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## Understanding Online Learning Engagement and Challenges during COVID19: Qualitative Evidence

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### Abstract

Over the past years, many educational organizations have been progressively shifting their courses online instead of conventional classrooms before carrying out online learning, particularly during the (COVID-19) pandemic. Learners' acceptance and readiness toward online learning platforms should be considered. This investigation explores and understands online learning engagement, academic achievements, satisfaction, and challenges. This research conducted a qualitative approach to address the study questions. This approach allowed us to collect detailed data regarding learners' experiences related to their online learning platforms and understand the present phenomenon from their standpoint. A focused group discussion (FGD) was implemented to collect the data for this research. This protocol comprises two key sections: firstly, the background information of the interviewees, secondly, the research questions of this study. Results showed that the COVID-19 pandemic highly affected undergraduates' mental health and the quality of their learning experience. Consequently, study findings have shown that learners' most significant challenges mainly lack communications and physical interactions. Moreover, most learners were unfamiliar with the skills necessary for online learning. Finally, learners have thought that online learning is only a temporary choice since they were not entirely passionate about online learning as a teaching-learning technique.

**Keywords:** Online Learning, E-learning, COVID19, Online Education, Teaching, and Learning

### Introduction

It is essential to accept that online learning is a temporary yet crucial problem-solving to traditional classrooms. Many educational institutions during the past years have been progressively shifting their courses online instead of traditional classrooms (Bao, 2020). Going entirely online necessitates considerable preparation and investments from all sectors (Bao,

2020; Abuhassna et al., 2020; Filius et al., 2019; Abuhassna & Yahaya, 2018). Students could learn both inside and outside their classroom; education inside the school is through teachers, whether in a face-to-face environment, fully online environment, or blended learning environment (mix of face-to-face and fully online learning). At the same time, education outside the classroom is carried out by students themselves anywhere and anytime outside of their classes (Panigrahi et al., 2018). Moreover, changes to synchronous online video-conferencing techniques (for example, FaceTime, Hangouts, Microsoft Teams, WebEx, or Zoom) can create insecurity for learners and teachers (Knipe & Lee, 2002). The transformation from traditional to online settings indicates that online learning environments need to consider both learner and instructor needs and communications among each other's (Northcote, 2008). Consequently, before educational institutions implement online learning in this (COVID-19) pandemic, they should consider learners' acceptance and readiness to online learning platforms. However, educational institutions battle to stay up with the latest advances in digital technology. They might be missing resources, competencies, interests, or skills; thus, there similarly might be excessive differences among education institutions (Organisation for Economic Co-operation & Development (OECD), 2012; Kinnula, Laari-Salmela, & Iivari, 2015; Smith et al., 2018; Vainionpää, Kinnula, Iivari, & Molin-Juustila, 2019; Godhe et al., 2019; Alsharif et al., 2020a; Alsharif et al., 2021b; Alsharif et al., 2021c; Alsharif et al., 2021e; Alsharif et al., 2021f; Alsharif et al., 2021g). Consequently, most educational institutes have closed their doors, and their students have been asked to return home to their families and are collectively self-quarantined (UNESCO, 2020). Therefore, educational institutes currently utilize online learning as a temporary solution to this pandemic (UNESCO, 2020).

### Literature Review

Online learning is primarily offered in two different styles: synchronous or asynchronous settings (Jolliffe, Ritter, & Stevens, 2012). Asynchronous online learning is considered more accessible for the students because of its unique characteristics, which are: (1) the ability to access all materials anywhere and anytime, (2) the ability to access a more significant mass at the same time, (3) the informality of the content, unlike synchronous learning where learners need to be present at the same time with their instructors in online platforms (Google hangouts, WebEx, Zoom, etc.). Besides the traditional face-to-face classrooms, online learning has been successfully utilized in the education industry and academia, thus proving its positive results (Chang, 2016). The geographical nature of online learning in any association could get their ability to be trained and educated throughout online platforms. Similarly, students can get their classes at their own favorable time and place, along with the availability of the online material.

