

Remote Learning during the COVID-19 Pandemic: Perceptions of Teacher Education Students

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ABSTRACT

This study investigates teacher education students' remote learning experiences and anxiety levels in the College of Education at NEUST-San Isidro Campus during the shift to virtual learning in response to COVID-19. A descriptive correlational study was conducted among students (N=649). Data were collected using an electronic questionnaire, mainly google Forms. Pearson's r was used to investigate the relationships between student perceptions of responsibility and independence in their learning, the impact of remote teaching on achievement of the learning goal, and student anxiety levels. Results showed that students agree on the outcome of remote teaching on their responsibilities and independence towards their learning ($2.95 \pm .91$). In addition, students achieved their learning goals ($2.80 \pm .66$). Moreover, 6.32% of the students reported not having had anxiety, while 31.12% had severe anxiety. Student's perceptions of responsibility and independence and learning goal achievement has a moderate positive correlation ($r=0.699; p<0.001$). Moreover, between students' anxiety level and their perceptions of responsibility and independence there was a weak positive correlation ($r=.144; p<0.001$) as well as learning goal achievement ($r=.177; p<0.001$). In conclusion, students' anxiety levels had a moderate effect on student perceptions of responsibility, independence, and goal achievement. Further studies are needed to discover what would progress student learning experience during the COVID-19 pandemic.

Keywords-Remote Learning; COVID-19; Anxiety level; Teacher Education

Introduction

Coronavirus disease (COVID-19) has significantly impacted people's livelihood and health around the world (WHO, 2020). COVID-19 blowouts quickly not only in China but also globally. Hence, the World Health Organization (WHO) has declared it a pandemic on January 30, 2020 (Sohrabi et al., 2020). Numerous governmental actions have been taken to control the danger of disease spreading. These actions and measures include mandatory 14-day quarantines for travelers, restrictions, self-isolation (Bedford et al., 2020), wearing of face mask and face shield, social distancing, prohibitions on public events and gatherings, public and private schools and universities closure, the closing of businesses, work from home arrangements, curfews, and total lockdown (Gostin& Wiley, 2020).

Although the COVID-19 pandemic is a health crisis (Rajkumar, 2020), several countries have decided to close both private and private schools, colleges, and universities (Gostin& Wiley, 2020). Higher educational institutions (HEIs) in the country have suspended all academic events and classes as ordered by the Commission on Higher Education advisory No. 6, 2020). As a result, the higher education sector in the Philippines experienced a massive disruption (Toquero, 2020a). Therefore, the teaching and learning structure was affected. All course programs transitioned from face-to-face learning to online and remote teaching and learning. (Gostin& Wiley, 2020).

Remote learning (RT) can happen synchronously using technology (Moore et al., 2011) and other digital resources (Arkorful&Abaidoo, 2015) with real-time lectures and time-based assessments (Hodges et al., 2020) or asynchronously, with self-paced learning task that occurs independently of the instructor (Ali, 2020), delayed-time tasks, such as pre-recorded video lessons and time-independent assessments. Moreover, this approach provides an opportunity for both teachers and students to be connected and involved with the lesson while doing it in their homes (Barton, 2020). This sudden shift to remote learning is a precautionary measure to fight the spread of COVID-19 to keep faculty and students safe.

In the Philippines, e-learning and remote learning started to be disseminated in government, and education in early 2000 is similar to the rising acceptance of Information Communication Technology (ICT) (Galeon et al., 2019). In today's global crisis, higher education institutions started this new normal approach to education. incorporated remote learning in the curriculum

Remote Teaching and Learning was part of the Philippine government's anticipatory preventive and precautionary measures. Emergency Remote Education (ERE) is vital in fulfilling students' educational needs during this public health emergency (Toquero, 2020b). Unfortunately, Nueva Ecija University of Science and Technology (NEUST), as one of the state universities in the Philippines, got affected by the sudden implementation of remote learning due to COVID-19, especially in the Teacher Education programs. Expressly, its practical activities were canceled; they provide teacher education students with practical experience to acquire the necessary skills and competencies through performances, reporting, and other settings needed to become teachers. As a replacement, these students were provided with lecture videos and discussions. According to Scagnoli et al. (2019), lecture videos were considered an effective and efficient means for delivering the content for the course and pervading the occurrence of teaching and learning in the virtual environment. Moreover, videos are likewise effective as standard teaching lectures (Smyrni&Nikopoulos, 2010). Nevertheless, students prefer to use these lecture videos as complementary resources and do not perceive them as sufficient education.

