Research Article

Post COVID-19 challenges of online teaching in higher education institutes: Teacher's experiences and satisfaction

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Abstract

The study examined factors related to teachers' satisfaction and their perspectives of the benefits and challenges of the online mode of teaching in colleges and universities during the time of the pandemic. The cross-sectional study utilized a Google form that was delivered to college and university teachers through social media platforms and the snowball sampling technique was used. The questionnaire elicited basic demographic and teaching experience information, views regarding online teaching experience, satisfaction with the same, online platform used, limitations, and advantages. The main outcome measure was the level of satisfaction with online teaching. The study was cleared by the ethical committee of the institute. The participants included 422 teachers (58.1 percent males). Overall, 36.9 percent reported being satisfied with their online teaching experience. Satisfaction was related to the educational stream taught, and medical and science faculty reported a significantly lower level of satisfaction with the online platform (χ^2=13.41, P=.037). Only 11.8 percent of the teachers concurred that online teaching led to superior learning among students and nearly half (49.8 percent) opined that it led to inferior learning. Collaborative efforts of the government and academic teaching institutions are needed to facilitate the adoption of a meaningful alternative to the conventional mode of teaching and learning.

Keywords: online teaching, teachers' satisfaction, higher education, COVID-19, distance learning

Introduction

In the post-COVID era, the educational landscape changed rapidly and almost all educational institutes across the world closed and face-to-face classes were suspended to contain the novel virus. It is estimated that nearly 1.5 billion students around the world are currently affected by the closure of educational institutions due to the pandemic and perforce engaged in online remote learning platforms (UNESCO, 2020). There was an abrupt demand that teachers change their teaching style and rapidly shift and adapt to the technology-enabled virtual education format so that students could continue learning with minimal disruption from the comforts of their homes. In western countries, advances in information and communication technology have made web-based learning a viable and popular choice in higher education both for learners and educators (Cojocariu, Lazar, Nedeff,

& Lazar, 2014; Wu, 2016). Some of the advantages of online teaching include increased accessibility and affordable options. Most educational institutions have adopted the synchronous learning mode wherein the students attend live lectures and engage in real-time interactions with their teachers (McBrien, Cheng, & Jones, 2009).

The transition was sudden and caught the college and university faculty by surprise as few were prepared or had any experience in the virtual delivery of academic curriculum in India (Mishra, Gupta, & Shree, 2020). Since India has marked regional and household digital inequalities in access to technology, this shift led to a major disruption in education for many students and teachers alike (Government of India, 2020). Moreover, the move increased the demands on teachers who were struggling to balance the stress of coping with the novel contagion and at the same time respond to the new challenges of service obligations of providing education remotely, especially in developing countries (Fernandez & Shaw, 2020; Oyedotun 2020; Rapanta, Botturi, Goodyear, Guardia, & Koole, 2020; Tuma, Nassar, Kamel, Knowlton, & Jawad, 2021). For example, a study from Jordan reported that a little more than half of the teachers reported increased difficulties with remote teaching due to intermittent internet connectivity and online fatigue (Tuma et al., 2021). Oyedotun (2020) suggested that the rapid change to online pedagogy due to the pandemic in developing countries has brought to the fore the inequities in the education sector of the developing nations including lack of devices and internet access in the rural areas, limited training among teachers to impart teaching on the online platform. In this paper, we address the gap in the research by examining teacher satisfaction of teaching a fully-online under and postgraduate academic courses. The main aims of the current research are to examine teachers' satisfaction with remote teaching and to understand their perspectives regarding the benefits and challenges of the online mode of teaching in colleges and universities during times of the pandemic. The possible limitations, challenges, and experiences of instructors of an implemented distance education curriculum are examined to share the findings and provide recommendations. Indeed, understanding teacher barriers is vital for the optimal implementation of remote learning in higher education.

Methodology

The study utilized a cross-sectional design and the findings are based on a Google form that was designed and delivered to college and university teachers through email, WhatsApp, and social media platforms. Emails were sent to a few faculty members from premier Indian institutes with a request to circulate the survey link to their colleagues and the snowball sampling technique was used. The institutes surveyed included the Indian Institute of Technology (IITs), Indian Institute of Management (IIMs), All India Institute of Medical Sciences (AIIMS), National Institute of Technology (NITs), and Central Universities. An effort was made to ensure that all the main streams of education and the Indian States were represented. The data were collected between January to February 2021. A total of 422 higher education teachers, residing in 27 States and two union territories of the country, responded to the survey.