To better understand achieving efficient online learning, it is essential to understand university students' online learning willingness elements that they must have. Moreover, what makes online learning platforms more accessible for the students (Masrom et al., 2021; Van et al., 2021). Prior literature claimed that computers' technical and Internet skills are associated with learners' achievement in online learning settings (Peng, Tsai, & Wu, 2006). Also, students' understanding of Internet use dramatically affects students' behaviors and attitudes online (Tsai & Lin, 2004). Additionally, online learning settings that are not highly instructors-centered require students to be more active in their online sessions. Particularly, learners need to understand their responsibility to be able to control and guide their own learning experience (Hsu & Shiue, 2005; Hartley & Bendixen, 2001) and for managing their

own time during the online experience (Hill, 2002; Roper, 2007), as well as communicate with the class, and finishing their work as they supposed to do (Discenza et al., 2002), finally, to be active during the course, and to be contributors not only listeners (Garrison et al., 2004).

Subsequently, online learning platforms also permit learners to have greater flexibility during their learning process, activities and quizzes due time, and arrangements with their instructor. Online learners will be necessary to make their own decisions about their learning, thus exercising the ability to control their educational activities in depth, pace, content coverage, media type, and studying time. Consequently, learner dependence becomes a significant part of online willingness (Stansfield, McLellan, & Connolly, 2004). Online platforms offer communication tools to assist interpersonal communication among themselves and their instructor (Hew & Cheung, 2008; Roper, 2007). By utilizing asynchronous tools, such as email and threaded discussions, along with synchronous tools and online meetings, instant messages, and live chat, learners may ask instant queries and exchange ideas among themselves to improve their learning experience. Online learning, in general, lacks face-to-face meetings; thus, learners need to communicate confidently and comfortably with their classmates and their instructors (Salaberry, 2000).

A study by Kamal and Sultana (2000) highlighted that the limited utilization of technology prevents communication effectiveness in the distance learning process. Thus, the current research pointed out technology's importance in the distance learning process. Koh and Hill (2009) highlight that the lack of social communication is an excellent barrier that de-motivates students in distance learning environments. Thus, this research highlights the importance of social communication. In addition, the absence of online group work hinders the effectiveness of communication in distance learning environments. Moreover, in his research, Pillai (2011) indicated that the lack of subject knowledge and language barriers prevent communication in distance learning environments.

Hoffman and Lowitzki (2005) indicated that both students' academic achievement and student satisfaction are measures of their intellectual accomplishment that determine distance learner's satisfaction and allow the evaluation of students' knowledge and the communications channels effectiveness. Consequently, there is a solid link between learners' academic achievements and communications channels between themselves and their instructors in the learning process (Dhaqane and Afrah, 2016). Therefore, the final grade and distance learners' behavior have affected students' academic performance. Moore and Kearsley (2011) describe those independent students are looking for courses that do not stress communications to enhance and clarify their learning development. (Mamman et al., 2017; Furnborough, 2012; Abuhassna & Yahaya, 2018; Abuhassna et al., 2020; Abuhassna et al., 2021; Abuhassna et al., 2022) determined that the cooperative feeling of students' who communicate with their classmates affects their response regarding their collaboration with their classmates. Evaluating learners' enthusiasm for online collaborative learning by a framework developed to measure the collective learning motivation, potential behaviors for collaborative learning, and online learning skills was investigated in a recent study (Xiong, So, & Toh, 2015). Social media use, Mendeley, as well as virtual settings have offered further current research areas, investigating how students communicate, whether academic performance among students enhanced, finally, what tools are most to support online collaborative learning students (Vuopala et al., 2016; Khwaja & Eddy, 2015).

### Research Methodology

A qualitative method was conducted in the current study to provide a comprehensive understanding and knowledge of undergraduates' online learning engagement and overcome the challenges they face in online learning settings. Two experts have been consulted on the interview content validation. A consent letter about the study objective has been derived from Al-Aqsa university – Gaza regarding the sampling and population; this study was carried out among university students who already have been online learning users at Al-Aqsa University.

