

Anxiety in Online Classes, Learning Style and Student's Satisfaction Among University Students in Current Pandemic of COVID-19

Hifza Qayyum, Sara Latif, and Ghoolam Hussein Rassool
Riphah International University

COVID-19 pandemic is continuing to impact all races of life, especially the educational landscape of the world. Where it arose many health-related concerns, it also resulted in anxiety among students due to shift in mode of learning from physical to virtual. Thus, the present study was designed with the aim to investigate anxiety in online classes, learning styles, students' satisfaction during COVID-19. A total sample of 155 participants was recruited from different universities of Lahore, Pakistan. Measures of Online Course Anxiety Scale (Bolliger & Halupa, 2011), Learning Style Scale (Abdollahimohammad & Ja'afar, 2014), and Student Satisfaction Scale (Bolliger & Halupa, 2011) were used to assess the study variables. Correlational research design and purposive sampling technique was employed. Findings revealed negative relationship of anxiety in online classes with students' satisfaction and performance. Anxiety in online classes significantly negatively predict students' satisfaction and performance. Learning styles positively predict students' satisfaction. Learning style moderate the existing relationship between anxiety in online classes and students' satisfaction. The findings of the present study applicable in the field of educational psychology and facilitate the teachers and students to design more effective strategy to enhance the quality of e-learning in current pandemic.

Keywords: Anxiety in online classes, learning style, student's satisfaction and performance

Over the past few years, online education has experienced explosive growth. In the USA a 21% increase in online course enrollment was seen in the span of a year from 2017-2018 (Han et al., 2019). Approximately 4.6 million apprentices were registered in minimally one online course in fall 2008 and this figure of apprentices amplified by nearly 1 million to 5.6 million in fall of 2009 (Palvia et al., 2018). Online education is not a new construct, but currently, due

Hifza Qayyum, Sara Latif, and Ghoolam Hussein Rasool, Riphah International University, QIE Campus, Lahore, Pakistan.

Correspondence concerning this article should be addressed to Hifza Qayyum, Riphah International University, Lahore. Email: hifza0336qayyum@gmail.com

to COVID-19 pandemic, shifting whole education system from physical to virtual mode has given this construct a new direction to be studied. Initially students took one course or diploma online but following the COVID-19 pandemic, the situation is bit different. Students' whole semesters of professional degree shifted to online medium which raised so many concerns including anxiety in online classes, anxiety related to technology, assessment and grades, etc.

Anxiety is one of the basic human emotions characterized by feelings of tension, worrisome thoughts, and distress. It is an anticipation of the threat/ fear to one's self-esteem (Dale et al., 2019). Anxiety is one of the most important affective factors affecting students' performance and satisfaction. During internet age, new teaching methods bring new load and anxiety to student's performance. In the context of the pandemic, the shift from on campus learning to online learning is a big challenge accompanied by fear and uncertainty. The apparent difference between face-to-face and distance learning and the contributing environmental variables affect distance learners by making them anxious. Anxiety is one of the factors which have a consistently negative impact on students' performance (Stein, 2020).

Online learning requires a different set of skills than on-campus learning. In order to be successful online learners, individuals need to master skills related to the computer, adequate use of available resources, and internet navigation (Reaves, 2019). Martin and Bolliger (2018) report that online learners find instructors' responses and directions on course websites mystifying which triggered anxiety. Findings of the various studies (Akcil & Bastas, 2020; Schlebusch, 2018) revealed an inverse association between anxiety related to technology and attitudes towards technology. Gerasimova et al. (2018) inspected approaches toward computers, the internet, and e-learning. The study conveyed a slightly positive attitude towards all three factors among all respondents. Age tends to have significant effect on attitudes towards the internet. With age a growing decrease in positive attitude towards internet was seen in members. However, the variance was not substantial in defining attitudes toward computers or e-learning. Emotions negative in nature linked with the usage of computer in e-learning have adverse effects on learning process. Student with great level of anxiety related to computer tend to experience worst experience of distance learning. In contrast students with minimal anxiety related to computer experienced worthy e-learning process (Mystakidis et al., 2021).