The questionnaire elicited basic demographic (age and sex), and teaching experience information (basic degree, designation, number of years of teaching experience, the average size of the class taught, working in government or private sector, the education

stream). The questionnaire also elicited specific information regarding online teaching experience, satisfaction with the same, the type of online platform used, main limitations and advantages, and perception of students' learning outcome. The main outcome measure was the level of satisfaction with the online teaching and this was measured on a 5-point Likert ranging from very dissatisfied (1) to neutral (3) to very satisfied (5). This was converted to a 3-point scale while conducting the analysis.

The questionnaire was pilot tested and modified and it was ensured that it did not take more than 10 minutes to complete. Participation in the study was voluntary and confidentiality was assured. Providing identification information such as email addresses was voluntary. Only those respondents who consented to participate in the research study were included. Ethical approval was granted by the Ethics Committee of the institute vide letter INT/IEC/2021/591-126, dated 22.1.2021.

Results

The participants included 422 teachers (mean age= 42.18 years, SD= 9.04; 58.1 percent males), mostly from government institutes (82.2 percent), teaching undergraduate (19.7 percent) postgraduate (17.5 percent), and both under- and postgraduate courses (62.8 percent). On an average, the faculty had 12 years (SD=8.05) of teaching experience, however, the majority reported that they had little experience of online teaching before the pandemic and the majority lacked the technical knowledge and only 21 percent had previously taught an online course/s. A little more than half (51.7 percent) reported that they had received some training from their institutes and an additional 8.1 percent reported that they had taken some course to update themselves regarding virtual teaching. Most teachers had some technical support from their educational institutes and 61.8 percent reported that they were provided with computers and infrastructure to support e-teaching during the pandemic. Despite the support, more than half (55 percent) reported an increase in expenditure related to web-based teaching. The most popular online platforms used were Google Meet (61.1 percent), Zoom (32 percent), Google Classroom (30.1 percent), Microsoft teams (23 percent), WhatsApp group chats (23.5 percent), and WebEx (21.1 percent). Most of the faculty reported that these platforms were user-friendly and posed no major user difficulty. However, nearly half (48.6 percent) of the respondents had cyber security concerns with the use of these platforms. The major modality of teaching was through the use of synchronous live streaming tutoring sessions. More than half (55 percent) of the participants reported taking online classes both from the office and home and only 18.5 percent reported taking classes exclusively from home.

To identify the salient characteristics of effective online instructors, the participants were asked to identify the most important features of online educators. Results indicated that teachers ranked passion for teaching, good subject knowledge, passion regarding the subject being taught and facilitating student engagement in the classroom as some of the distinctive characteristics (Table 1). Thirty-six (8.5 percent) respondents reported being 'very satisfied' and an additional 28.4 percent reported that they were 'satisfied' with their fully online teaching experience. Four percent of the participants reported being 'very dissatisfied' and 17.3 percent were 'dissatisfied' and 41.7 percent responded with 'neutral'.

Table-1: Percent reporting on the important characteristics of effective online teachers

Categories	Not important Percent (n)	Somewhat important Percent (n)	Very Important Percent (n)
Passion of teaching	0.9 (4)	11.4 (48)	87.7 (370)
Good subject knowledge	0.9 (4)	13.7 (58)	85.3 (360)
Passion about the subject	0.5 (2)	16.4 (69)	83.2 (351)
Facilitates classroom engagement	2.6 (11)	24.2 (102)	73.2 (309)
Flexible and open to feedback	4.0 (17)	24.4 (103)	71.6 (302)
Good time manager	2.6 (11)	34.8 (147)	62.6 (264)
Trained in online teaching	13.3 (56)	39.8 (168)	46.9 (198)

Table 2 presents the percentage of satisfaction or dissatisfaction with online teaching by the background characteristics. Results indicated that there were no differences among educators on satisfaction by gender, designation, type of institute, number of students in the class, and number of classes taught per week. Satisfaction was related to the educational stream taught and medical and science faculty reported a significantly lower level of satisfaction with the online teaching platform (χ^2=13.41, P=.037). Higher satisfaction was reported by teachers who had some prior online teaching experience (χ^2=10.47, P=.005) and by those who had greater teaching experience (χ^2=12.60, P=.05).

