and access in online education.



Based on the responses provided, it appears that there is a range of engagement levels with online learning activities provided by SMK Tamparuli. And it can be concluded that the survey responses indicated varying levels of engagement with online learning activities provided by SMK Tamparuli. And, while some respondents reported consistent participation, attending events, and being involved in online learning on a daily basis, others indicated less frequent engagement, citing factors such as schedule dependencies or rare participation. These findings highlight the diversity in student involvement with online learning initiatives at SMK Tamparuli. Wildana et al. (2020) considered online learning to be effective as it facilitates the use of various applications such as 'Whatsapp', 'Zoom' and 'Google Classroom'. Subsequently, students' attitudes also influence the effectiveness of online learning. Students who approach online learning carelessly present a challenge that all stakeholders should work to overcome (Hazwani et al., 2017).



5. Methodology:

5.1 Study Design

This study employs a case study design because it is relevant in collecting rich data and information on a specific event that affect how individuals react and change their behaviour (Chua, 2020). For the purpose of this study, online learning is defined as a teaching and learning process between teachers and pupils that involves various digital mediums, such as 'Whatsapp', 'Zoom', and 'Google Classroom'. In addition, online learning does not refer to direct learning alone. Any assignments or activities, provided by the teacher online, are considered part of online learning. Since the sudden change in teaching and learning delivery during the Conditional Movement Control Order (CMCO), this situation might affect how they react and change their behaviour in the online learning settings. In fact, this situation is still new and little evidence is available on its effectiveness. Therefore, in this study, in order to examine the effectiveness of online learning and the challenges that it presents to pupils' abilities to learn, a survey questionnaire has been utilized.

According to Chua (2020), a survey questionnaire is helpful to provide direct information from the respondents on their personal encounters, experiences, and perception of an issue. As shown in Table 1-3 a total of 50 pupils, aged 15-16, from SMK Tamparuli secondary school participated in answering survey questionnaires as sampling technique. This is because this study is not aimed at testing a research hypothesis to be generalized to the population but to develop an understanding (Chua, 2020) of students' perceptions about the effectiveness of online learning, and the challenges related to their online learning facilities. In this study, from a total of 50 pupils, 33 respondents were male and 17 were female. All of the respondents were also those receiving full-time online learning due to the CMCO that was implemented on 18th March 2020 in all states of the Malaysian region.

