

Online Teaching and Learning Attitude of Teachers towards Readiness in Shaping the Future-Oriented Education

Nerisa N. Paladan^{1*}

¹School of Graduate Studies and Research, Partido State University, Goa, Camarines Sur, Philippines
nerisa.paladan@parsu.edu.ph, npaladan@gmail.com

Corresponding author (*)

Received: 25 July 2022

Revised from: 31 October 2022

Accepted: 23 February 2023

Published: 31 May 2023

Abstract

Higher education institutions (HEI) are challenged to embrace online teaching and learning as part of the new normal in delivering educational services after the pandemic. The attitude of teachers in higher education plays a vital role in the implementation of online teaching and learning and readiness in shaping future-oriented education. This study aims to assess the teacher's attitude toward appreciation, and responsiveness to online teaching and learning. Also, teachers' attitudes as to their proficiency in handling online teaching and knowledge of technological reforms. It utilized quantitative research with a sample of 107 higher education teachers who are the main respondents of this study. Participation was voluntary in the self-administered online survey using a google form and it uses a standardized questionnaire in evaluating teachers' attitudes in the HEI towards online teaching and learning. The results of the statistical test revealed that teachers in private universities have favorable attitudes toward appreciation, responsiveness, proficiency, and knowledge of online teaching and learning while teachers in state universities have favorable attitudes toward appreciation, proficiency, and knowledge but are neutral to responsiveness towards online teaching and learning and for teachers in community colleges they have favorable attitudes as to appreciation and knowledge but are neutral to responsiveness and proficiency of online teaching and learning. However, regardless of the institution, the overall attitude of HEI teachers has favorable attitudes toward online teaching and learning.

Keywords: Teacher Attitude, Online teaching & learning, Appreciation, Responsiveness, Proficiency, Knowledge

1. Introduction

Online teaching and learning integrate Information and Communication Technologies (ICT), such as websites, video conferences, CDs, television, mobile technologies, and online platforms in the teaching and learning process (Sife et al., 2007). The online learning environment supports varied media ranging from text to multimedia and a combination of mixed content formats. Also, online teaching and learning is a method of distance learning that connects electronic technology and internet platforms for conducting teaching and learning processes (Howlett et al., 2009). This has been proposed to boost the quality of education, increase motivation, avoid place limitations, offer time flexibility, and give both students and educators innovative technological skills (Van Braak, 2001). The use of the internet and computer technologies for teaching-learning purposes had increased intensely. This provides opportunities in developing online courses.

Distance learning started as early as 1996, using TV broadcasting, lesson recording, and online content (Weiner et al., 2019). There was a shift in the last decade, although hesitant, into online and other forms of distant learning (Shachar and Neumann, 2003; Weiner et al., 2019). It was observed that the shift towards online education has been slow due to various barriers documented from earlier experiences. These barriers to online learning might fall into four major categories that include skills, resources, institutional strategies, and attitudes (O'Doherty et al., 2018).

The success of any information system relies on its users (Almaiah, 2018) which is the teachers' attitude. Liaw et al., (2007) argue that no matter how innovative or proficient the technology is, its actual implementation depends upon users having a positive attitude toward it. This was supported by several studies that conclude the success of the online teaching and learning process depends mostly on teachers' attitudes towards it (Xhaferi et al., 2018; Teo, 2011), which indicates that teachers' attitudes play a vital role in promoting the ongoing use of online teaching and learning in the future.

Attitude refers to a person's positive or negative opinion about something and it plays a crucial role in using technology (Krishnakumar & Rajesh, 2011). It also has a vital role in guiding a person to participate in actions envisioned to achieve specific objectives and goals (Kumar, 2017). Early literature describes that teachers have an affective attitude toward technology development, adoption, and implementation or assessing judgment about the technology in question (Davis, Bagozzi, & Warshaw, 1989).