Table-2: Background characteristics and percent satisfied/dissatisfied with online teaching

Characteristics	Percent satisfied Percent (n)	Percent dissatisfied Percent (n)	χ^2	P value
Gender				
Male (245)	37.6 (92)	23.3 (57)	1.97	.373
Female (177)	36.2 (64)	18.6 (33)		
Designation				
Assistant Prof (244)	34.0 (83)	21.3 (52)	3.17	.530
Assoc/Additional (97)	39.2 (38)	20.6 (20)		
Professor (81)	43.2 (35)	22.2 (18)		
Type of Institute				
Government (347)	37.6 (92)	22.5 (78)	2.62	.270
Private/aided (75)	37.5 (130)	16.0 (12)		
Stream taught				
Engineering (162)	42.6 (69)	24.7 (40)	13.41	.037
Humanities (125)	40.0 (50)	16.0 (20)		
Medical (61)	27.9 (17)	23.0 (14)		
Science (74)	27.0 (14)	21.6 (16)		

Teaching experience (yrs.) <5 (97) 5-10 (111) 11-20 (128) >20 (86)	 16.0 (25) 24.4 (38) 34.0 (53) 25.6 (40)	 30.0 (27) 24.4 (22) 24.4 (22) 21.1 (19)	12.60	.050
No. of students (class) <40 (141) 40-80 (181) >80 (100)	 36.9 (52) 39.8 (72) 32.0 (32)	 23.4 (33) 20.4 (37) 20.0 (20)	2.73	.603
No. of classes taught (week) Less than 5(151) 6-15(210) >15(61)	 39.1 (59) 34.8 (73) 39.3 (24)	 24.5 (37) 19.0 (40) 21.3 (13)	3.88	.422
Previous online experience No (333) Yes (89)	 33.3 (111) 50.6 (45)	 23.7 (79) 12.4 (11)	10.47	.005

Table 3 presents the percentage of teachers who agreed with online teaching pros and cons by level of satisfaction. Results indicated that educators who were more satisfied with online teaching relative to those who reported being dissatisfied were more likely to agree with the myriad advantages of web-based teaching such as increased interaction (χ^2=51.44, P=.0001), greater flexibility (χ^2=59.8, P=.0001), recording of lectures and replaying them at a convenient time (χ^2=24.53, P=.0001), active participation of students (χ^2=59.8, P=.0001), and increased creativity (χ^2=17.02, P=.002). On the other hand, no differences were found among satisfied and dissatisfied faculty on some of the cons of online teaching such as increased workload associated with virtual delivery of classes, limited face-to-face contact and longer preparation time associated with online teaching.

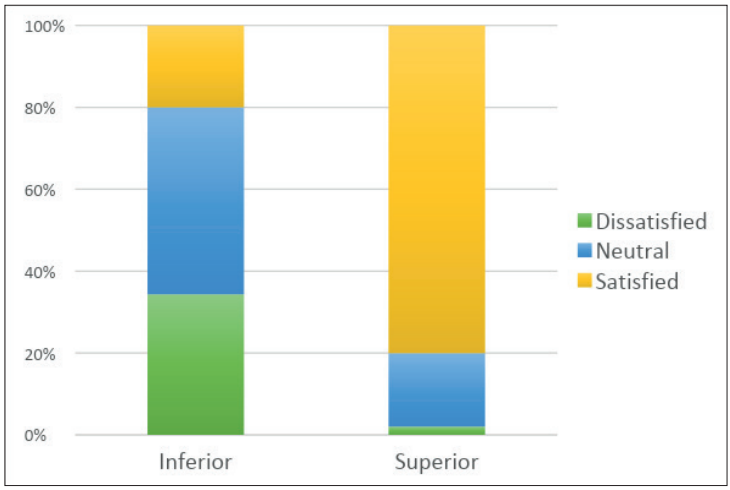
Table 3: Percent agreement with online pros and cons by satisfaction with online teaching