Research Through Innovation

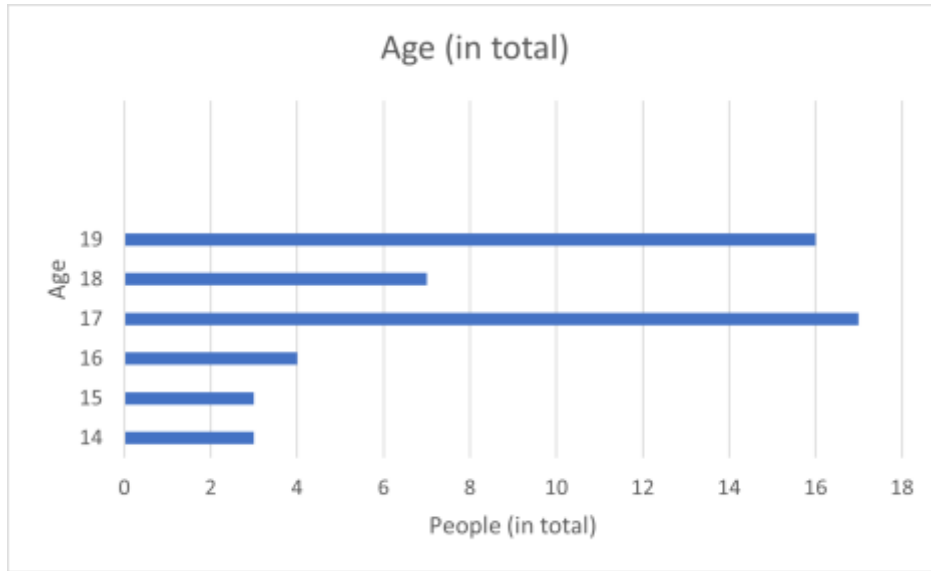


Table 1

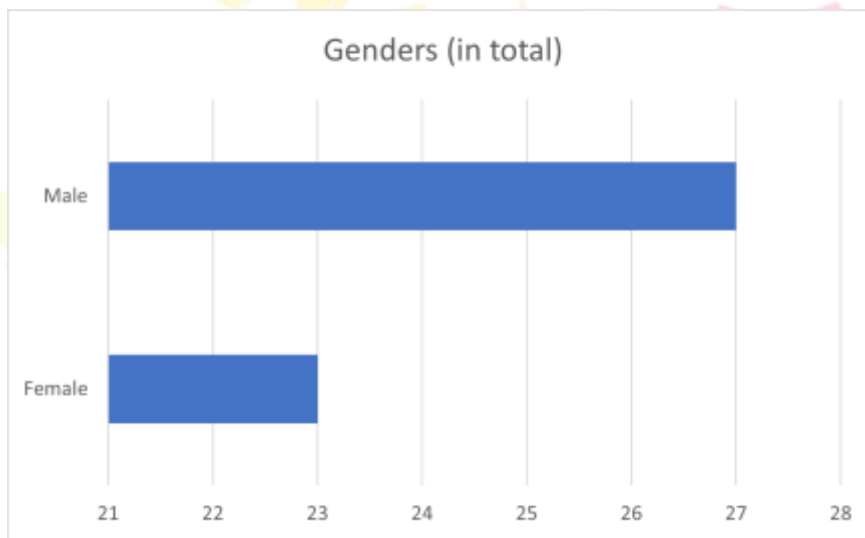


Table 2

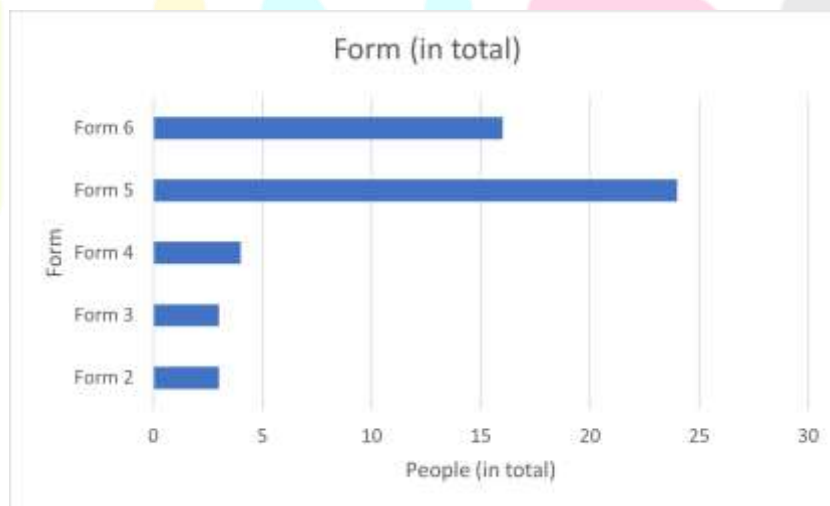


Table 3

The research methodology involves a case study approach, with SMK Tamparuli serving as the focal point. Data was collected through questionnaire surveys administered to students. The triangulation of data sources ensures the reliability and validity of the findings. Based on the survey conducted on "Online Learning and its Impact on

Traditional Education in Sabah: A Case Study of High Schools in Tamparuli District with a focus on SMK Tamparuli," the following result **findings** and **conclusions** could be drawn:

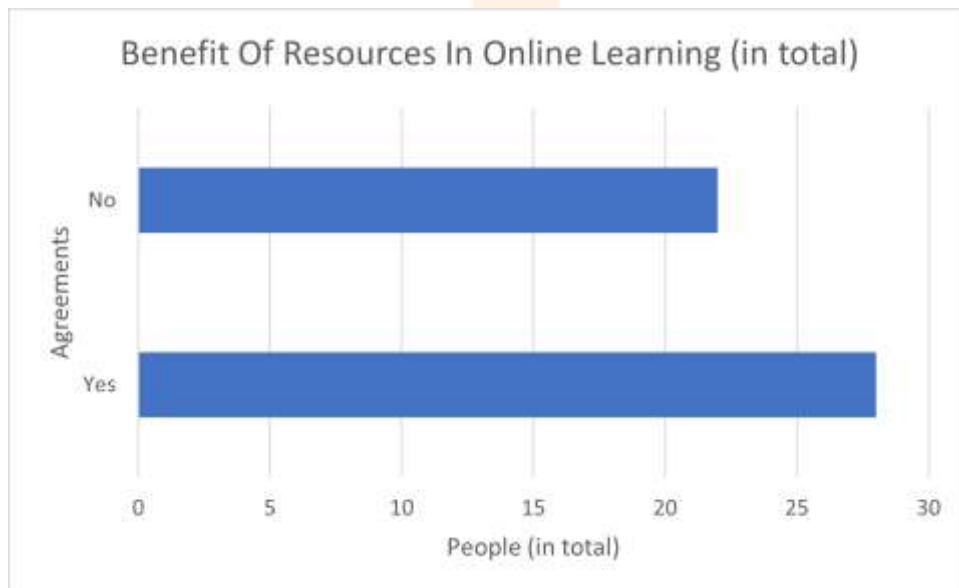
5.2 Level of Participation in Online Learning:



Findings: The survey reveals that a majority of students and teachers in SMK Tamparuli actively engage in online learning activities.

Conclusion: There is a significant level of participation in online learning within SMK Tamparuli, indicating a willingness to embrace technology-mediated educational approaches.

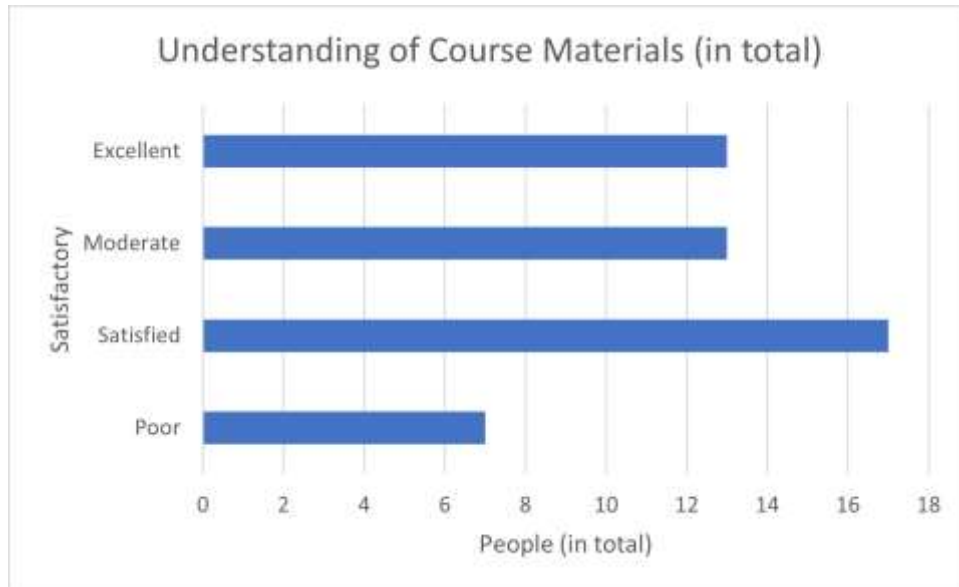
5.3 Perceived Effectiveness of Online Learning:



Findings: Respondents generally perceive online learning to be effective in supplementing traditional classroom instruction, citing benefits such as flexibility, access to resources, and opportunities for self-paced learning.

Conclusion: Online learning is perceived positively by both students and teachers as a valuable complement to traditional education, providing enhanced learning experiences and facilitating personalized learning pathways.