This research conducted a qualitative approach to address the study questions. This approach allowed us to collect detailed data regarding learners' experiences related to their online learning platforms and understand the present phenomenon from their standpoint. A focused group discussion (FGD) was implemented to collect the data for this research. This protocol comprises two key sections: firstly, the background information of the interviewees, secondly, the research questions of this study. Figure 1 illustrates the flowchart of the study.

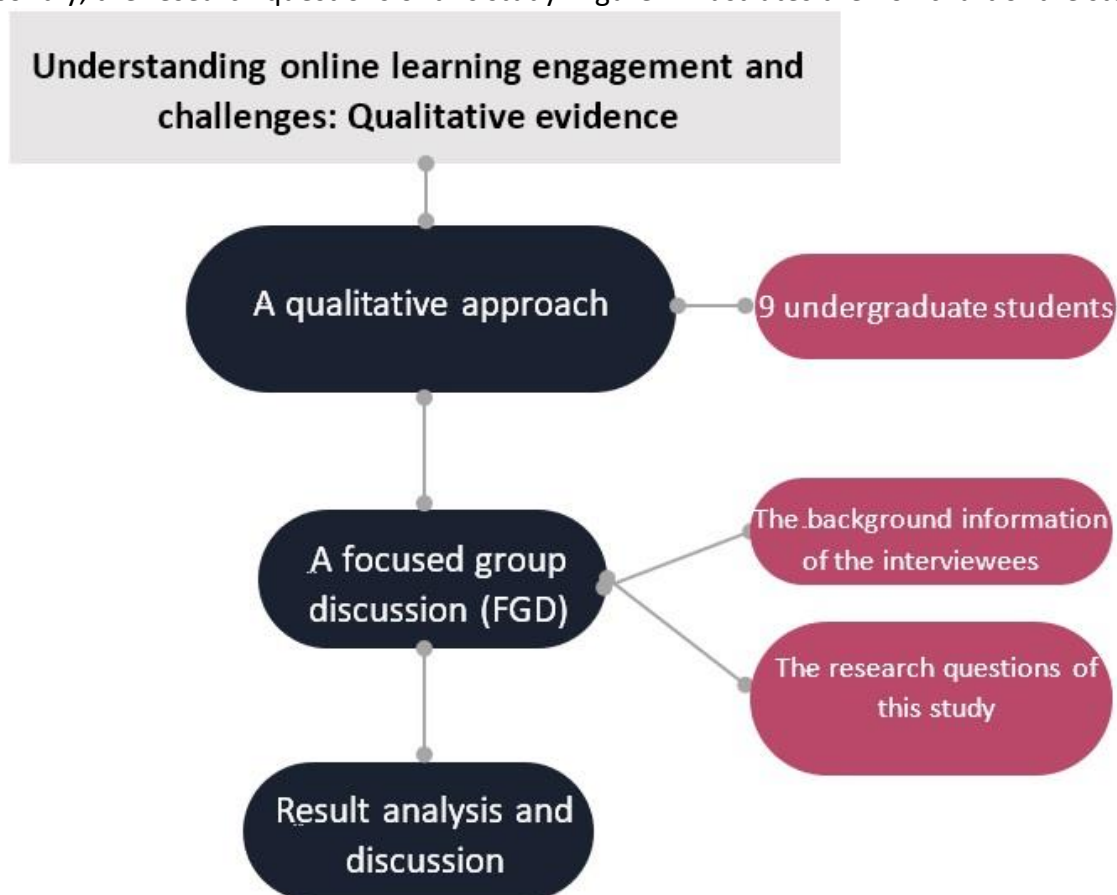


Figure 1: The flowchart of the study

### Interviews

Interviews are instruments for extracting direct data from participants relating to their experiences and meaning reflection (Seidman, 2006). The interview provides the students with the opportunity to reflect on their studies. The interviews were designed in this research to be completed within ninety minutes. Ten participants have been interviewed. Three participants were included in each FGD; the group sample has typically kept small enough to manage the group effortlessly (Creswell, 2015). In this study, the interviewees were selected purposely; thus, we ensure that our sample does have some knowledge regarding online