Statements	**Satisfied (n=156)** **Percent (n)**	**Not Satisfied (n=90)** **Percent (n)**	χ^2	**P value**
Interaction is higher in online than traditional class	19.9 (31)	1.1 (1)	51.44	.0001
Greater flexibility in online teaching	64.7 (101)	24.4 (22)	59.8	.0001
Lectures can be recorded and replayed	78.8 (123)	50.0 (45)	24.53	.0001
Students are actively involved	30.1 (47)	1.1 (1)	92.67	.0001
Increased workload in online teaching	60.9 (95)	68.9 (62)	2.13	.713

Face to face contact with students is missing	85.3 (133)	93.3 (84)	4.94	.293
Online teaching requires being creative	86.5 (135)	66.7 (60)	17.02	.002
Technical issues make online teaching frustrating	31.4 (49)	61.1 (55)	28.96	.0001
Longer preparation time for an online class	55.8 (87)	57.8 (52)	0.44	.979
Passive and lower participation of students	58.3 (91)	91.1 (82)	42.78	.0001
Difficulty in motivating students in online mode	57.7 (90)	86.7 (78)	27.57	.0001

Teachers were also asked to report whether they felt that online teaching was associated with superior learning as compared to face-to-face teaching. Only 11.8 percent of the teaching faculty concurred that online teaching led to superior learning among students and nearly half (49.8 percent) opined that it led to inferior learning. Interestingly, teachers who felt that online teaching was associated with a superior outcome were more likely to report being satisfied with the web-based platform as compared to the faculty who felt it was associated with inferior learning (Fig 1). A little less than two-thirds (63 percent) of the teachers preferred a hybrid mode of teaching in the future and only 35.1 percent wanted to continue with the traditional classroom teaching. It seems that the e-learning platforms cannot completely replace the traditional classrooms as most preferred a blended mode after the pandemic.

Figure-1: Percent teachers satisfied with online teaching by student learning outcome



Discussion

The study examined teachers' satisfaction with their web-based teaching experiences post the lockdown. Satisfaction with this novel mode of teaching was generally low as the faculty struggled with several

challenges including lack of adequate training for using the online platform, increased expenses, limited teacher-student engagement, and doubts about whether students were learning from the e-learning platform. In addition, other issues cited by some participants included the adequate provision of basic online teaching facilities, unlimited internet connection plans and a stable power supply.

Some of the distinctive characteristics for effective online teaching affirmed by the faculty included passion for teaching and the subject, expert knowledge of the subject and teacher's ability to facilitate student engagement in the classroom. Indeed, evidence indicates that passion is a salient feature and has a positive effect on the academic achievement, commitment, and motivation of the students (Carbonneau, Vallerand, Fernet & Guay, 2008; Ruiz-Alfonso, Vega, & Beltran, 2018; Serin, 2017). Interestingly, besides subject matter knowledge and passion, respondents also opined that educators need a wide range of different skills and these include instructors' ability to create effective learning environments by student engagement, being open to feedback and exercising flexibility. Indeed, identification of characteristics that contribute towards involvement in online teaching can help in preventing burnout and increasing the involvement of the faculty in their profession (Green, Alejandro, & Brown, 2009).

Instructors also struggled with a lack of skills to create an engaging online learning environment for their students. Satisfaction was particularly low among medical and science faculty as they lacked resources and support for content development. Previous studies have found that academic subjects like medicine and sciences that depend on lab skills and hands-on experiences require educational resources of excellent quality to impart adequate training (Al-Balas et al., 2020; O'Doherty et al., 2018; Sindiani, Obeidat, Alshdaifat, 2020). Previous studies have documented that the distance education format is perceived as less effective and satisfying by students and teachers alike (Khalili 2020; Tuma et al., 2021). Most of the educators surveyed preferred to shift to a hybrid mode of instruction as they felt that traditional face-to-face teaching was superior for coaching skills and a clinical-driven curriculum.