5.4 Challenges and Limitations of Online Learning:



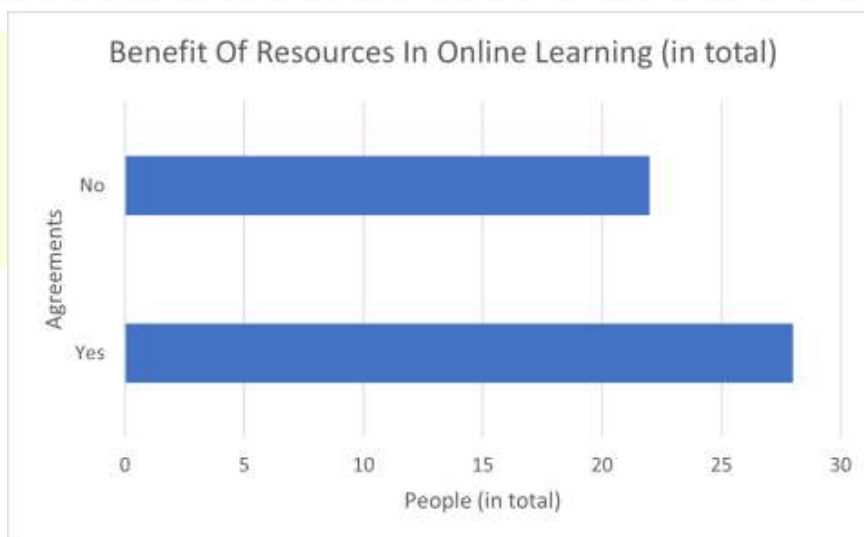
Findings: Despite its perceived benefits, respondents also identify various challenges and limitations of online learning, including technological barriers, lack of internet access, and concerns about social isolation and motivation.

Conclusion: While online learning offers numerous advantages, addressing technological infrastructure issues and providing adequate support and resources are crucial for ensuring equitable access and promoting inclusive learning environments.

5.5 Impact on Teaching and Learning Practices:

Findings: The integration of online learning has led to changes in teaching methods and learning approaches, with educators adapting instructional strategies to leverage digital tools and resources.

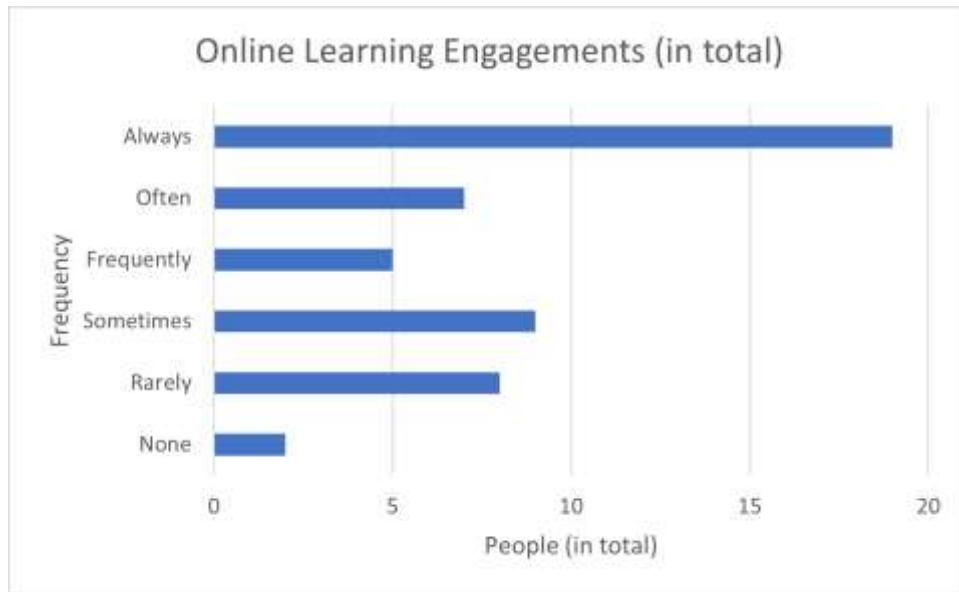
Conclusion: Online learning has influenced pedagogical practices within SMK Tamparuli, prompting teachers to adopt more student-centered and interactive teaching approaches that promote critical thinking, collaboration, and digital literacy skills.