learning, so the model has been chosen intentionally to reflect their experiences towards online learning accurately. The interviewees were invited to sit by a sitting plan to blend them evenly depending on their performance. The interview length was set approximately to enable participants to reconstruct their experiences and put them into their experience context. Every interviewee was offered the consent form to be signed before beginning the interview, and they were able to withdraw at any point during the interview. Then, the interviewer presented the interview's objective, involved the interviewees, and has made them convenient. Additionally, the interview was filmed and voice recorded to avoid losing data. The interview was performed in Arabic. Further, transcriptions have been translated to English using the (back-to-back) method. Then the data has been labeled and duplicated. Next, we transcribed the interviews and then literally translated them into English. The transcript was transcribed in a word processing format. Then, the transcript was analyzed to answer the following questions:

- When your university announced an online learning strategy, what was your reaction?
- Were there challenges that you encountered during online learning classes? List some of these challenges (if any)?
- What was the impact of the pandemic on students' challenges?
- What strategies do you employ to overcome the challenges?

### Data Analysis

We examined undergraduates' answers in open-ended questions and FGD transcription. Specifically, we used multilevel coding to classify the transcripts' codes (Birks & Mills, 2011). To do so, we have identified the relevant rules from participants' answers and ranked those codes based on relatedness or similarities of their dimensions and characteristics. Subsequently, we conducted a comparative and progressive analysis of cases to enable initially identified subcategories to emerge and take shape. For the reliability of the current study, two coders examined the data. The two coders familiarize themselves with the research method, research questions, research aim, and the study coding scheme. Table 1 demonstrates interviewees main points and summarize the main key point of this investigation.

Table 1: Interview summary.

Student opinions	
Challenges	I delay my task and assignments sometimes.
	I find it hard to adapt to online learning as an educational platform.
	I find it hard to communicate with my instructor and classmates.
	I rarely prepare before online classes.
	I lack the skills needed sometimes.
	I have difficulties on my internet sometimes.
Engagement	The instructor keeps us involved during the class.
	I ask questions through the chatbox.
	I get immediate feedback from the instructor.
	Learning online is more accessible than uploading materials and submitting assignments.

## Results and Discussion

This study examined students' online learning engagement and challenges in higher education instructions during the pandemic. We have identified the students' challenges, how the COVID-19 pandemic influenced their online learning experience and their strategies to address these challenges. The interviewees remarked that, based on their experience, they were able to communicate with the other participants, regardless of time and location; the whole process was simple for them, except that they were shocked by the sudden shift to entirely online, as they had the chance to log in to e-learning system anywhere anytime. The discussion through the e-learning platform enabled participants to become more flexible in the time granted to present their tasks. When they were asked about the challenges, the participants suggested that online learning would offer them a chance to overcome the physical separation. However, it might have some challenges, such as the lack of communication with their classmates and instructor. Consequently, this experiment has improved their communication skills and e-learning platforms. Attendees stated that this experience had given them a forum for discussing and sharing their thoughts with their classmates and lecturers. Lastly, this experience enhanced their teamwork which helped them generate togetherness through the e-learning platform. Regarding the first question: When your university announced an online learning strategy, what was your reaction? Most of the students in this study claimed that they had been choked with the switch to online learning due to many factors, mainly because of the internet access instability, computer devices, and the lack of experience towards using online learning platforms. The second question: Were there challenges you encountered during online learning classes? List some of these challenges (if any)?

The biggest obstacle informed is that those interviewed have been used for physical interaction with classmates and lecturers. Online interaction was relatively tricky as it was difficult to know the appropriate time to connect with classmates and lecturers as everyone has different circumstances. For instance, a few stated that they had to look for places with a steady internet connection. Others claimed they could share their computer devices with other household members or get trapped with family responsibility. Furthermore, Internet unpredictability only made it possible for one-way communication with lecturers for the duration of online classes. Other students claimed that it is hard to receive a clear and sustained voice stream from their lecturers. In conclusion, this study could help the students during this sudden switch to the pure online alternative. It could help them face the considerable challenges they encounter during the blended learning process. They use online learning as a support mechanism for face-to-face learning.