Technology is viewed as important and personally relevant which creates people's positive attitude toward it (Rogers 2003; Teo 2011). Ferdousi (2009) claims that teachers' attitudes have a noteworthy influence on their decisions "...about if, how and when they will use e-learning systems" (p. 5). The influencing factors on teachers' attitudes toward e-learning have been discovered in several studies (Yilmaz & Bayraktar, 2014; Karaca et al., 2013; Chen & Tseng 2012; Teo et al., 2011;). Literature classified two categories of factors affecting teachers' attitudes toward technology such as internal and external factors (Venkatesh et al., 2003). The internal factors include the teacher's acceptance of the technology formed and their perception of whether technology is favorable or unfavorable while external factors include subjective norms (Venkatesh et al., 2003) such as technical factors like the complexity of a technology (Rogers, 2003; Weller, 2007), organizational structure (Rogers, 2003), and environmental factors such as Information and Communications Technology (ICT) infrastructure, features and support, and etc. (Chien et al., 2014).

Recently, due to the novel coronavirus (COVID-19) outbreak, many countries considered online education as the best substitute for reaching out to learners across distant places. The COVID-19 situation compelled institutions across the world to use the online platform(s) and transfer their activities to online and remote methods (Sahu, 2020) to ensure that learning will not be stopped. Online courses permit a vast audience of learners to obtain high-quality education on an inclusive variation of subjects and modes.

At present, many countries utilize online teaching and learning as a mainstream method of education (Kara et al., 2020) and a significant learning tool for teachers' professional development (Zhang et al., 2017). Chieu and Herbst, (2016) state that teachers are open to online teaching and learning for its autonomy, flexibility, peer interaction, and opportunities for personalized learning. In addition, online teaching and learning can encourage the sharing and co-construction of the educational experience using effective social interaction (Kent et al., 2016). Therefore, online teaching and learning are viewed as important strategies to develop teachers' thinking skills and encourage professional development (Quinn et al., 2019) and this now becomes part of the new normal in higher education after the pandemic. Online teaching and learning will now influence the future of higher education. Given this situation, a study on online teaching and the learning attitude of teachers toward readiness in shaping future-oriented education is needed. This study aims to assess the teacher's attitude toward appreciation, and responsiveness to online teaching and learning. Also, teachers' attitudes as to their proficiency in handling online teaching and knowledge of technological reforms. The attitude of the teachers in HEI will play a significant role in shaping future-oriented education in the HEI. The study may add to the body of knowledge in the discipline of online teaching and learning in higher education.

2. Research Method

The study utilized a quantitative-survey research design to assess the attitude of teachers in higher education institutions in terms of their appreciation for online teaching and learning; responsiveness towards online education; proficiency in handling online teaching; and knowledge of technological reforms. The study was conducted in different higher education institutions (HEI) in the Philippines, and the respondents are the teachers in higher education institutions in the Philippines that includes private universities, state college universities, and community colleges in the Philippines. Virtual consent was asked from the HEI teachers' respondents before they participated in this study after providing a brief orientation of the research objectives. Confidentiality was assured in their responses and the voluntary nature of the survey.

The study applied both primary and secondary data. Primary data comes directly from the HEI teachers. Data was collected through a survey using google forms with a structured questionnaire. It uses a standardized questionnaire for assessing the attitude scale toward online teaching and learning for higher education teachers that include four factors such as an appreciation for online teaching and learning; responsiveness towards online education; proficiency in handling online teaching; and knowledge of technological reforms (Sangwan, A. et al 2020). The attitude scale was interpreted using the following: 5.00-4.21: Highly Favorable, 4.20- 3.41: Favorable, 3.40-2.61: Neutral, 2.60- 1.81: Unfavorable, 1.80-1.00: Highly Unfavorable Attitude. These were based on a published journal with the consent of the author. The questionnaire is composed of 30 statements and it uses a five Likert scale of 5 to 1 from strongly agree, agree, neutral, disagree, and strongly disagree respectively.

It uses a descriptive weighted mean and ranking to explain the attitude of teachers in HEI as to their appreciation of online teaching and learning; responsiveness to online education; proficiency in handling online teaching; and knowledge of technological reforms.