5.6 Student Performance and Engagement:

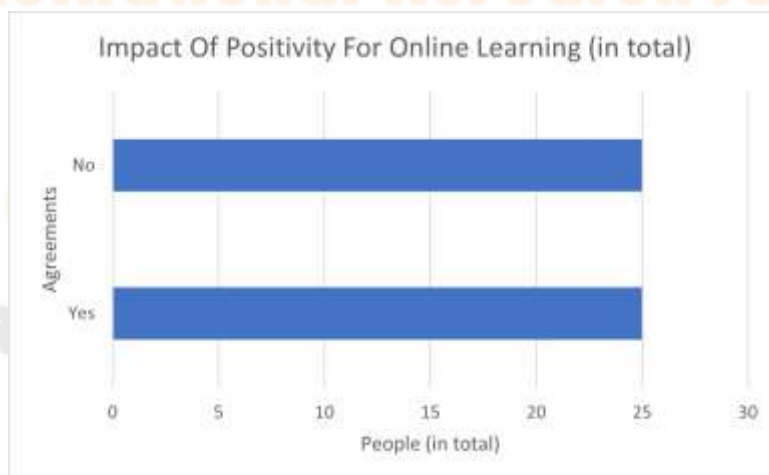
Findings: Some respondents indicate improvements in student engagement and academic performance because of online learning, while others express concerns about potential distractions and reduced motivation.

Conclusion: The impact of online learning on student outcomes varies, highlighting the need for ongoing evaluation and support to maximize its effectiveness and address individual learning needs.



5.7 Future Directions and Recommendations:

There is a consensus among stakeholders on the importance of continued investment in online learning infrastructure, professional development, and curriculum innovation to ensure the sustainable integration of technology-enhanced educational practices in SMK Tamparuli and other high schools in the Tamparuli District. The survey discovered that respondents express interest in further integrating online learning into the curriculum and expanding access to digital resources and training opportunities. In summary, the survey findings suggest that online learning has a significant impact on traditional education practices in SMK Tamparuli, with both opportunities and challenges emerging from its implementation. By addressing key issues related to access, equity, pedagogy, and support, SMK Tamparuli can leverage online learning to enhance teaching and learning experiences and better prepare students for the demands of the 21st-century knowledge economy.



Therefore, based on the findings of the online survey which were distributed mostly to students, several **recommendations** can be made to enhance the implementation of online learning initiatives at SMK Tamparuli and other high schools in the Tamparuli District:

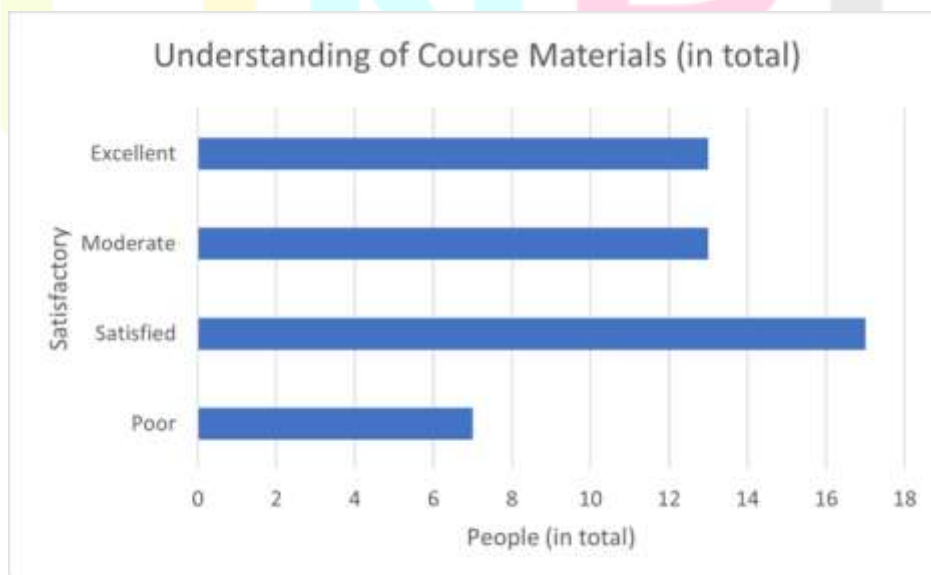
(1) **Investment in Infrastructure:** There is a need for increased investment in digital infrastructure, including internet connectivity, digital devices, and learning platforms, to ensure reliable access to online learning resources for all students and educators.