## Practical Implications

These study findings recommended a group of recommendations and practical implications. Firstly, for higher education administrators to employ online learning, there should be more attention provided to the online learning courses as a whole process that needs various elements to be successful firstly the communications between this process parties, which mainly are students among their classmates, and students with own instructors, where it must be based on theories and previous literature. Additionally, instructors must be trained and skilled to achieve an online learning plate. Seminars and training sessions should be given for both instructors and students to be more familiar with online learning sessions to benefit the learning management system like LMS and Moodle and how terms use its tools in the communications process in online learning sessions. Students' satisfaction autonomy and

academic achievements in online learning sessions depend on their online readiness and communication among themselves and their classmates.

### Contribution of the Study

First, this investigation underlined the significance of emergency response capacity and enthusiasm of higher education organizations if another emergency strikes again. Crucial dimensions that need the highest concentration include potential inequalities, instructional delivery, technological resources and infrastructure, protocol and guidelines, national and institutional policies, staff development, and collaboration among key stakeholders (i.e., community, government education agencies, industry, school leaders, parents, teachers, and students). Second, the conclusions have extended our understanding of the various challenges learners might encounter when suddenly shifting to fully online education, mainly those from countries with poor home learning environments, poor Internet infrastructure, and limited resources. Schools with a comparable education context could utilize the results of this investigation in enhancing and developing their education continuity techniques to mitigate the adverse consequence of the pandemic. Furthermore, this investigation would provide learners with practical knowledge to reflect on the possible strategies they may employ to overcome the challenges. These are necessary information required for future implementation of online learning, decision-making effectiveness, and policymaking.

### References

- Abuhassna, H., & Yahaya, N. (2018). Students' Utilization of Distance Learning through an Interventional Online Module Based on Moore Transactional Distance Theory. *Eurasia Journal of Mathematics, Science and Technology Education*, 14(7), 3043-3052. <https://doi.org/10.29333/ejmste/91606>
- Abuhassna, H., Busalim, A. H., Mamman, B., Yahaya, N., Megat Zakaria, M. A. Z., Al-Maatouk, Q., & Awae, F. (2022). From Student's Experience: Does E-learning Course Structure Influenced by learner's Prior Experience, Background Knowledge, Autonomy, and Dialogue. *Contemporary Educational Technology*, 14(1), ep338. <https://doi.org/10.30935/cedtech/11386>
- Alsharif, A. H., Salleh, N. Z. M., & Baharun, R. (2020a). Research trends of neuromarketing: A bibliometric analysis. *Journal of Theoretical and Applied Information Technology*, 98(15), 2948-2962.
- Alsharif, A. H., Salleh, N. Z. M., & Baharun, R. (2021b). Neuromarketing: Marketing research in the new millennium. *Neuroscience Research Notes*, 4(3), 27-35. DOI:<https://doi.org/10.31117/neuroscirn.v4i3.79>
- Alsharif, A. H., Salleh, N. Z. M., & Baharun, R. (2021c). Neuromarketing: The popularity of the brain-imaging and physiological tools. *Neuroscience Research Notes*, 3(5), 13-22. DOI:<https://doi.org/10.31117/neuroscirn.v3i5.80>
- Alsharif, A. H., Salleh, N. Z. M., Baharun, R., & Alharthi, R. H. E. (2021e). Neuromarketing research in the last five years: a bibliometric analysis. *Cogent Business & Management*, 8(1), 1978620. DOI:<https://doi.org/10.1080/23311975.2021.1978620>
- Alsharif, A. H., Salleh, N. Z. M., Baharun, R., Alharthi, R. H. E., Mansor, A. A., Ali, J., & Abbas, A. F. (2021f). Neuroimaging Techniques in Advertising Research: Main Applications, Development, and Brain Regions and Processes. *Sustainability*, 13(11), 6488. DOI:<https://doi.org/10.3390/su13116488>