Online course anxiety is student's experience of fear and uncertainty driven by confusion and misunderstanding regarding the

course content. Distance e-learning demands certain available resources including laptop/computer/smart phone, internet some software's help to maintain the process of e-learning. Numerous sorts of anguish are experienced during online class including apprehension, obstruction, and misperception (Prasatyo et al., 2020). Students are expected to intermingle regularly by means of online content and with each other via information and communiqué technologies. According to Toquero et al. (2020), the relative experiences level and performances of educational services as given by higher educational bodies in any country are combined as a function to be named student satisfaction level. This level can be affected by facilities that are provided to students, other educational experiences, and services which students come across while going through the learning process (Mather & Sarkans, 2018). Student satisfaction is also defined as a short-termed attitude in an educational context with reference to students' educational experiences (Semerci & Aydin, 2018).

According to Yekefallah et al. (2021), in distant learning, there are different factors that impact the student satisfaction level: computer knowledge, usefulness and flexibility. In online education, instructor behavior, interactivity through internet and reliable technology are among the several factors that affect students' gratification (Adam et al., 2021; Chen, 2018; Zhao et al., 2021). According to Baabdullah et al. (2022), in an online educational system, there are other factors as well which influence student satisfaction levels, these are: social interactivity, internet quality, student's compatibility of understanding a task, and design issues. A study (Kay & Pasarica, 2019) revealed that students' encounter problems instantly from the concerned department and self-efficacy of students are two distinguish factors to enhance satisfaction of the student. According to Felder and Brent (2001), students have a variety of learning styles based on their own past experiences and convenience. Some reflect and act, some learn logically, and some must learn the material by heart. Liu et al. (2020), have defined learning style as a way students process the given information in a formal learning setup. Whereas Rezigalla and Ahmed (2019) have described learning styles as a learner or student's personal appreciated way of understanding and remembering the given information. Muali (2018) discussed Learning style as a procedure of how students learn what they acquire in form of knowledge.

The observation of rate of anxiety in students and rate of satisfaction in them in online classes proves that anxiety and satisfaction in students while attending online classes have inverse

relationship between them. Students' satisfaction rate increased as their anxiety in online classes decreased. Ghaderizefreh and Hoover (2018) observed in their study that in any online program, anxiety and student satisfaction have negative correlativity. Dirzyte et al. (2021), has also concluded his study with the same remarks that in e-learning, anxiety and satisfaction have inverse relationship.

Since, student satisfaction levels are actually the outcomes so, learning styles show not much impact on student satisfaction. There are not much literature available about such topic. Learning styles are techniques which are opted for by students themselves hence, they play very little part rather none in student satisfaction. Vizeshfah and Torabizadeh (2018) concluded that there was no relativity between student satisfaction and a variety of learning styles. This was also convinced by Wang et al (2020) who concluded that learning styles are not a very important factor while evaluating student satisfaction levels. In contrast, Nabizadeh et al. (2019) indicates that learning styles predict students' satisfaction and achievement. Tandilashvil (2019) found that student satisfaction is directly related to performance. Torlak and Kuzey (2019) concluded that satisfaction is related to performance and has its more powerful impact than the impact of performance over satisfaction. Gender-wise, women are found to be less satisfied than men regarding their college life (Shahzad et al., 2021).

Rationale

Online education is not a new construct in educational psychology. The trend of online education provokes a few years back when student of different age choose online course or diploma/certificates as per their ease. Currently, whole world is facing the crisis of COVID 19, and this pandemic affected all domains around the world, including closure of educational institutes. To avoid further delay in the educational process, educationist considers online education as alternative of physical education. Shifting educational system from physical environment to virtual revive the construct of online education. In this research, the focus is on students experiencing anxiety during online classes. As online education is not a new construct but its first time in the history that whole education including all discipline and educational level turned into virtual and it causes anxiety not only in students but among teachers as well. The current study focuses on anxiety in online classes in three perspectives: namely, computer related anxiety, internet related anxiety and course related anxiety. In addition, it is attempted to

investigate the type of anxiety that more negatively predict students' satisfaction and its impact on students' performance. Additionally, research focused on moderating role of learning style in relationship between anxiety in online classes and students' satisfaction. Broader objectives of the study are to examine the relationship between anxiety in online classes, learning style, satisfaction and performance of university students. In addition, to determine the moderating role of learning style in predicting students' satisfaction.