Although previous research indicates that educators are more likely to be satisfied when they have flexibility in 'what, how, when, and where they teach rather than follow strict and rigid curricula and guidelines (Archambault & Crippen, 2009; Bolliger & Wasilik, 2009; Hawkins, Barbour, & Graham, 2012; Murphy & Rodríguez-Manzanares, 2008; Velasquez, Graham, & Osguthorpe, 2013), however, when teachers have with little or no training in online pedagogy the challenges can be considerable (O'Doherty et al., 2018; Khalili 2020). Our results indicated that greater satisfaction was reported by respondents when they had some prior online tutoring experience. There is a need to provide higher education teaching faculty some training to enhance their professional skills regarding remote instruction. Since a significant proportion of respondents were dissatisfied with the online platform and virtual delivery of instruction this can lower the quality of the course and lead to inferior learning outcomes. There are several technology online tools such as multimodality, live cloud recordings of lectures, instant feedback, chatting and posting questions that need to be exploited by the educators to provide enhanced and personalized learning experiences for the technology-driven generation of students. Unless higher education tutors are trained in online pedagogy the

benefits to students and professional satisfaction will remain elusive. Indeed, online instruction requires pedagogical content knowledge that is linked to digital technology tools to enhance students' learning experiences (Rapanta et al., 2020). Several studies have documented that trainer's satisfaction is central to optimal and quality learning of the students (Bolliger & Wasilik, 2009; Stickney, Bento, & Aggarwal, 2019).

Results indicated that satisfaction with online instruction was related to the perceptions of the faculty about the advantages that the web-based platform provided them including interactive technologies and web features like chatting that encourage active participation of learners, use of creative tools like mentimeters, and short quizzes to enhance and test learning. It is anticipated that newer instructional strategies would further enhance student participation and student-teacher interaction and promote collaborative learning (Bao, 2020; Evans, Ward, & Reeves, 2019; Kebritchi, Lipschuetz, & Santiague, 2017). Regardless of the challenges, online instruction is here to stay and can greatly facilitate and enhance the standards of education (Ayebi-Arthur, 2017).

The demand for quality online educators who provide personalized learning experiences to learners is indeed going to increase over time with technological advancement ((Donahoe, Rickard, Holden, Blackwell, & Caukin, 2019; Mishra et al., 2020). It is envisaged that use of technology will become an integral part of academic learning in the coming years and gradually replace the traditional and teacher-driven classroom. Unfortunately, in resource-poor countries, the digital learning platform is limited to students who are tech-savvy and can afford smartphones, computers, and a fast internet connection (Altbach & De Wit 2020). Keeping this in mind, the government of India has initiated the SWAYAM, an educational portal to provide quality online learning for all and bridge the digital divide gap in the country. The portal provides several free distance learning courses at the school, undergraduate and postgraduate levels. The Ministry of Human and Resource Development (MHRD) and University Grants Commission (UGC) have made available several e-books, e-journals, online depositories, web-based TV channels, and virtual labs such as the National Digital Library of India, e-ShodhSindhu, e-GyanKosh and Gyandarshan. Information about these vital resources needs to be widely disseminated to educational institutions so that these resources can be adequately utilized and educational institutes can adapt to the novel educational reality.

The main drawback of the study is the use of a convenience sampling technique that limits the generalizability of the findings. It also remains possible that those who were more satisfied with the digital platform were more likely to respond and this may have overestimated the satisfaction rates. Nevertheless, the study has several strengths including a large sample size and the pan-India representation of teachers from all the educational streams. It is anticipated that the growing pains of remote-based learning will be overcome soon and the forum would provide increased, equitable and affordable opportunities for all students. Future studies need to compare online and traditional classroom teaching to student engagement and learning outcomes.

Conclusions

In sum, collaborative efforts of the government and academic teaching institutions are needed to facilitate the adoption of meaningful alternatives to

the conventional mode of teaching and learning. There are myriad opportunities for transforming instructional practices and expanding the remote learning platform by collaborating with other national and international academic institutes. Indeed, the e-learning platform can unlock immense opportunities for strengthening education in resource- and experience-poor countries.

Key findings and implications for stakeholders:

1. Teachers need the training to enhance their skills to create an engaging online learning environment for their students.
2. It is anticipated that remote learning would provide increased, equitable, and affordable opportunities for all students.
3. Collaborative efforts of the government and academic teaching institutions are needed to facilitate the adoption of meaningful alternatives to the conventional mode of teaching and learning.

