ESTEEM Journal of Social Sciences and Humanities
Vol. 5, No. 1, 116-125, April 2021
https://ejssh.uitm.edu.my

Instructional Technologies Facilitating Open Distance Learning: Environment, Interaction, and Academia

Suhaida Halamy[1*], Nurfaizah Kamarudin[2] and Mohsinin Mohsin[3]

[12 3]Faculty of Information Management, Universiti Teknologi MARA Cawangan Sarawak, Malaysia
**Corresponding author: [1]dida@uitm.edu.my*

ABSTRACT

ARTICLE HISTORY

Received:
22 January 2021
Accepted:
24 March 2021
Published:
30 April 2021

KEYWORDS

Instructional technology
Open Distance Learning
COVID-19
Higher education,
Online learning

The national education landscape has changed a lot because of the Coronavirus Outbreak (COVID-19) as the pandemic circumstances boost the digitization of higher education in Malaysia. Open Distance Learning (ODL) has become the new norm, with more flexibility in teaching and learning processes. Online teaching and learning should continue even after the pandemic has ended. This ensures that effective learning can be achieved in the best possible way. Adaptation to the new norms for educational institutions should be rapid for ongoing education. This issue has been an enormous movement towards online learning. Technology has been widely applied in distance education. Computer technology integration can create a successful learning environment in teaching and learning at a distance. The article discusses various technological tools that support Open Distance Learning (ODL) and analyses the features of the online platforms. Appropriate selection of technology media or tools is needed by educators or instructional designers based on their features. It may be challenging during the transition to online teaching and learning but embracing the change in this situation has positively impacted the higher education landscape.

e-ISSN 2600-7274

1. INTRODUCTION

Today, the presence of technology is widespread in educational institutions. Technology is not just tools and machines but also processes and ideas. Technology has always been associated with the use of computers. Computer technology is rapidly developing and making all the information and knowledge just at your fingertips. Computers have become so ubiquitous and advanced that digital devices are increasingly replacing pen and paper in many classrooms and lecture halls. Technology media is one of the intermediaries between each other to convey information and serves as an intermediary between educators and students

(Dunlap & Lowenthal, 2018). Life nowadays is surrounded by sophisticated equipment regardless of age has made possible the success of a system or pattern of digital and online learning. Now, gradually the traditional teaching and learning process has changed towards computer technology-based learning (Abdul Aziz & Ahmad, 2016). Instructional Technology in online teaching and learning is a design of message or communication that applies the use of advanced technology. Teaching and learning materials delivered through the media have multimedia elements such as text, graphics, animation, simulation, audio, and video (Putra, 2018). Gupta and Gupta (2020) explained that one of the biggest contributions of internet technology in the world of education is in terms of the dissemination of learning content without borders. Meanwhile, Abdul Hadi (2016) says that consumption of this online web media technology is making an impact on the teaching and learning process and student performance due to the application of web technology this internet-based can support teaching and learning in Higher Learning Institution (HLI) and implementation a more effective education system in the country. Technology has the potential to revolutionize teaching and learning by allowing for unparalleled collaboration, interaction, and support.

All things related to technology have various functions and their uses in undergoing the teaching and learning process in HLIs. For this reason, because of the use of technology in online teaching and learning, instructors and students must master the most up-to-date technologies that can aid in the comprehension of each topic studied as well as the storage, processing, and recording of all data collected. Technology allows for more efficient delivery of instruction and information. Curriculum, teaching, and learning must be prioritized. Before the announcement of the closing instructions of HLIs by the Prime Minister of Malaysia, several educational institutions took proactive steps to announce the practice of limited lectures, cancel face-to-face lectures and encourage the use of technology in teaching and learning as an intermediary medium. In this case, the use of technology is seen as an effective step to reduce the spread of the pandemic COVID-19 in educational institutions.