3. Findings and Discussion

3.1 Attitude of HEI teachers toward an appreciation for online teaching and learning

Table 1 illustrate the attitude of teachers in HEI toward an appreciation for online teaching and learning. Both teachers in state universities and community colleges have favorable while teachers in private universities have a highly favorable attitude towards appreciation for online teaching. This indicates that teachers in HEI regardless of the type of their institution have a positive appreciation of online teaching and learning from favorable to highly favorable. This contributes to the readiness for e-learning of teachers in HEI and this is a tangible consideration in the implementation of the e-Learning process (Balci et al., 2021). Another thought was teachers having positive attitudes are those who are aware of technologies on web-based (Uzunboylyu, 2007).

Table 1 Factor 1 Appreciation for online teaching and learning

Indicators	State University		Private University		Community College	
	Weighted Mean	Rank	Weighted Mean	Rank	Weighted Mean	Rank
8. Online teaching has offered new ventures of creativity and opportunities for a teacher.	4.24	3	4.47	3	4.44	2
17. Every Teacher should be digitally updated in order to stay relevant.	4.61	1	4.63	1	4.11	4
21. I believe that digitally literate teachers have better future	3.84	6	3.85	8	3.78	5
23. Students can learn at their own pace via online learning.	3.68	7	4.02	7	3.67	6
24. One can work collaboratively through online platforms	3.66	8	4.17	5	4.22	3
25. Digital Competence is an important 21st century skill for every teacher	4.55	2	4.62	2	4.56	1
26. Online education system provides great opportunity to a teacher for creating and sharing his/her presentations, video, handouts and weblinks	4.15	5	4.43	4	4.44	2
28. I take interest in attending workshops/ training programmed related with online teaching and MOOCs.	4.21	4	4.12	6	4.44	2
29. Online teaching is very economical.	2.97	9	3.6	9	3.33	7
33. I appreciate the use of online teaching in present time.	4.21	4	4.47	3	4.44	2
<i>Over-all Mean</i>	4.01 Favorable		4.24 Highly Favorable		4.14 -Favorable	

Legend: 5.00-4.21: Highly Favorable, 4.20- 3.41: Favorable, 3.40-2.61: Neutral, 2.60- 1.81: Unfavorable, 1.80-1.00: Highly Unfavorable

4.2. Attitude of HEI teachers towards responsiveness to online education

Table 2 reflects the attitude of HEI teachers with regard to their responsiveness toward online education. The result of the weighted mean indicates that both teachers in state universities and community colleges have a neutral response to online education and they still feel more comfortable in classroom teaching than online teaching for them, online teaching can never replace the conventional mode of teaching which rank 1st and 2nd. This is in contrast to the response of teachers in private universities who have a favorable response to online education and believe that online teaching provides more flexibility to the students. This is similar to the result of teachers' attitudes that online classes transformed it meaningfully (Gold, 2001) with the flexibility provided to the students. However, similar to teachers in state universities and community colleges, teachers in private universities also feel more comfortable in classroom teaching than online teaching.

Table 2 Factor 2 Responsiveness towards online education

Indicators	State Universities		Private Universities		Community Colleges	
	Weighted Mean	Rank	Weighted Mean	Rank	Weighted Mean	Rank
6. Online teaching is very good platform for teachers and students	3.5	3	3.73	4	3.89	2
12. Online teaching is more interesting than classroom teaching.	2.63	4	2.87	6	2.56	5
14. Online teaching provides more flexibility to the students.	3.5	3	4.03	1	3.56	3
15. I feel more comfortable in classroom teaching than online teaching	3.87	1	3.92	2	4	1
18. Students participate more actively during online teaching.	2.32	6	2.58	7	2.56	5
19. Student progress can be tracked more efficiently during online teaching	2.53	5	3.12	5	2.89	4
20. Online teaching can never replace conventional mode of teaching.	3.58	2	3.87	3	3.89	2
<i>Over-all Mean</i>	3.13	<i>Neutral</i>	3.45	<i>Favorable</i>	3.33	<i>Neutral</i>

Legend: 5.00-4.21: Highly Favorable, 4.20- 3.41: Favorable, 3.40-2.61: Neutral, 2.60- 1.81: Unfavorable, 1.80-1.00: Highly Unfavorable

It was also noted that teachers from state universities, private universities, and community colleges have common unfavorable responses to students participating more actively during online teaching. This can be attributed to the difficulty of internet connection of the students, and the majority of the student most of the time are off camera during synchronous class. However, this is in contrast to the findings of Gold, (2001), that online classes were observed as interactive and participatory. Furthermore, according to Adnan, & Anwar (2020), online classes might be helpful for both students and teachers, it need to pay attention to matters related to their attitudes.