Hypotheses

In consistency with previous literature, the following hypotheses are proposed.

1. There will be a negative association between anxiety in online classes and students' satisfaction.
2. There will be a negative association between anxiety in online classes and students' performance.
3. Learning style is likely to moderate the association between online classes and students' satisfaction.

Method

Study Design and Sample

A quantitative cross sectional correlational research design was used to determine the relationship between anxiety in online classes, learning styles, student's satisfaction, and performance. A sample of 155 (75 males & 80 females) university students who were first time enrolled in the online classes during the pandemic Covid-19 was selected through purposive non-probability sampling technique. Inclusion criteria was to select medical and engineering students who enrolled in semester system. On the other hand, repeaters, and students of matric and intermediate were excluded from the sample.

Measures

The following measures were used:

Online Course Anxiety Scale

The measure of Online Course Anxiety Scale ([Bolliger & Halupa, 2011](#)) was used to assess the anxiety experienced by the

students during online classes. It has three subscales including anxiety related to computer, anxiety related to internet and anxiety related to online course. It comprises of 18 items to be rated on 5-point Likert scale. Response category ranges from 1 = *strongly disagree* to 5 = *strongly agree*. Possible total score ranged from 18-90 and high score indicate increased level of online course anxiety. The alpha reliability of the total scale found to be .97; while, alpha coefficients attained for subscales (anxiety related to computer $\alpha = .91$; anxiety related to internet $\alpha = .93$; and anxiety related to online course $\alpha = .95$) were also in acceptable ranges.

Learning Style Scale

The measure of Learning Style Scale ([Abdollahimohammad & Ja'afar, 2014](#)) was used to assess the learning styles of the student. This scale comprises of 22 items to be responded on 6-point Likert scale. Response category ranges from 1 = *strongly agree* to 6 = *strongly disagree*. Potential score on this scale range from 22-132. The alpha value of .88 was achieved for the current sample depicting adequate reliability of the scale.

Student Satisfaction Scale

The Student Satisfaction Scale ([Bolliger & Halupa, 2011](#)) was used to assess the level of satisfaction of the student. This scale comprises of 24 items to be answered on 5-point Likert scale. Response category ranges from 1 = *strongly disagree* to 5 = *strongly agree* with possible score range of 24-120. Cronbach alpha of .92 was acquired in the present study thereby showing good psychometric index of the scale.

Demographic Sheet

A demographic sheet was developed to obtain specific information (including gender and educational level) of the participants.

Procedure

Foremost, researcher contacted program coordinators of different public and private universities. Few of them cooperated with the researcher and some of them simply refused to take part in the current

study. Program coordinators shared the mailing IDs of the students with the consent of higher authorities. Researcher initially received very good response from the students, but later students stop responding and researcher identified fake responses in the research questionnaires. Researcher approached 185 students via email, out of which 105 participants responded back, 80 plus questionnaire were identified with missing information, incomplete forms, and patterns. At that time, situation of COVID-19 was under controlled, and ministry of education decided to reopen all educational institutes. At that time, supervisor allowed the researcher to shift the approach of data collection from online to physical environment. To initiate on campus data collection, an authority letter was signed by the supervisor to collect the data. Researcher approached different universities to collect data. Researcher approached 250 students out of which data of 155 participants after data screening was retained.

Results

Table 1 shows correlation between anxiety in online classes, learning styles, students' satisfaction, and performance. Results indicates that there is statistically significant negative relationship between anxiety in online classes and student satisfaction, computer related anxiety and student satisfaction, internet related anxiety and students' satisfaction and online course related anxiety and students' satisfaction. Moreover, significant negative relationship between anxiety in online classes and students' performance, computer related anxiety and students' performance, internet related anxiety and students' performance, and online course related anxiety and students' performance. Findings also revealed positive relationship between student satisfaction and performance.