2. DEFINITION OF INSTRUCTIONAL TECHNOLOGY

Seels and Richey (1994) describe instructional technology as “the philosophy and practice of designing, developing, using, managing, and evaluating processes and tools for learning” (p.9). According to Finn (1960), “Instructional technology should be seen as a way of examining possible solutions to instructional problems” (p.5). Lumsdaine (1964) defines instructional technology as “Instructional technology of science to instructional practices” (p.371). The Association for Educational Communications and Technology (AECT, 1977) defined “Instructional technology is a systematic way of designing, implementing, and evaluating the overall learning and teaching process in terms of specific objectives, based on human learning and communication research, and using a combination of human and non-human resources to make education more effective” (p.1). It implies that the systematic design of planning, production, selection, utilization, and management. Meanwhile, as for instructional technology, according to Kurt (2017), it involves realistic instructional delivery approaches that consistently strive for successful learning, whether they require the use of media or not. One of the primary goals of instructional technology is to encourage and facilitate the use of these well-known and established procedures in the design and delivery of instruction. Clearly, the above description of instructional technology related to the process in the practice of systematic teaching design, thus improve teaching and learning or facilitate human learning.

The integration of interactive computers, the Internet, CDs, and other ICT innovations in the field of instructional technology during the 1990s had a significant impact on the future of this

field. The involvement of IT (Information Technology) and now ICT (Information and Communication Technology) in education demonstrates that instructional technology is primarily focused on products or media. Even so, the effects of ICT have greatly influenced the direction of educational technology in Malaysia. Nowadays, ICT or computer technologies are overwhelming educational institutions hoping that they will ease the challenges of instructional and learning. Although instructional technology has a wide range of uses and benefits, it all serves the same goal: to involve students and provide them with meaningful learning experiences. This aims to enable students to understand what they are learning. Instructional technology can provide many benefits to the educational process, such as improved access to information, increased communication opportunities, and improved skills to meet the needs of diverse learners.

3. THE COVID-19 PANDEMIC AND THE PUSH TO ONLINE LEARNING

In early 2020, mandatory lockdown globally has forced educational institutions to close and pushed most of the world into emergency distance learning situations. The situation has certainly triggered drastic changes to higher education. Before the outbreak, educators may never have imagined that educational institutions would face great challenges in providing teaching and learning needs for students through distance learning mode. Those emergency distance teaching experiences highlighted the global barriers to digital learning adoption and tech-enabled education. As of April 9, 2020, there were more than 1,500,000,000 students worldwide from primary to secondary school levels who were unable to attend school because of the unprecedented COVID-19 pandemic to students (UNESCO, 2020). Affected countries and communities are forced to find quick solutions in different digital learning platforms due to the massive and unexpected closure of educational institutions (Jandrić, 2020).

Before the COVID-19 pandemic spread around the world, lecturers at HLIs have begun to take steps to meet the challenge of digital transformation through the method of delivering lectures in a Massive Open Online Course (MOOC) and also blended learning defined as an approach to learning that combines face-to-face and online learning experiences. Millions of people and students are taking advantage and improve existing skills from MOOCs that have been recognized as important developments in higher education (Gupta & Gupta, 2020). The Globalized Online Learning (GOL) movement is outlined in Shift 9 of the Malaysia Education Blueprint of Higher Education 2015-2025. A comprehensive and sustainable framework that requires a paradigm shift from educators and students, namely their use of digital technology and e-content creation, is part of the global online learning environment.

According to the Cambridge dictionary (2021), academia is the part of society, particularly universities, that is associated with studying and thinking, as well as the activity or job of studying. Professional academics and students who are involved in higher education and science, typically based around colleges and universities. The meaning of academia also refers to the atmosphere or culture dedicated to science, education, and scholarship (Jessani et al., 2020). Academia not only supports the industry by teaching students about the importance of global interaction through virtual learning but also benefits by incorporating new methods into the learning environment. Universities are increasingly using virtual applications to teach technology and interpersonal skills to students, thus preparing them to work in the global marketplace. Online learning also could develop new interests in information technology by emphasizing its role in remote communication.

Due to the coronavirus outbreak (COVID-19), the changes in the learning environment of Malaysia's education system have had a huge impact on educators and students. The

introduction of open and distance learning systems or better known as Open Distance Learning (ODL), is no longer a new thing as a learning method used for all levels of study. ODL is not something new in the west, as the existence of the ODL that they pioneered has also inspired many countries to follow in this proactive step, including Malaysia. This change in the ODL learning method has been implemented at all levels in the national education system involving the learning sessions of kindergarten children, primary and secondary school students, as well as students at the university level. The implementation of ODL is also in line with the Industrial Revolution 4.0, which covers automation technology that challenges all sectors, including education in Malaysia, which necessitates changes as well as digital transformation to produce dynamic students who are competitive both nationally and internationally.