- Alsharif, A. H., Salleh, N. Z. M., Baharun, R., Alsharif, Y. H., & Abuhassna, H. (2021g). A bibliometric analysis of neuromarketing: Current status, development, and future directions. *International Journal of Academic Research in Accounting Finance and Management Sciences*, 11(3), 670-689. DOI:<http://dx.doi.org/10.6007/ijarafms/v11-i3/11673>
- Bao W. (2020). COVID-19 and online teaching in higher education: A case study of Peking University. *Hum Behav & Emerg Tech*. 2020; 2:113–115. <https://doi.org/10.1002/hbe2.191>
- Chang, V. (2016). Review and discussion: e-Learning for academia and industry. *International Journal of Information Management*.
- Creswell, J. W. (2015). *A concise introduction to mixed methods research*. Thousand Oaks, CA: Sage.
- Dhaqane, M. K., & Afrah, N. A. (2016). Satisfaction of students and academic performance in Benadir university. *Journal of Education and Practice*, 7(24), 59–63.
- Discenza, R., Howard, C., & Schenk, K. (2002). *The design & management of effective distance learning programs*. Hershey, PA: Idea Group Publishing.
- Filius, RM, de Kleijn, RAM, Uijl, SG, Prins, FJ, van Rijen, HVM, Grobbee, DE (2019). Audio peer feedback to promote deep learning in online education. *J Comput Assist Learn*. 2019; 35: 607– 619. <https://doi.org/10.1111/jcal.12363>
- Furnborough, C. (2012). Making the most of others: autonomous interdependence in adult beginner distance language learners. *Distance Education*.
- Garrison, D. R., Cleveland-Innes, M., & Fung, T. (2004). Student role adjustment in online communities of inquiry: model and instrument validation. *Journal of Asynchronous Learning Networks*, 8(2), 61–74.
- Godhe, A. L., Lilja, P., & Selwyn, N. (2019). Making sense of making: Critical issues in integrating maker education into schools. *Technology Pedagogy and Education*, 28(3), 317–328. <https://doi.org/10.1080/1475939X.2019.1610040>
- Hartley, K., & Bendixen, L. D. (2001). Educational research in the Internet age: examining the role of individual characteristics. *Academic Researcher*, 30(9), 22–26.
- Hassan Abuhassna, Noraffandy Yahya, Megat Aman Zahiri Megat Zakaria, Qusay Al-Maatouk, and Fareed Away, "Guidelines for Designing Distance Learning Courses via Moodle to Enhance Students Satisfaction and Achievements," *International Journal of Information and Education Technology* vol. 11, no. 12, pp. 574-582, 2021
- Hew, K. F., & Cheung, W. S. (2008). Attracting student participation in asynchronous online discussion: a case study of peer facilitation. *Computers & Education*, 51(3), 1112– 1124.
- Hill, J. R. (2002). Overcoming obstacles and creating connections: community building in web-based learning environments. *Journal of Computing in Higher Education*, 14(1), 67–86.
- Hoffman J. L., & Lowitzki, K. E. (2005). Predicting college success with high school grades and test scores: Limitations for minority students. *The Review of Higher Education*, 28(4), 455–474.
- Hsu, Y. C., & Shiue, Y. M. (2005). The effect of self-directed learning readiness on achievement comparing face-to-face and two-way distance learning instruction. *International Journal of Instructional Media*, 32(2), 143–156.
- Jolliffe, A., Ritter, J., & Stevens, D. (2012). *The online learning handbook: Developing and using web-based learning*. Routledge.
- Kamal, M. Z. & Sultana, S. A. (2000). *Barriers to Development in Open Learning and Distance Education*, Bangladesh, Bangladesh University Press.