- (2) **Digital Literacy Training:** Providing comprehensive digital literacy training for students and educators is essential to empower them with the skills and confidence needed to navigate online learning platforms effectively and responsibly.
- (3) **Supportive Learning Environment:** Fostering and developing a supportive online learning environment that promotes collaboration, communication, and social interaction is crucial for addressing feelings of social isolation and enhancing student engagement and motivation.
- (4) **Pedagogical Innovation:** Encouraging pedagogical innovation and the adoption of student-centred teaching approaches that leverage online learning technologies can enrich the learning experience and cater to diverse student needs and preferences.
- (5) **Community Engagement:** Engaging parents, caregivers, and community stakeholders in the online learning process can help foster a sense of shared responsibility and support for students' educational journey, contributing to their overall success.

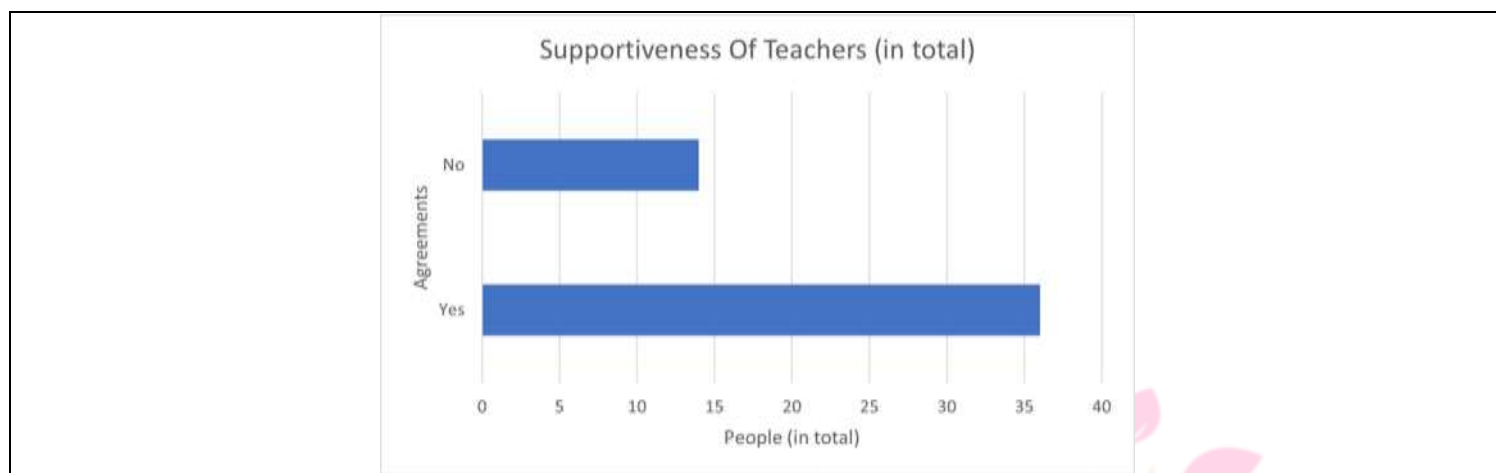
By implementing these recommendations, SMK Tamparuli and other high schools in the Tamparuli District can harness the potential of online learning to enhance traditional education practices, improve student outcomes, and prepare students for success in the digital age. Hence, this conclusion of this case study provides a summary of the key findings and recommendations derived from the survey, emphasizing the importance of addressing challenges and leveraging opportunities to maximize the benefits of online learning for traditional education in Sabah. As the findings generated the survey responses indicate varying levels of engagement with online learning activities provided by SMK Tamparuli. While some respondents reported consistent participation, attending events, and being involved in online learning on a daily basis, others indicated less frequent engagement, citing factors such as schedule dependencies or rare participation. These findings highlighted the diversity in student involvement with online learning initiatives at SMK Tamparuli and also the other high schools in the vicinity of the District of Tamparuli, Sabah.