4. TECHNOLOGICAL TOOLS

Technology is a system created by humans for a specific purpose. Technology can be interpreted as a method of knowledge. Thus, the notion of technology is a way of doing something to meet human needs with the help of tools, methods, or with certain systems. Online education can be synchronous or asynchronous; in synchronous education, teachers and students work at the same pace and are connected online at the same time, making it more like a face-to-face class (Cakiroglu & Kiliç, 2018). Students prefer to use 'Asynchronous' learning because this learning takes place via online channels without real-time interaction. Educators provide learning materials that students can access anytime (Putra, 2018). The use of this learning also does not consume much data quota because students can learn according to their flexibility, pacing, and affordability. This is different from 'Synchronous' learning, where this learning happens in real-time. Instructors and students are online at the same time and using the same learning platform. When live video conferencing takes place, a lot of data quotas will be used and require stable internet access. But the benefits that can be gained from this learning are classroom engagement, dynamic learning, and instructional depth (Lockee, 2021). The following are commonly used tools incorporating technology in Open Distance Learning (ODL).

4.1 Synchronous Technology Applications

If educators choose to use a 'synchronous' type of technology applications, there are several things to keep in mind, namely, Internet line stability, student coordination, student number limitations per application, and loss of nuances of interaction commonly found during face-to-face learning. There are some flaws in the use of 'synchronous' technology that teachers and students will encounter, such as rigid schedules, technological difficulties, and the need for compatible systems to facilitate immediate interaction. Examples of technology applications that enable this type of interaction are Skype, Google Hangout, Google Meet, YouTube Live, Facebook Live, and Zoom Meeting. Educators can conduct lectures as usual without having to gather in the lecture hall, thus lowering the risk of COVID-19 infection.

4.1.1 Online Discussion

Online discussion enables distance students to converse about interesting topics with others. Digital video conferencing tools like Zoom, Microsoft Teams, and WebEx, as well as Google Classroom, are being adopted by the education industry (Larry, 2020). The use of these platforms also keeps all participating students up to date and involved, no matter where or when they log on. Besides, more and more Internet users find themselves meeting in real-time via interactive, multiuser features. The benefits are to save time, reduce the use of paper, and

easier to create classes, interact, distribute assignments, and stay organized. These tools are very useful for promoting collaborative online learning and for working on shared tasks in small groups. Through this platform, sometimes students and educators are unable to maintain attention during live lectures. Their engagement also began to wane. As a result, they must meet again for the next lecture to complete a particular topic and spend twice the amount of time. This has affected performance in assignments and exams.

4.1.2 Messaging Applications

Between educators and students, a multiplatform messaging application has the potential to mediate focused discussions with prompt feedback. Thus, it appears to have the potential for high-quality interaction in distance learning settings (Burnett, 2003) and thereby improve student satisfaction and perceived learning. Messaging applications such as WhatsApp and Telegram rely on data to send messages, text, chat, and share media, including voice messages and video, with individuals or groups.

4.2 Asynchronous Technology Applications

The application of 'asynchronous' technology allows learning interactions to take place without requiring educators and students to be present at the same time. Learning Management Systems (LMS), e-bulletin boards, emails, social media platforms, and learning video recordings are examples of types of technology that can be used 'asynchronously.' Frequent problems with 'asynchronous' technology such as isolation, risk of apathy, no immediate feedback, difficulty to keep track of collaboration such as email overload and information must be organized and searchable, or it is lost. Teaching and learning in the form of 'asynchronous' should emphasize the 'immediacy' of communication between students and educators. The time taken for educators to respond to comments and questions will affect the quality of learning experienced by students.

4.2.1 Email

In distance education, the use of email is to send individual messages. E-mail is a personal messaging tool to communicate one-on-one between learners and educators. Educators can interact with a student using electronic mail, or a student can share knowledge with other students. Therefore, e-mail is a tool for facilitating learning practices by collecting input from educators or other students.