References

Al-Balas, M., Al-Balas, H. I., Jaber, H. M., Obeidat, K., Al-Balas, H., Aborajooh, E. A., Al-Taher, R., & Al-Balas, B. (2020). *Distance learning in clinical medical education amid COVID-19 pandemic in Jordan: current situation, challenges, and perspectives*. BMC Medical Education, 20(1), 341. https://doi.org/10.1186/s12909-020-02257-4

Altbach, P. G., & De Wit, H. (2020). *Post-pandemic outlook for higher education is bleakest for the poorest. International Higher Education*, 102, 3–5. https://www.internationalhighereducation.net/api-1/article/!/action/getPdfOfArticle /articleID/2904/productID/29/filename/article-id-2904.pdf

Archambault, L., & Crippen, K. (2009). K-12 distance educators at work: Who's teaching online across the United States. *Journal of Research on Technology in Education*, 41(4), 363–391. https://doi.org/10.1080/15391523.2009.10782535

Ayebi-Arthur, K. (2017). *E-learning, resilience, and change in higher education: Helping a university cope after a natural disaster. E-Learning and Digital Media,* 14(5), 259–274. https://doi.org/10.1177/2042753017751712

Bao, W. (2020). *COVID-19 and online teaching in higher education: A case study of Peking University. Human Behavior Emerging Technology*, 2(2), 113-115. https://doi.org/10.1002/hbe2.191

Bolliger, D., & Wasilik, O. (2009). *Factors influencing faculty satisfaction with online teaching and learning in higher education. Distance Education,* 30(1), 103–116. https://doi.org/10.1080/01587910902845949

Carbonneau, N., Vallerand, R., Fernet, C., Guay, F. (2008). *The role of passion for teaching in intrapersonal and interpersonal outcomes. Journal of Educational Psychology, 100*(4), 977-987. https://doi.org/10.1037/a0012545

Cojocariu, V.-M., Lazar, I., Nedeff, V., & Lazar, G. (2014). *SWOT analysis of e-learning educational services from the perspective of their beneficiaries. Procedia-Social and Behavioral Sciences,* 116(2014), 1999–2003. https://doi.org/10.1016/j.sbspro.2014.01.510

Donahoe, B., Rickard, D., Holden, H., Blackwell, K., & Caukin, N. (2019). *Using EdTech to enhance learning. International Journal of the Whole Child,* 4(2), 57–63. https://libjournals.mtsu.edu/index.php/ijwc/article/view/1599/1124

Evans, S. M., Ward, C., & Reeves, S. (2019). *Online interprofessional education facilitation: A scoping review. Medical Teacher,* 41(2), 215–222. https://doi.org/10.1080/0142159X.2018.1460656

Fernandez, A.A., & Shaw, G.P. (2020). *Academic leadership in a time of crisis: The coronavirus and COVID-19. Journal of Leadership Studies*, 14(1), 39–45. https://doi.org/10.1002/jls.21684

Government of India. (2020). *Household Social Consumption on Education in India report, based on the 2017-18 National Sample Survey. Ministry of Statistics and Programme Implementation. New Delhi: National Statistical Office*. Retrieved from http://mospi.nic.in/sites/default/files/publication_reports/Report_585_75th_round_Education_final_1507_0.pdf

Green, T., Alejandro, J., & Brown, A. H. (2009). T*he retention of experienced faculty in online distance education programs: Understanding factors that impact their involvement. International Review of Research in Open and Distance Learning*, 10(3), 1-15. https://doi.org/10.19173/irrodl.v10i3.683

Hawkins, A., Barbour, M. K., & Graham, C. R. (2012). "*Everybody is their own island": Teacher disconnection in a virtual school. The International Review of Research in Open and Distance Learning,* 13(2), 124–144. https://doi.org/10.19173/irrodl.v13i2.967

Kebritchi, M., Lipschuetz, A., & Santiague, L. (2017). *Issues and challenges for teaching successful online courses in higher education: a literature review. Journal of Educational Technology Systems,* 46(1), 4–29. https://doi.org/10.1177/0047239516661713