Conclusion:

With increased technical and electronic advancement, online education enables students to take courses from different countries. Some schools, universities also offer eLearning courses or blended courses in both the in-class and online medium. These still traditional brick and mortar institutions also will soon be offering more online courses to cope up with the advanced learning process. The emerging of online education is persuading just because of the expansion of technology and desire of people to learn at their own pace. With the current scenario of learning across continents and industries, digital skills are required in many roles and companies that wants to hire graduates having knowledge of digital technologies and platforms. However, despite the ubiquity of smart phones not all students will have access to technology outside of the classroom. Teachers should also help students develop healthy habits and attitudes when using technology. And educators need to take an active role in helping them understand the benefits, dangers, and opportunities technology provides.



It can be concluded that the findings of this survey provide valuable insights into the impact of online learning on traditional education at SMK Tamparuli and high schools in the Tamparuli District, Sabah. The study revealed a mixed response among students and educators, highlighting both the potential benefits and challenges associated with online learning initiatives. It has been an attempt on investigating how the integration of online learning methods has influenced or changed the traditional educational practices at SMK Tamparuli.



While online learning offers opportunities for increased flexibility, access to resources, and personalized learning experiences, challenges such as technological barriers, digital literacy skills, and social isolation must be addressed to maximize its effectiveness. Additionally, the integration of online learning into traditional teaching methods requires careful consideration of pedagogical strategies, infrastructure support, and community engagement to ensure equitable access and quality educational experiences for all students.

References

- Alamri, H. Instructors' self-efficacy, perceived benefits, and challenges in transitioning to online learning. *Educ Inf Technol* (2023). <https://doi.org/10.1007/s10639-023-11677-w>
- Aboderin, O. S. (2015). The challenges and prospects of e-learning in National Open University of Nigeria. *Journal of Education and Learning*, 9(3), 207-216.
- Alqurashi, E. (2016). Self-Efficacy In Online Learning Environments: A Literature Review. *Duquesne University, USA Contemporary Issues in Education Research*, First Quarter 2016 Volume 9, Number 1 : CC-BY 45 The Clute Institute
- Basar, Z. M., Mansor, A. N., Jamaludin, K. A., & Alias, B. S. (2021). The effectiveness and challenges of online learning for secondary school students—A case study. *Asian Journal of University Education*, 17(3), 119-129.
- Bernard, M. B., Borokhovski, E., Schmid, R. F., Tamim, R. M. and Abrami, Ph. C., 2014. A meta-analysis of blended learning and technology use in higher education: from the general to the applied. *Journal of Computing in Higher Education*, 26(1), pp. 87-122.
- Ng, Y., Li, Z., Chua, Y. X., Chaw, W. L., Zhao, Z., Er, B., ... & Lee, V. J. (2020). Evaluation of the effectiveness of surveillance and containment measures for the first 100 patients with COVID-19 in Singapore—January 2–February 29, 2020. *Morbidity and mortality weekly report*, 69(11), 307.
- Chigeza, P. and Halbert, K., 2014. Navigating E-Learning and Blended Learning for Pre-service Teachers: Redesigning for Engagement, Access and Efficiency. *Australian Journal of Teacher Education*, 39(11), pp. 133–146. <https://doi.org/10.14221/ajte.204v39n11.8>
- Erarslan, A. & Arslan, A. (2020). Online Learning Experiences of University Students in ELT and the Effects of Online Learning on their Learning Practice. *Language and Technology*. 2020, Volume:2 Issue:1 <https://www.researchgate.net/publication/343678780>
- Gilbert, B. (2015). Online Learning Revealing the Benefits and Challenges. Online Master dissertation. School of Education. St. John Fisher College