4.2.2 Online Resources

Distance students can conduct research or gather relevant information to assist their learning by using an online search engine. Online academic search includes databases, such as EBSCOhost, Emerald, Scopus, and online catalogues to obtain bibliographic information. Web searches are conducted with such Web browsers as Chrome or Internet Explorer through hybrids to find resources from websites. Subject directories such as Yahoo and Google provide valuable information by using a mouse to navigate established categories (Lilla et al., 1999). Some websites, like ResearchGate or Google Scholar, provide a collection of Internet resources that are themselves subject directories addition, electronic journals also provide high accessibility and immediate resources for distance students. Electronic journals refer to any journal, magazine, newsletter, or other types of electronic publication available over the Internet.

4.2.3 Learning Management Systems

Higher Learning Institutions (HLIs) in Malaysia, on average, have their own LMS system. For example, Universiti Teknologi MARA has *iLearn* and *ufuture* that also supports asynchronous interaction. LMSs include several time-saving features for instructors' convenience (West et al., 2007). It is a digital software environment for managing user learning interventions as well as providing students with learning content and resources. For instance, students use *iLearn* or *ufuture* to get notes, and even discussions on learning topics can also be done with the lecturer. While lecturers use LMS aims to insert notes and provide information on the latest issues to students.

4.2.4 Online Courseware

The online course platform chosen to deliver the MOOC in Malaysia is OpenLearning. OpenLearning provides an attractive platform such as a forum to enable students to give and receive comments and further encourage interaction while learning. MOOCs (Massive Online Open Courses) have developed higher educational boundaries. MOOCs are a large-scale, free-to-use distance learning method that is accessible to anyone and wherever they are in the world. Besides, students can participate in interactive user forums, which are typically provided by MOOCs, and these interactive forums help educators and students build communities. According to the findings of a study conducted by Zulkifli et al. (2020), technological facilities are a major obstacle to the use of Massive Open Online Courses (MOOCs) in the teaching and learning process, even though students are committed and motivated to use MOOCs. There is a study done at a private university in Manila that revealed the limitations and challenges of facilities like poor Internet access that resulted in students skipping online discussion or not being able to complete assigned tasks (Mabuan & Ebron, 2019). In Malaysia's context, MOOC Malaysia is the main agenda of the Ministry of Education under Shift 9 of the Malaysia Education Blueprint of Higher Education 2015-2025.

5. ONLINE PLATFORMS FEATURES

5.1 Interactivity and Feedback

Interactivity can encourage active learning to occur among students at any age, and computers are the only tools that have such potential (Sewell, 1990). The more dynamic the interactivity, the more active the learning process will take place. Through active learning, many advantages can be achieved, such as attracting students, building long-term memory, faster learning, and increasing motivation to learn. Online learning provides distance students more interactive activities and a greater exchange of information. Besides, distance students can easily receive feedback through Internet communications. Supported by the Internet, distance education allows educators and students to have access at their convenient times. Student access to the Internet could be from home, office, or a computer laboratory on time. Besides, students can brainstorm and improve their problem-solving abilities and social skills via collaborative learning. Therefore, learners may benefit from high interactivity and immediate feedback provided by electronically mediated human communication. E-mail, online discussion tools, or messaging applications via the Internet can keep all students for a learning group up to date and involved no matter where or when they log in. Class discussions can be formed and maintained by group teams online when learners are studying at a distance, with discussion or posting messages at any time.

5.2 Encourage Self-Learning

The provision of self-learning platforms, as well as student-friendly learning schedules, are two advantages of teaching software in instructional technology that has been proven through research. With the application of instructional technology, students are free to choose the learning medium, time, and place of learning that they think is appropriate. Model by Song and Hill (2007) states that the concept of self-learning can be supported by learning methods conducted online, as shown in the diagram below.