4.3. Attitude of HEI teachers toward proficiency in handling online teaching

Table 3 indicates the attitude of HEI teachers towards proficiency in handling online teaching. The result of the weighted mean shows that both teachers in state universities and private universities have a favorable attitude with regard to proficiency in handling online teaching while teachers in community colleges have a neutral attitude. It was noted that despite the difficulty of online teaching and learning to the HEI teachers since this is just new to them, they have neutral to favorable responses to the proficiency in handling online teaching. With this, it was observed that teachers are committed to continuing to do their responsibility and upgrade their skills to teach on an online platform which is now part of the new

normal of educating students in higher education. In periods of unforeseen change, teachers were not well equipped to teach online (Sokal et .al, 2020; De la Rama, et .al, 2020) nevertheless coping with the current situation. However, common to teachers in state universities, private universities, and community colleges view online teaching as more challenging, but at the same time they see digitally literate teachers to have a better future and they assess that online learning is difficult for students.

Table 3 Factor 3 Proficiency in handling online teaching

Indicators	State Universities		Private Universities		Community Colleges	
	Weighted Mean	Rank	Weighted Mean	Rank	Weighted Mean	Rank
3. Online teaching is more challenging.	4.39	1	4.6	1	4.33	1
4. I don't feel comfortable while preparing video lectures.	3.37	5	3.05	6	2.56	6
7. I find it difficult to teach through online mode.	3.37	5	2.93	8	3	5
9. Online learning is difficult for students.	3.95	3	3.63	3	3.44	3
10. I feel stressed about the use of different Learning Management System (LMS) for teaching	3.05	7	3	7	3.11	4
16. Online teaching is time consuming.	3.55	4	3.5	4	3	5
31. I believe that digitally literate teachers have better future.	3.97	2	3.9	2	4.22	2
22. Availability of many online teaching tools creates confusion about their usage.	3.34	6	3.25	5	3.11	4
<i>Over-all Mean</i>	3.63 Favorable		3.48 Favorable		3.35 Neutral	
<i>Legend:</i>	<i>5.00-4.21: Highly Favorable, 2.60- 1.81: Unfavorable,</i>		<i>4.20- 3.41: Favorable, 1.80-1.00: Highly Unfavorable</i>		<i>3.40-2.61: Neutral,</i>	

4.4. Attitude of HEI teachers toward knowledge of technological reforms

Table 4 illustrate the attitude of HEI teachers toward knowledge of technological reforms. Teachers in state universities, private universities, and community colleges have a favorable attitude toward knowledge of technological reforms with the manifestation of keeping themselves self-updated with new technological innovations in the field of teaching and they have sufficient knowledge about different internet tools required for conducting online classes. It was noted that teachers in HEI have an attitude of openness and commitment to upgrade themselves with regard to technological reforms. It was observed that the majority of the HEI institutions provide training in upgrading the skills of their teachers to prepare them for online teaching and learning. According to Oranburg, (2020) both teachers and students can simply advance from some technological innovations online.

Table 4-D Factor 4 Knowledge of technological reforms

Indicators	State University		Private University		Community College	
	Weighted Mean	Rank	Weighted Mean	Rank	Weighted Mean	Rank
1. I keep myself updated with new technological innovations in the field of teaching.	4.61	1	4.58	1	4.44	1
2. I have sufficient knowledge about different internet tools required for conducting online classes.	4.16	2	4.18	2	4	2
5. I have good command over LMS like Google Classroom.	3.89	3	4.15	3	4	2
11. I have clear idea about the use of various tools required for preparing e-content.	3.66	4	3.93	4	3.56	3
13. I know about different Open Educational Resources (OERs).	3.37	5	3.57	5	3.33	4
<i>Over-all Mean</i>	3.94 Favorable		4.08 Favorable		3.87 Favorable	
<i>Legend:</i>	<i>5.00-4.21: Highly Favorable, 2.60- 1.81: Unfavorable,</i>		<i>4.20- 3.41: Favorable, 1.80-1.00: Highly Unfavorable</i>		<i>3.40-2.61: Neutral,</i>	