Khalili H. (2020). *Online interprofessional education during and post the COVID-19 pandemic: a commentary. Journal of Interprofessional Care, 34*(5), 687–690. https://doi.org/10.1080/13561820.2020.1792424

McBrien, J. L., Cheng, R., & Jones, P. (2009). *Virtual Spaces: Employing a Synchronous Online Classroom to Facilitate Student Engagement in Online Learning. The International Review of Research in Open & Distributed Learning*, 10(3), 1-17. https://doi.org/10.19173/irrodl.v10i3.605

Mishra, L., Gupta, T., & Shree A. (2020). *Online teaching-learning in higher education during lockdown period of COVID-19 pandemic. International Journal of Educational Research Open*, 1 (2020),100012. https://doi.org/10.1016/j.ijedro.2020.100012

Murphy, E., & Rodríguez-Manzanares, M. A. (2008). *Contradictions between the virtual and physical high school classroom: A third-generation activity theory perspective. British Journal of Educational Technology*, 39(6), 1061–1072. https://doi.org/10.1111/j.1467-8535.2007.00776.x

O'Doherty, D., Dromey, M., Lougheed, J., Hannigan, A., Last, J., & McGrath, D. (2018). *Barriers and solutions to online learning in medical education - an integrative review. BMC Medical Education*, *18*(1), 130. https://doi.org/10.1186/s12909-018-1240-0.

Oyedotun, T.D. (2020). *Sudden change of pedagogy in education driven by COVID-19: Perspectives and evaluation from a developing country. Research in Globalization*, 2 (2020), 100029. https://doi.org/10.1016/j.resglo.2020.100029. https://doi.org/10.1016/j.resglo.2020.100029

Rapanta, C., Botturi, L., Goodyear, P., Guardia, L, & Koole, M. (2020). *Online University Teaching During and After the Covid-19 Crisis: Refocusing Teacher Presence and Learning Activity. Post digital Science and Education*, 2, 923–945. https://doi.org/10.1007/s42438-020-00155-y

Ruiz-Alfonso, Z., Vega, L., & Beltran, E. (2018). *What about passion in education? the concept of passion, why it is important and how teachers can promote it. European Scientific Journal,* 14(1), 19-28. https://doi.org/10.19044/esj.2018.v14n1p19

Serin, H. (2017). *The role of passion in learning and teaching. International Journal of Social Sciences & Educational Studies,* 4(1):60-64. https://doi.org/10.23918/ijsses.v4i1p60

Sindiani, A. M., Obeidat, N., Alshdaifat, E., Elsalem, L., Alwani, M. M., Rawashdeh, H., Fares, A. S., Alalawne, T., & Tawalbeh, L. I. (2020). *Distance education during the COVID-19 outbreak: A cross-sectional study among medical students in North of Jordan. Annals of Medicine and Surgery (2012)*, *59*, 186–194. https://doi.org/10.1016/j.amsu.2020.09.036

Stickney, L,T,, Bento, R.F., & Aggarwal, A. (2019). *Online higher education: faculty satisfaction and its antecedents. Journal of Management Education,* 43 (5), 509-542. https://doi.org/10.1177/1052562919845022

Tuma, F., Nassar, A. K., Kamel, M. K., Knowlton, L. M., & Jawad, N. K. (2021). *Students and faculty perception of distance medical education outcomes in resource-constrained system during COVID-19 pandemic. A cross-sectional study.* Annals of Medicine and Surgery (2012), *62*, 377–382. https://doi.org/10.1016/j.amsu.2021.01.073

UNESCO. (2020). *COVID-19 Education: From disruption to response*. Retrieved from https://en.unesco.org/covid19/educationresponse/

Velasquez, A., Graham, C. R., & Osguthorpe, R. D. (2013). *Caring in a technology-mediated online high school context. Distance Education*, 34(1), 97–118. https://doi.org/10.1080/01587919.2013.770435

Wu, B. (2016). *Identifying the influential factors of knowledge sharing in e-learning 2.0 systems. International Journal of Enterprise Information Systems*, 12(1), 85–102. https://doi.org/10.4018/IJEIS.2016010105