Linear regression analysis shows that the impact of anxiety in online classes on students' satisfaction. The R^2 value of .67 revealed that the predictor variable explained 67.1% variance in the outcome variable with $F(302.03) = 16.06, p < .000$. The findings revealed that workload stress predicted work-family conflict ($\beta = -.81, p < .001$).

Table 1*Inter-correlation Among the Study Variables (N = 155)*

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11
1. SL	1.50	.514	–										
2. SES	1.91	.715	.21**	–									
3. AoI	1.85	.731	-.05	-.15	–								
4. FT	1.46	.538	-.09	-.04	.01	–							
5. AOC	51.49	21.7	-.16*	.06	-.01	-.01	–						
6. CRA	17.09	7.54	-.19*	.06	-.04	-.00	.96**	–					
7. IRA	17.11	7.52	-.15	.04	-.00	.02	.98**	.92**	–				
8. OCRA	17.23	7.22	-.12	.06	.00	.04	.97**	.89**	.93**	–			
9. LS	48.16	13.4	-.22**	.01	.18*	.06	.10	.11	.06	.11	–		
10. SS	70.06	27.8	.18*	.01	-.06	.01	-.81**	-.78**	-.79**	-.81**	-.05	–	
11. Per.	1.34	.476	.08	-.11	.04	-.09	-.19*	-.19*	-.17*	-.19*	.06	.05	–

Note. SL = Study level; SES = Socioeconomic status; AoI = Availability of Internet; FT = Family Type; AOC = Anxiety in Online Classes; CRA = Computer Related Anxiety; IRA = Internet Related Anxiety; OCRA = Online Course Related Anxiety; LS = Learning Style; SS = Student Satisfaction; Per = Performance.

* $p < .05$. ** $p < .01$.

Table 2

Moderation Role of Learning Style in Predicting Students' Satisfaction (N = 155)

Variables	β	SEB	t	p	LL	UL
Constant	161.70	15.10	10.70	.00	131.81	191.52
Anxiety	-1.82	0.27	6.54	.00	-2.37	-1.27
Learning Style	-0.87	0.34	2.54	.01	-1.56	-0.19
Anxiety X Learning Style	.01	0.00	2.83	.00	0.00	0.03

Table 2 shows the result of moderation analysis. Main effect of the predictor, that is the mean value of anxiety in online classes, there was a significant negative relationship between anxiety in online classes and students' satisfaction. At the mean of learning style, there was a significant negative relationship between learning styles and students' satisfaction. There is a significant interaction between anxiety in online classes and learning styles. This indicates that the relationship between anxiety in online classes and students' satisfaction is conditional on learning style. It means that undergraduate students experienced more computer related anxiety, learning styles and satisfaction.

Table 3

Gender Differences Among Study Variables (N = 155)

Variables	Male (n = 75)		Female (n = 80)		t	p	95% CI		Cohen's d
	M	SD	M	SD			LL	UL	
Anx.	51.54	20.36	51.44	23.10	.029	.97	-6.84	7.05	0.00
Com.	17.42	7.117	16.78	7.963	.526	.60	-1.76	3.04	0.04
Int.	17.18	7.165	17.05	7.886	.113	.91	-2.25	2.53	0.01
Cou.	16.93	6.635	17.51	7.782	-.501	.61	-2.89	1.72	0.04
LS	50.42	13.57	46.05	13.12	2.04	.04	.1387	8.61	0.32
SS	73.36	24.91	66.81	30.25	1.45	.14	-2.375	15.46	0.23

Note. Anx. = Anxiety in online classes; Com. = Computer related anxiety; Int. = Internet related anxiety; Cou. = Online course related anxiety; LS = Learning style; SS = Student satisfaction.