4.5 Overall Attitude of HEI teachers towards online teaching and learning

Table 5 reflects the overall attitude of HEI teachers toward the four factors of online teaching and learning. It shows that HEI teachers differ in their attitude responses to the four factors of online teaching and learning. Teachers in private universities have favorable attitudes toward appreciation, responsiveness, proficiency, and knowledge while teachers in state universities have favorable attitudes toward appreciation, proficiency, and knowledge but are neutral to responsiveness towards online teaching and learning. And Teachers in community colleges have favorable attitudes as to appreciation and knowledge but are neutral to responsiveness and proficiency of online teaching and learning. However, regardless of the institution, the overall attitude of HEI teachers has favorable attitudes toward online teaching and learning. This indicates that HEI teachers are responsive to the present situation where online teaching and learning is now part of the new normal of educating students in higher education.

It was observed that there is a highly favorable acceptance level in the implementation of distance learning tools (Al-Anezi and Alajmi, 2021), and some studies worldwide have shown favorable attitudes toward e-learning throughout the period of lockdown during the COVID-19 pandemic of teachers in college and university levels (Alhumaid et al. 2020; Hoq 2020) and even at the post-pandemic. This favorable response attitude of the HEI teachers should be supported by providing them training to boost their confidence to deal with the new condition imposed by the pandemic (Kast et al. 2021) and a studied how teaching and learning can move forward after the COVID-19 confinement, it reflects that universities worldwide were embracing the idea toward distance learning (Ali, 2020).

Table 5 – Over-All Attitude of HEI teachers towards online teaching and learning

Type of Higher Education Institution	<i>Factor 1</i> Appreciation for online teaching and learning	<i>Factor 2</i> Responsiveness towards online education	<i>Factor 3</i> Proficiency in handling online teaching	<i>Factor 4</i> Knowledge of technological reforms	<i>Over-All Mean</i>
State University	4.01	3.13	3.63	3.94	3.68
Private University	4.24	3.45	3.48	4.08	3.81
Community College	4.14	3.33	3.35	3.87	3.67
<i>Legend:</i>	<i>5.00-4.21: Highly Favorable, 2.60- 1.81: Unfavorable,</i>		<i>4.20- 3.41: Favorable, 1.80-1.00: Highly Unfavorable</i>		<i>3.40-2.61: Neutral,</i>

4. Conclusions

The result of the study shows that the attitude of teachers in HEI towards online teaching and learning was favorable to highly favorable, they appreciate the usefulness of online teaching and learning, they believe in their proficiency in handling online teaching and they have knowledge of technological reforms. This reflected a positive outlook from HEI teachers and a good indicator as to the readiness of HEI teachers in shaping future-oriented higher education where online teaching and learning are part of it. However, there are some HEI teachers who are still neutral or hesitant in their responsiveness toward online teaching and learning and they need capacity training and support for them to embrace online teaching and learning and view it as a good opportunity for personal development.

Higher education institutions strive to offer quality education to their stakeholder and embrace online teaching and learning as part of the new normal of delivering education services to their client. Therefore, it is important for HEI to assess the attitude of teachers toward online teaching and learning and develop capacity training to improve their attitude toward responsiveness to online education.

5. About the author

Nerisa N. Paladan is currently an Associate Professor in the school of graduate studies and research, Partido State University, Philippines. She received her Doctor in Business Administration from Ateneo de Naga University, Naga City, Philippines. She engaged herself in researches related to entrepreneurship, leadership, social responsibility, and other related business topics. Her professional advancements involve “international engagement” through active participation in international conferences and she also published research paper in peer reviewed journal in an international publication.