- Giray, L., Gumalin, D., Jacob, J., & Villacorta, K. (2022). Exploring the Online Learning Experience of Filipino College Students During Covid-19 Pandemic. *Jurnal Ilmiah Peuradeun*, 10(1), 227-250. doi:10.26811/peuradeun.v10i1.691
- Gomeseria, R. V. (2023, July 24). The Challenges of Online Learning as an Online eLearner in Today's Environment. <https://doi.org/10.17605/OSF.IO/HBY2J>
- Hallerman, S., Lewis, C., & Dresbach, B. What is a 21st century education? <https://www.battelleforkids.org/learning-hub/publications,04/23/2019>
- Hazwani Mohd N., Noor Raudhiah Abu B. and Norziah O. (2020). E-Pembelajaran Dalam Kalangan Pelajar Di Sebuah Institusi Pengajian Tinggi Selangor. Selangor. Malaysian atas talian. *Journal of Education*.
- Hong J-C, Liu Y, Liu Y and Zhao L (2021) High School Students' Online Learning Ineffectiveness in Experimental Courses During the COVID-19 Pandemic. *Front. Psychol.* 12:738695. doi: 10.3389/fpsyg.2021.738695
- Israel, M. J., 2015. Effectiveness of Integrating MOOCs in Traditional Classrooms for Undergraduate Students. *International Review of Research in Open and Distributed Learning*, 16(5), pp. 102-118.
- Lestari, P. A. S., Gunawan, G., & Yulianci, S. (2020). Effectiveness of Online Lectures Using Digital Platform During the Pandemi Covid-19. *Indonesian Journal of Applied Science and Technology*, 1(3), 107-115.
- Lorenza Giannella; The power of online learning. *Biochem (Lond)* 1 December 2017; 39 (6): 42–43. doi:<https://doi.org/10.1042/BIO03906042>
- Northey, G., Bucic, T., Chylinski, M. and Govind, R., 2015. Increasing Student Engagement Using Asynchronous Learning. *Journal of Marketing Education*, 37(3), pp. 171-180.
- Ormrod, J.E. (2014) *Educational Psychology: Developing Learners (7th and 8th. Edition)*. Pearson Education Ltd.:UK
- Phanse, S. (2021). The online education impact on students during covid-19 pandemic. *Indonesian Journal of Teaching in Science*, 1(2), 137-140.
- Pedagogical Considerations of E Learning in Education for Development in the Face of COVID-19. <https://www.researchgate.net/publication/344097276>
- Pellas, N. and Kazandis, I., 2015. On the value of Second Life for students' engagement in blended and online courses: A comparative study from the Higher Education in Greece. *Education and Information Technologies*, 20(3), pp. 445-466.
- Potter, J., 2015. Applying a hybrid model: Can it enhance student learning outcomes? *Journal of Instructional Pedagogies*, 17(11).
- Qureshi, M. A., Khaskheli, A., Qureshi, J. A., Raza, S. A., & Yousufi, S. Q. (2023). Factors affecting students' learning performance through collaborative learning and engagement. *Interactive Learning Environments*, 31(4), 2371-2391.
- Ryan, S., Kaufman, J., Greenhouse, J., Joel; She, R. and Shi, J., 2016). The Effectiveness of Blended Online Learning Courses at the Community College Level. *Community College Journal of Research and Practice*, 40(4), pp. 285-29.
- Sutrisno, S. (2020). Increased Learning Activities and Outcomes Through Online Learning with Google Classroom in The Covid-19 Pandemic Period. *Ideguru: Jurnal Karya Ilmiah Guru*, 5(1), 95-106.
- Syahrul, S., Muliadi, M., & Dewi, S. S. (2022). The Implementation of Online Learning at The Faculty of Engineering, State University of Makassar in Response To Covid-19. *INDONESIAN JOURNAL OF EDUCATIONAL STUDIES*, 25(1), 76-87.
- Wildana Wargadinata, Iffat Maimunah, Eva Dewi & Zainur Rofiq. (2020). Student's Responses on Learning in the Early COVID-19 Pandemic. Malang, Indonesia. *Journal of Education and Teacher Training*, DOI: 10.24042/tadris.v5i1.6153.