- Khwaja, T., & Eddy, P. L. (2015). Using Mendeley to support collaborative learning in the classroom. *Manager's Journal of Educational Technology*, 12(2), 19.
- Kinnula, M., Laari-Salmela, S., & Iivari, N. (2015). Mundane or magical? Discourses on technology adoption in Finnish schools. *Proc. ECIS*, 2015. <http://doi.org/10.18151/7217388>
- Knipe, Damian & Lee, Maria. (2002). The quality of teaching and learning via videoconferencing. *British Journal of Educational Technology*. 33. 301 - 311. <http://doi.org/10.1111/1467-8535.00265>
- Mamman, B., Yusof, A., AbuHassna, H. M. M., Aly, H., Al-Ahmadi, T., Atan, N. A., Harun, J., Mohamad Said, M. N. H., Ismail, Z., Yahaya, N., & Khair, F. (2017). Design and Learning Strategies Applied in Mooc: A Meta-Analysis. *Sains Humanika*, 9(1-4). <https://doi.org/10.11113/sh.v9n1-4.1127>
- Moore, M. G., & Kearsley, G. (2011). *Distance education: A systems view of online learning*. Boston, MA: Cengage Learning.
- Northcote, M. (2008). Sense of place in online learning environments. In R. Atkinson, & C. Organization for Economic Co-operation and Development (OECD) (2012). *Connected minds: Technology and today's learners*. Educational Research and Innovation. OECD
- Panigrahi, R., Srivastava, P. R., & Sharma, D. (2018). Online learning: Adoption, continuance, and learning outcome-A review of the literature. *International Journal of Information Management* 43, 114. <https://doi.org/10.1016/j.ijinfomgt.2018.05.005>
- Peng, H., Tsai, C. C., & Wu, Y. T. (2006). University students' self-efficacy and attitudes toward the Internet: the role of student's perceptions of the Internet. *Educational Studies*, 32(1), 73–86
- Pillai M. (2011). Barriers to Effective Communication. Retrieved from; <http://www.buzzle.com/articles/barriers-to-effective-communication.html>, on 12th October 2020.
- Roper, A. R. (2007). How students develop online learning skills. *Educause Quarterly*, 30(1), 62–64.
- Salaberry, M. R. (2000). Pedagogical design of computer-mediated communication tasks: learning objectives and technological capabilities. *Modern Language Journal*, 84(1), 28–37.
- Seidman, I. (2006). *Interviewing as qualitative research: a guide for researchers in education and the social sciences*. 3rd ed. New York: Teachers College Press
- Smith, R. C., Iversen, O. S., & Veerasawmy, R. (2018). Impediments to digital fabrication in education: A study of teachers' role in digital copy. *Information and technology literacy: Concepts, methodologies, tools, and applications*. IGI Global 301–319. <http://doi.org/10.4018/978-1-5225-3417-4.ch017>
- Stansfield, M., McLellan, E., & Connolly, T. M. (2004). Enhancing student performance in online learning and traditional face-to-face class delivery. *Journal of Information Technology Education*, 3, 173–188.
- Tsai, C.-C., & Lin, C.-C. (2004). Taiwanese adolescents' perceptions and attitudes regarding the Internet: exploring gender differences. *Adolescence*, 39, 725–734.
- Vainionpää, F., Kinnula, M., Iivari, N., & Molin-Juustila, T. (2019b). Gendering and segregation in girls' perceptions of IT as a career choice—A rational inquiry. *Proc. ISD*, 2019.
- Van, N. T., Abbas, A. F., Abuhassna, H., Awae, F., & Dike, D. (2021). Digital Readiness for Social Educators in Health Care and Online Learning During COVID-19 Pandemic: A

- Bibliometric Analysis. *International Journal of Interactive Mobile Technologies (IJIM)*, 15(18), pp. 104–115. <https://doi.org/10.3991/ijim.v15i18.25529>
- Vuopala, E., Hyvönen, P., & Järvelä, S. (2016). Interaction forms successful collaborative learning in virtual learning environments. *Active Learning in Higher Education*, 17(1), 25-38.
- Xiong, Y., So, H., & Toh, Y. (2015). Assessing learners' perceived readiness for computer-supported collaborative learning (CSCL): A study on initial development and validation. *Journal of Computing in Higher Education*, 27(3), 215-239.