References

- Adnan, M., & Anwar, K. (2020). Online Learning amid the COVID-19 Pandemic: Students' Perspectives. *Online Submission*, 2(1), 45-51.
- Al-Anezi, Y. H., & Alajmi, S. M. (2021). Factors that influence English teachers' acceptance and use of e-learning technologies. *International Education Studies*, 14(9), 15-27. <https://doi.org/10.5539/ies.v14n9p15>.
- Alhumaid, K., Ali, S., Waheed, A., Zahid, E., & Habes, M. (2020). COVID-19 and e-learning: Perceptions and attitudes of teachers towards e-learning acceptance in the developing countries. *Multicultural Education*, 6(2), 100-115. <https://doi.org/10.5281/zenodo.4060121>.
- Ali, W. (2020). Online and remote learning in higher education institutes: A necessity in light of COVID-19 pandemic. *Higher Education Studies*, 10(3), 16-25. <https://doi.org/10.5539/hes.v10n3p16>.
- Balci, T., Temiz, C. N., & Sivrikaya, A. H. (2021). Transition to distance education in COVID-19 period: Turkish pre-service teachers' e-learning attitudes and readiness levels. *Journal of Educational Issues*, 7(1), 296. <https://doi.org/10.5296/jei.v7i1.18508>.
- Almaiah, M. A. (2018). Acceptance and usage of a mobile information system services in University of Jordan. *Education and Information Technologies*, 23(5), 1873-1895. <https://doi.org/10.1007/s10639-018-9694-6>
- Chen, H-R., & Tseng, H-F. (2012). Factors that influence acceptance of web-based e-learning systems for the in-service education of junior high school teachers in Taiwan. *Evaluation and Program Planning*, 35(3), 398-406.
- Chien, S-P., Wu, H-K., & Hsu, Y-S. (2014). An investigation of teachers' beliefs and their use of technology-based assessments. *Computers in Human Behaviour*, 31, 198-210
- Chieu, V. M., and Herbst, P. (2016). A study of the quality of interaction among participants in online animation-based conversations about mathematics teaching. *Teach. Educ.* 57, 139–149. doi: 10.1016/j.tate.2016.03.010
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), 982-1003.
- De la Rama, J., Sabasales, M., Antonio, A., Ricohermoso, C., Torres, J., Devanadera, A., & Alieto, E.(2020). Virtual Teaching as the new Norm': Analyzing Science TAtoward Online Teaching, Technological Competence, and Access. *International Journal of Advanced Science and Technology*, 29 (7), 12705-12715
- Ferdousi, B. J. (2009). A study of factors that affect instructors' intention to use e-learning systems in two-year colleges. (Doctoral dissertation, Nova Southeastern University). Retrieved from <http://faculty.mu.edu.sa/public/uploads/1357292294.9264out26.pdf>
- Gold, S. (2001). A constructivist approach to online training for online teachers. *Journal of Asynchronous Learning Networks*, 5(1), 35-57.
- Graff, M. (2003). Cognitive style and attitudes towards online learning and assessment methods. *Electronic Journal of e-Learning Methods*, 1(1), 21-28.
- Hoq, M. Z. (2020). E-learning during the period of pandemic (COVID-19) in the Kingdom of Saudi Arabia: An empirical study. *American Journal of Educational Research*, 8(7), 457- 464.