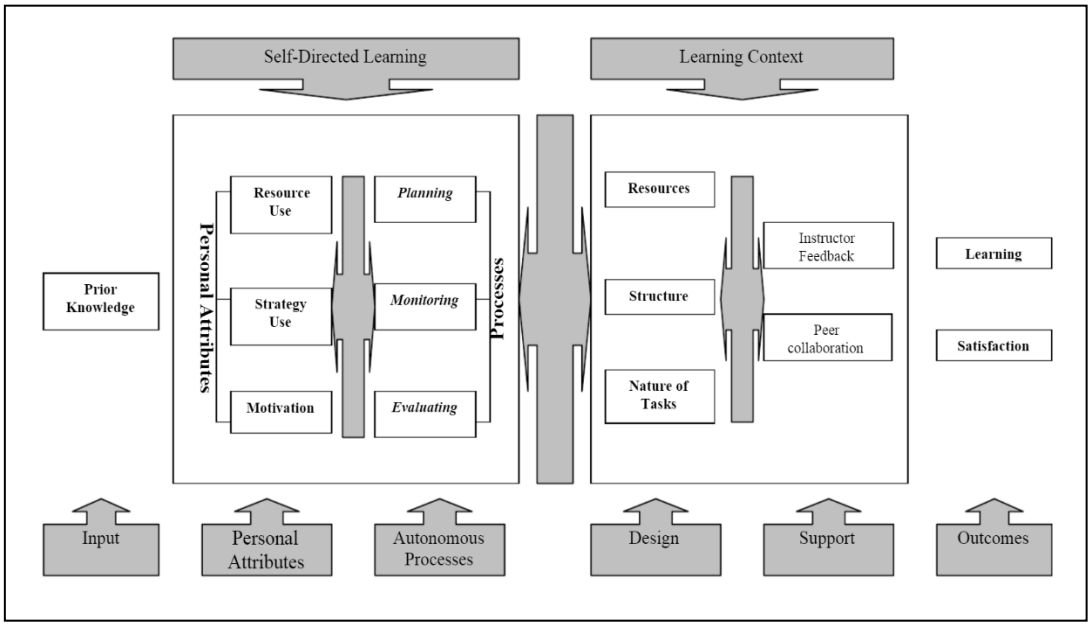

Diagram 1. Self-learning Concept Model

5.3 Cooperative Approach

Since ODL cannot have face-to-face interaction like a typical classroom, interaction is essential for distance education (Comeaux, 1995; McDonald & Gibson, 1998; McHenry & Bozik, 1995). A cooperative approach is learning that involves students working together to learn and taking responsibility for each member of their group. In this approach, all members should work together in a group to solve a given problem. Educators are responsible for ensuring that students can work well in groups. Social skills among group members are emphasized to help other group members to achieve objectives and maintain positive relationships. For the implementation of this approach, educators need to motivate students, such as recognition and appreciation, if they can perform the tasks that have been given well.

5.4 Pace of Learning

Distance students can benefit from online learning from increased control over the timing, place, and pace of learning, as well as from access to resources that are available online. The Web provides students with high control in directing their learning according to their interests and learning preferences. Besides, the educators or instructional designer controls the pacing strategy of predetermined Web-based instruction. The role of the educator is to guide students, provide feedback on their progress, and customize the learning environment to meet their needs. As group learning is conducted, the learning group controls the pace for the synchronous communication environment. For asynchronous discussions, however, the student can control the time and pace of interaction because participants access the online

platform at different times. Thus, the students are able to learn at the same speed as others, with less pressure to finish their assessments.

5.5 Sharing and Exchange of Information

Students use networks to access information resources such as databases, online catalogues, and software. The Internet gives us an effective and efficient method of exchanging and sharing information with the development of online libraries in higher education that provides services such as library catalogues and online databases accessible to individuals searching for bibliographic information on the Internet. Thus, Trentin (1999) has classified network services as a tool for accessing and sharing information. The Internet provides a wonderful environment for learning foreign languages, cultures, and world geography and history through the sharing or exchange of knowledge.

6. CONCLUSION

Instructional technology is part of a larger technology, namely educational technology. It is a combination of learning, development, and management technology. Instructional technology can be combined with other technologies to form a larger and higher technology. From the perspective of instructional technology in education, three main elements have helped the field of education in empowering our national education system today. The three elements are instructional technology changing decision-making stages, instructional technology changing teaching systems or approaches, and instructional technology changing learning experiences. Tzotzou (2018) stated that trained educators are required to perform online learning to integrate technology in pedagogy and to prevent technical problems. Although online classes allow students to interact more effectively, it is difficult to express feelings to others (Sobko et al., 2020). Possible ways to convey something are not reachable through ODL. Problems will occur when students misunderstand what is being taught by the educators. However, given the current situation, educators themselves must explore and adapt to online learning, as it is the new norm for learning and teaching through various platforms. Educators and students have greatly benefited by this instructional technology. Through online learning environment activities, they can promote active learning, encouraging entertaining learning, building students' cognitive skills, encouraging self-learning, saving learning time, diversifying learning methods, overcoming large numbers of students, and many more.