Table 3 shows the mean difference in gender on anxiety in online classes, learning styles and students' satisfaction. Analysis produces significant results for learning styles. It means male score on learning style is significantly higher than females.

Discussion

A quantitative cross sectional correlational research design was used to analyze the relationship between anxiety in online classes, learning styles, students' satisfaction, and performance in current pandemic of COVID-19. Findings revealed that anxiety in online classes inversely related with students' satisfaction and performance.

Findings emerged in the present study indicates significant negative relationship between anxiety in online classes and students' satisfaction. Anxiety itself is negative in nature and students' satisfaction is positive emotion that's why there is inverse relation among them. Increase in anxiety in online classes decreases level of students' satisfaction. Findings are aligned with the existing literature. Findings of the study conducted by [Bolliger and Halupa \(2011\)](#) indicates negative correlation between anxiety in online program and student's satisfaction. Findings of the [Liaw \(2008\)](#) also consistent with the nature of relationship existing between anxiety in e-learning and satisfaction.

Findings of present study indicates negative relationship between anxiety in online classes and students' performance. Anxiety is a negatively associated emotion which decreases the students' performance. In current study, negative relationship exists between anxiety in online classes and students' performance but its don up to the level of significance. It might be due to online assessment because in online assessment student have chance to get a clue from friend via text message or availability of internet. The direction of relationship among anxiety in online classes and students' performance is aligned with the existing literature. Evaluation is important in distance education, and it consists of different dimensions in alignment with the goals of a course or program ([Allen & Seaman, 2010](#); [Chen, 2018](#)). Course grades are often used as an indicator of student achievement in online instruction ([Halupa, 2004](#); [Han et al., 2019](#)). Anxiety in online classes negatively correlated with students' performance ([Hara & Kling, 2001](#); [Schlebusch, 2018](#)).

It was hypothesized that anxiety in online classes predict students' satisfaction and performance. Findings of the present study indicates negative prediction of anxiety in online classes on students' satisfaction and performance. Emotions experienced by the students during class directly linked with the students' level of satisfaction and outcome ([Pekrun, 2006](#)). Findings are consistent with the existing literature. Findings of the study conducted by [Bolliger and Halupa \(2011\)](#) indicates negative prediction of anxiety in online program on student's satisfaction.

Present study shows that the relationship between anxiety in online classes and students' satisfaction is conditional on learning style. Anxiety in online classes significantly negatively predict students' satisfaction while learning styles positively predict students' satisfaction. Findings of the study revealed that moderating role of learning style weaken the existing significant negative prediction of anxiety in online classes on students' satisfaction. Findings are aligned with the existing literature. Cheng and Chau (2015) revealed the moderating role of learning styles in relationship between online course and students' achievement and course satisfaction. Result of revealed significant difference on the study level among participants. Undergraduate students experienced more computer related anxiety, learning styles and satisfaction. It might be because of not enough computer exposure at undergraduate level or students at this level strived hard to get affiliated with this technology.

Limitations and Suggestions

Beside the significance of the current study, some limitations need to be acknowledged. Data was collected only from Lahore and Islamabad and it will limit the generalizability. It is suggested that in future researcher should collect data from other major cities of Pakistan. Sample size was small due the current pandemic situation, closure of educational institutes and inadequate responses from the participants. It is suggested that in future, researcher should go for large sample size. After getting appropriate response in pilot study, main study was proceeded. Unfortunately, later on participants stop responding on questionnaires and researcher identified forged responses, due to which researcher discarded data properly and initiate recollection of data.

Conclusion

The conclusion of the present research was viewed in the light of indigenous and international research conducted across the globe. Although, it concludes that anxiety experienced during online class decrease level of satisfaction related to that course and over all learning process. Increase in anxiety during class, either it's related to computer, internet or specifically course cause decrease in students' satisfaction and performance. It is also concluded that moderating role of learning style weaken the existing significant negative prediction of anxiety in online classes on students' satisfaction.