- Howlett, D., Vincent, T., Gainsborough, N., Fairclough, J., Taylor, N., Cohen, J., and Vincent, R. (2009). Integration of a case based online module into an undergraduate curriculum: what is involved and is it effective? *E-Learning and Digital Media*, 6(4), 372–384. doi: 10.2304/elea.2009.6.4.372.
- Kara, M., Kukul, V., and Çakir, R. (2020). Self-regulation in three types of online interaction: how does it predict online pre-service teachers' perceived learning and satisfaction? *Asia Pac. Educ. Res.* 30, 1–10. doi: 10.1007/s40299-020-00509-x
- Karaca, F., Can, G., &Yildirim, S. (2013). A path model for technology integration into elementary school settings in Turkey. *Computers and Education*, 68,353-365.
- Kast, J., Lindner, K. T., Gutschik, A., & Schwab, S. (2021). Austrian teachers' attitudes and self-efficacy beliefs regarding at-risk students during home learning due to COVID-19. *European Journal of Special Needs Education*, 36(1), 114-126. <https://doi.org/10.1080/08856257.2021.1872849>.
- Kent, C., Laslo, E., and Rafaeli, S. (2016). Interactivity in online discussions and learning outcomes. *Comput. Educ.* 97, 116–128. doi: 10.1016/j.compedu.2016.03.002
- Krishnakumar, R., & Rajesh, K. M. (2011). Attitude of teachers' of higher education towards e-learning. *Journal of Education and Practice*, 2(4), 48- 53. <https://www.iiste.org/Journals/index.php/JEP/article/view/440>
- Kumar, P. (2017). Attitude of teacher educators towards e-learning. *Bhartiyam International Journal of Education and Research*, 6(4), 18-35.
- Liaw, S-S., Huang, H-M., & Chen, G-D. (2007). Surveying instructor and learner attitudes toward e-learning. *Computers and Education*, 49, 1066–1080.
- O'Doherty, D., Dromey, M., Loughheed, J., Hannigan, A., Last, J., and McGrath, D. (2018). Barriers and solutions to online learning in medical education - an integrative review., *BMC Medical Education*, 18(1), p. 130. doi: 10.1186/s12909- 018-1240-0.
- Oranburg, S. (2020). Distance Education in the Time of Coronavirus: Quick and Easy Strategies for Professors. Available at SSRN.
- Quinn, F., Charteris, J., Adlington, R., Rizk, N., Fletcher, P., Reyes, V., et al. (2019). Developing, situating and evaluating effective online professional learning and development: a review of some theoretical and policy frameworks. *Aust. Educ. Res.* 46, 405–424. doi: 10.1007/s13384-018-00297-w
- Sahu, P. (2020). Closure of universities due to coronavirus disease 2019 (COVID-19): impact on education and mental health of students and academic staff, *Cureus*. doi: 10.7759/cureus.7541.
- Sangwan, A., Sangwan, A. & Punia, P. (2021). Development and Validation of an Attitude Scale towards Online Teaching and Learning for Higher Education Teachers. *TechTrends* 65, 187–195. <https://doi.org/10.1007/s11528-020-00561-w>.
- Sife, A. S., Lwoga, E. T., and Sanga, C. A. (2007). New technologies for teaching and learning: Challenges for higher learning institutions in developing countries. In: D. Mukherjee, (ed) *Information and Communication Technology: Changing Education*. India:Icfai University Press
- Sokal, L., Trudel, L. E., & Babb, J. (2020). Canadian teachers' attitudes toward change, efficacy, and burnout during the COVID-19 pandemic. *International Journal of Educational Research Open*, 100016.
- Teo, T. (2011). Factors influencing teachers' intention to use technology: Model development and test. *Computers and Education*, 57(4), 2432-2440.
- Van Braak, J. 2001. Factors influencing the use of computer mediated communication by teachers in secondary schools, *Computers and Education*, 36(1), 41–57. doi: 10.1016/S0360-1315(00)00051-8.
- Venkatesh, V., Morris, M.G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478.
- Weiner, E., McNew, R., Gordon, J., Trangenstein, P., and Wood, K. . 2019. Twenty plus years of distance learning: lessons learned., *Studies in Health Technology and Informatics. Netherlands*, 264, 1807–1808. doi: 10.3233/SHTI190658.

- Yilmaz, O., & Bayraktar, D. M. (2014). Teachers' attitudes towards the use of educational technologies and their individual innovativeness categories. *Procedia - Social and Behavioral Sciences*, 116, 3458-3461.
- Xhaferi, G., Farizi, A., & Bahiti, R. (2018). Teacher'attitudes towards e-learning in higher education in Macedonia Case study: University of Tetovo. *European Journal of Electrical Engineering and Computer Science*, 2(5), 14-17. <http://dx.doi.org/10.24018/ejece.2018.2.5.26>
- Weller, M. 2007. "Virtual Learning Environments: Using, choosing and developing your VLE". London: Routledge
- Zhang, S., Liu, Q., Chen, W., Wang, Q., and Huang, Z. (2017). Interactive networks and social knowledge construction behavioral patterns in primary school teachers' online collaborative learning activities. *Comput. Educ.* 104, 1–17. doi: 10.1016/j.compedu.2016.10.011