Due to the pandemic, online and web-based learning platforms have grown in popularity, particularly when all face-to-face educational activities are halted. According to a study, online learning enhances knowledge retention and takes less time, suggesting that the improvements brought on by the coronavirus may have continued (Li & Lalani, 2020). However, dependency on technology for teaching and learning decreases students' logical thought, manipulating, and gazing to solve problems; with external intervention, problems emerge, as well as copying and pasting (Pazilah et al., 2019). According to Mohd Najib et al. (2016), ODL is a model of lifelong learning that enables students to monitor aspects of their learning, such as time and place. The most significant element that plays an important role in the success of ODL is students' self-nature, also known as student motivation. Online education in the future will be less constrained by the traditions of single teaching styles, as educators will be able to support pedagogical methods from a menu of instructional delivery choices, a combination that previous generations of online educators have embraced (Dunlap & Lowenthal, 2018). It has been clear that through this pandemic, disseminating knowledge across borders, industries, and all parts of society is very important. Educators of this century need to learn to be as flexible as possible and create a teaching technique openly based on

student accessibility without taking the question of becoming a student themselves lightly. Now, the technology of online learning considers as an important role. It is up to educators and students to explore and discover its full potential.

ACKNOWLEDGEMENT

The author expresses her deepest appreciation to fellow writers. Not to also forget the previous researchers who too much contributed ideas and helped in the success of this writing.

REFERENCES

Abdul Hadi Mat Dawi, Lee Siong Theam, Mohan Palaniandy & Jamilah Dolah (2016). Penerimaan alat web 2.0 dalam pelaksanaan kurikulum program berasaskan pembelajaran abad ke-21 di Institut Pendidikan Guru. Jurnal Penyelidikan Dedikasi IPG Kampus Ipoh. 2(1), 13-20.

Association for Educational, Communications, and Technology. (1977). *The definition of educational technology.* Washington DC: AECT, 1-16

Burnett, C. (2003). "Learning to Chat: Tutor Participation in Synchronous Online Chat," *Teaching in Higher Education 8*(2), 247-61.

Çakiroglu, U. & Kiliç, S. (2018). "How to gamify?: example scenarios for participation in synchronous online learning", *E-Learning and Digital Media*, *15*(5), 254-266, doi: 10.1177/ 2042753018798166

Academia definition. (2021). Cambridge Dictionary. https://dictionary.cambridge.org/ dictionary/english/academia

Comeaux, P. (1995). The impact of an interactive distance learning network on classroom communication. *Communication Education*, *44*, 353-361.

Dunlap, J., & Lowenthal, P. (2018) Online educators' recommendations for teaching online: Crowdsourcing in action. *Open Praxis*,10, 79–89. http://dx.doi.org/10.5944 /openpraxis.10.1.721

Finn, J.D. (1960). Technology and the instructional process. *AV Communication Review, 8*(1), 5-26.

Gupta, S.B., & Gupta, M. (2020). Technology and E-learning in higher education. *Technology*, *29*(4), 1320–1325.

Hazwani Mohd Najib,Noor Raudhiah Abu Bakar & Norziah Othman (2016). E-pembelajaran dalam kalangan pelajar di institusi pengajian tinggi. *Proceeding of the 3rd International Conference on Management and Muamalah, 1*(1), 74-82.

Jandrić, P. (2020). Deschooling. In M. Peters (Ed.), *Encyclopedia of teacher education*. Springer, 1-6. https://doi.org/10.1007/978-981-13-1179-6_115-1.