References

- Abdollahimohammad A., & Ja'afar, R. (2014). Learning Style Scales: A valid and reliable questionnaire. *Journal of Educational Evaluation for Health Professions, 11*(1), 38-43.
- Adam, M., Urbančić-Rak, T., & Crnić, T. (2021). Dental students' discomfort and anxiety during the first and the second lockdown due to COVID-19 pandemic at the School of Dental Medicine, University of Zagreb. *Croatian Journal of Somatic Disorders, 55*(2), 186-196.
- Akcil, U., & Bastas, M. (2020). Examination of university students' attitudes towards e-learning during the covid-19 pandemic process and the relationship of digital citizenship. *Contemporary Educational Technology, 13*(1), 291-298.
- Allen, I. E., & Seaman, J. (2010). *Staying the course: Online education in the United States*. Sloan Consortium. Newburyport, USA.
- Baabdullah, A. M., Alsulaimani, A. A., Allamnakhrah, A., Alalwan, A. A., Dwivedi, Y. K., & Rana, N. P. (2022). Usage of augmented reality and development of e-learning outcomes: An empirical evaluation of students' e-learning experience. *Computers and Education, 177*, 104383.
- Bolliger, D. U., & Halupa, C. (2011). Student perceptions of satisfaction and anxiety in an online doctoral program. *Distance Education, 33*(1), 81-98.
- Chen, C. P. (2018). Understanding mobile English-learning gaming adopters in the self-learning market: The uses and gratification expectancy model. *Computers & Education, 126*(1), 217-230.
- Dale, L. P., Vanderloo, L., Moore, S., & Faulkner, G. (2019). Physical activity and depression, anxiety, and self-esteem in children and youth: An umbrella systematic review. *Mental Health and Physical Activity, 16*(1), 66-79.
- Dirzyte, A., Vijaikis, A., Perminas, A., & Rimasiute-Knabikiene, R. (2021). Associations between depression, anxiety, fatigue, and learning motivating factors in e-learning-based computer programming education. *International Journal of Environmental Research and Public Health, 18*(17), 9158-9160.
- Gerasimova, V. G., Melamud, M. R., Tutaeva, D. R., Romanova, Y. D., & Zhenova, N. A. (2018). The adoption of e-learning technology at the faculty of distance learning of Plekhanov Russian University of Economics. *Journal of Social Studies Education Research, 9*(2), 172-188.
- Ghaderizefreh, S., & Hoover, M. L. (2018). Student satisfaction with online learning in a blended course. *International Journal of Digital Society, 9*(3), 1393-1398.
- Halupa, C. (2004). Medical providers' and Internet-based education. *Academic Exchange Quarterly, 8*(3), 116-121.
- Han, Y., Ryan, M. P., & Manley, K. (2019). Online course enrolment and tuition: Empirical evidence from public colleges in Georgia, USA.