Jessani, N.S., Valmeekanathan, A., Babcock, C.M. & Ling, B. (2020*)* Academic incentives for enhancing faculty engagement with decision-makers—considerations and recommendations from one school of public health. *Humanity Soc Sci Commun*,*7*, 148. https://doi.org/10.1057/s41599-020-00629-1

Kurt, S. (2017). *Definitions of instructional technology Educational technology.* http://educationaltechnology.net/definitions-of-instructional-technology/

Larry, D (2020). Back to virtual school: Education embraces remote learning. https://www.zdnet.com/article/online-learning-gets-its-moment-due-to-covid-19-pandemic-heres-how-education-will-change/

Li, C & Lalani, F. (2020). The COVID-19 pandemic has changed education forever. This is how. *World Economic Forum.* https://www.weforum.org/agenda/2020/04/coronavirus-education-global-covid19-online-digital-learning/

Lilla, R., Hipps, N., & Corman, B. (1999). Searching for the Yahoos of academia: Academic subject directories on the Web. *Educational Technology*, 39(6), 33-39.

Lockee, B.B. (2021). Online education in the post-COVID era. *Nat Electron 4***,** 5–6. https://doi.org/10.1038/s41928-020-00534-0

Lumsdaine, A.A. (1964). Educational technology, programmed learning, and instructional science. In E.R. Hilgard (Ed.), *Theories of learning and instruction: The sixty-third yearbook of the National Society for the Study of Education, Part I.* Chicago: University of Chicago Press. 371-401.

Mabuan, R.A., & Ebron, G.P. (2019), Facebook integration into university classes: opportunities and challenges. *PACLIC 2017 - Proceedings of the 31st Pacific Asia Conference on Language, Information and Computation*, 265-273.

McDonald, J., & Gibson, C. C. (1998). Interpersonal dynamics and group development in computer conferencing. *The American Journal of Distance Education, 72*(1), 6-2.

McHenry, L., & Bozik, M. (1995). Communicating at a distance: A study of interaction in a distance education classroom. *Communication Education, 44*, 362-371.

Ministry of Education (2015). Malaysia Education Blueprint 2015-2025, http://www.moe.gov.my.

Nor Aziah Abdul Aziz & Mohd Taufik Hj Ahmed. (2016). E-Pembelajaran dalam pengajaran dan pembelajaran Bahasa Melayu di IPG Kampus Ipoh. *Jurnal Penyelidikan Dedikasi, 11*, 116-130.

Norfarahi Zulkifli, Mohd Isa Hamzah & Khadijah Abdul Razak. (2020). Isu dan cabaran penggunaan MOOC dalam proses pengajaran dan pembelajaran. *Journal of Research, Policy & Practice of Teachers &Teacher Education, 1*(1), 77-94.

Fetylyana Nor Pazilah, Harwati Hashim & Melor Md. Yunus. (2019), "Using technology in ESL classroom: highlights and challenges," *Creative Education, 10*(12), 3205-3212. Doi: 10.4236/ce.2019.1012244

Putra, C.A. (2018). Pemanfaatan Teknologi Multimedia untuk Media Instruksional. *Journal of ICT in Education (JICTIE), 5*, 1-8.

UNESCO. (2020). *COVID-19 educational disruption and response*. https://en.unesco.org/covid19/educationresponse.

Seels, B.B., & Richey, R.C. (1994). *Instructional technology: The definition and domains of the field.* AECT, 9-17

Sewell, D. F. (1990). *New tool for new minds: A cognitive perspective on the use of computers with young children*. Harvester Wheatsheaf, London.

Sobko, S., Unadkat, D., Adams, J. & Hull, G. (2020), Learning through collaboration: a networked approach to online pedagogy. *E-Learning and Digital Media,17*, (1), 36-55. Doi:10. 1177/2042753019882562

Song. L & Hill, J.R. (2007). A conceptual model for understanding self-directed learning in online environments. *Journal of Interactive Online Learning*. *6*(1).www.ncolr.org/jiol

Trentin, G. (1999). What does 'using the Internet for education' mean? *Educational Technology*, *39*(4), 15- 23.

Tzotzou, M. (2018), Integrating Web 2.0 technologies into EFL learning in the Greek state-school context: a mixed-method study. *Research Papers in Language Teaching and Learning*, 9, (1), 32-55.https://search.proquest.com/docview/2013922318/fulltextPDF/

West, R. E., Waddoups, G., & Graham, C. R. (2007). Understanding the experiences of instructors as they adopt a course management system. *Educational Technology Research and Development, 55*(1), 1-26.