- International Journal of Education Economics and Development*, 10(1), 1-21.
- Kay, D., & Pasarica, M. (2019). Using technology to increase student (and faculty satisfaction with) engagement in medical education. *Advances in Physiology Education*, 43(3), 408-413.
- Liaw, S. S. (2008). Investigating students' perceived satisfaction, behavioral intention, and effectiveness of e-learning: A case study of the Blackboard system. *Computers and Education*, 51(2), 864-873.
- Liu, Y., Garg, S., Nie, J., Zhang, Y., Xiong, Z., Kang, J., & Hossain, M. S. (2020). Deep anomaly detection for time-series data in industrial IoT: A communication-efficient on-device federated learning approach. *IEEE Internet of Things Journal*, 8(8), 6348-6358.
- Martin, F., & Bolliger, D. U. (2018). Engagement matters: Student perceptions on the importance of engagement strategies in the online learning environment. *Online Learning*, 22(1), 205-222.
- Mather, M., & Sarkans, A. (2018). Student perceptions of online and face-to-face learning. *International Journal of Curriculum and Instruction*, 10(2), 61-76.
- Muali, C., Islam, S., Bali, M. E. I., Baharun, H., Mundiri, A., Jasri, M., & Fauzi, A. (2018). Free online learning based on rich internet applications: The experimentation of critical thinking about student learning style. *Journal of Physics*, 1114(1), 120-124.
- Mystakidis, S., Berki, E., & Valtanen, J. P. (2021). Deep and meaningful e-learning with social virtual reality environments in higher education: A systematic literature review. *Applied Sciences*, 11(5), 2412.
- Nabizadeh, S., Hajian, S., Sheikhan, Z., & Rafiei, F. (2019). Prediction of academic achievement based on learning strategies and outcome expectations among medical students. *BMC Medical Education*, 19(1), 1-11.
- Palvia, S., Aeron, P., Gupta, P., Mahapatra, D., Parida, R., Rosner, R., & Sindhi, S. (2018). Online education: Worldwide status, challenges, trends, and implications. *Journal of Global Information Technology Management*, 21(4), 233-241.
- Pekrun, R. (2006). The control-value theory of achievement emotions: Assumptions, corollaries, and implications for educational research and practice. *Educational Psychology Review*, 18(4), 315-341.
- Prasatyo, B. A., Nopiyadi, D., & Gustary, D. T. (2022). The error analysis of English speech sounds perception conducted by EFL students: A case study of English literature students at STBA Technocrat. *Journal of Language Teaching and Literature*, 9(1), 70-79.
- Reaves, J. (2019). 21st-century skills and the fourth industrial revolution: a critical future role for online education. *International Journal on Innovations in Online Education*, 3(1).

- Rezigalla, A. A., & Ahmed, O. Y. (2019). Learning style preferences among medical students in the College of Medicine, University of Bisha, Saudi Arabia. *Advances in Medical Education and Practice*, 10(6), 795-810.
- Schlebusch, C. L. (2018). Computer anxiety, computer self-efficacy and attitudes towards the internet of first year students at a South African University of Technology. *Africa Education Review*, 15(3), 72-90.
- Semerici, A., & Aydin, M. K. (2018). Examining high school teachers' attitudes towards ICT use in education. *International Journal of Progressive Education*, 14(2), 93-105.
- Shahzad, A., Hassan, R., Aremu, A. Y., Hussain, A., & Lodhi, R. N. (2021). Effects of COVID-19 in E-learning on higher education institution students: The group comparison between male and female. *Quality and Quantity*, 55(3), 805-826.
- Stein, C. (2020). The effect of clinical simulation assessment on stress and anxiety measures in emergency care students. *African Journal of Emergency Medicine*, 10(1), 35-39.
- Tandilashvili, N. (2019). *Factors influencing student satisfaction in higher education: The case of a Georgian State University*. Paper Presented in the 13th International RAIS Conference on Social Sciences and Humanities, Berkley University, USA.
- Toquero, C. M. (2020). Challenges and opportunities for higher education amid the COVID-19 pandemic: The Philippine context. *Pedagogical Research*, 5(4), 314-320.
- Torlak, N. G., & Kuzey, C. (2019). Leadership, job satisfaction and performance links in private education institutes of Pakistan. *International Journal of Productivity and Performance Management*.
- Vizeshfar, F., & Torabizadeh, C. (2018). The effect of teaching based on dominant learning style on nursing students' academic achievement. *Nurse education in practice*, 28(1), 103-108.
- Wang, M., Cao, R., Zhang, L., Yang, X., Liu, J., Xu, M., & Xiao, G. (2020). Remdesivir and chloroquine effectively inhibit the recently emerged novel coronavirus in vitro. *Cell Research*, 30(3), 269-271.
- Yekefallah, L., Namdar, P., Panahi, R., & Dehghankar, L. (2021). Factors related to students' satisfaction with holding e-learning during the Covid-19 pandemic based on the dimensions of e-learning. *Heliyon*, 7(7), e07628.
- Zhao, L., Liu, X., & Su, Y. S. (2021). The differentiate effect of self-efficacy, motivation, and satisfaction on pre-service teacher students' learning achievement in a flipped classroom: A case of a modern educational technology course. *Sustainability*, 13(5), 2888-2890.

Received 24 February 2022

Revision received 24 August 2022