The unexpected shift from traditional face-to-face to emergency remote teaching concerns most students worldwide, which triggered anxiety and psychological stress (Almoayad, 2020). A study conducted among Lebanese undergraduate university students showed that the sudden shift to e-learning and remote teaching methods had produced depression and anxiety signs due to the stressful subject load of work required (Fawaz & Samaha, 2021). In the study conducted by Zhai& Du (2020), the psychological impact caused by the sudden shift showed that Chinese students experienced an emotional state of anxiety, frustration resulting from loss of social interactions, and loneliness. However, aside from the psychological effects, remote learning has numerous positive benefits; it provides flexibility (Soffer et al., 2019), self-paced learning (Roddy et al., 2017), accommodates different learning styles (Pinchot &Pullet, 2014), and motivates teacher-student interaction (Sandybayev, 2020).

Over the years, research studies have shown unconvincing results on the effectiveness of remote and e-learning (Algahtani, 2015). Therefore, it is essential to understand both students' and instructors' viewpoints and the learning context (Khan, 2015). Researchers should also specify which dimensions of effectiveness they evaluate, such as assessing learning objectives or learning perspectives (Algahtani, 2015).

Beaty and McGill (2020) acknowledged five vital areas in remote learning activities: planning and designing, teaching and learning support, assessment and feedback, facilitating the development of productive learning environments, and professional and research activities. The NEUST San Isidro Campus, College of Education, has discussed the first four areas. This study looked at learning from students' viewpoint to address the fifth area in remote activities. Also, it examines students' standpoints of learning and anxiety levels during the shift to remote teaching and learning in response to the COVID-19 pandemic. The research objectives were to (1) assess student perceptions of responsibility in learning during remote teaching, (2) assess the student perceptions of the impact of remote teaching on learning goal achievement, (3) examine student anxiety levels during remote teaching, and (4) evaluate the relationship between student's perceptions of learning and anxiety levels. Researchers hypothesized that students' anxiety levels would be high and that the overall learning experience would be positive. These research findings will contribute to the existing literature by supporting the higher education institutions in better preparing remote and online learning programs during this crisis. Moreover, it helps develop strategies to overcome challenges to reinforce the remote learning experiences.

Methodology

This study applied a descriptive correlational research design to investigate data through quantitative methods (Dorfman et al., 2017) and was devoted to gathering information about prevailing conditions for descriptions and explanation (Samonte & De Guzman, 2019). The study population included students from the four (4) different programs of the College of Education at NEUST-San Isidro Campus. The study sample was calculated using non-probability sampling, where participants were selected because they are often readily and easily available (Berndt, 2020). If the quota is reached, the drawing of the sample is completed (Setia, 2016). The respondents used available primary data in this study until the requested sample size (N=649)

was reached. This type of sampling method was selected since it was the most appropriate and convenient method to gather data during the COVID-19 pandemic. A total of 649 teacher-education students participated in the study. Students from all levels were included. Data were collected using an electronic questionnaire, mainly google forms, distributed to students through Facebook messenger. The chairperson of the College of Education approved this research study, and the researchers used informed consent from the student-respondents and applied the confidentiality of the information.

The questionnaire was established using previous studies and literature Uziak et al.; Ghenghesh et al., (2018) to suit the research objectives. The tool consists of four (4) parts. The first part focuses on the socio-demographic profile, including age, sex, academic program, and year level. The second part measures the students' perceptions in terms of responsibility in learning during remote teaching. The six (6) item-questions focused on student responsibility and independence in their learning, time management, organization, and student-teacher interactions. The third part assesses student perceptions on the impact of remote teaching on the learning goal. It comprised of five (5) item-questions that designed to determine if remote teaching improved the quality of their education, enhanced their learning motivation, allowed them to finish subject works and activities faster effectively, and efficiently, assisted them in improved understanding of the materials, and helped them progress and improve skills and knowledge acquisition. The first and second parts were rated using the four-point Likert Scale, where; 4-strongly agree; 3-agree; 2 - disagree; and 1-strongly disagree. The fourth part examines the anxiety level of the student-respondents during the remote teaching using the General Anxiety Disorder-7 (GAD-7) tool developed by Spitzer et al. (2006). This tool measures the severity of anxiety using seven (7) item-questions, and each question gives a score where; 0-not at all, 1-several days, 2-over half the days; and 3-nearly every day. The total scores were ranged from 0 to 21. According to Spitzer et al. (2006), student-respondents were categorized into groups according to their anxiety scores, where: no anxiety (range: 0–4), mild anxiety (range: 5–9), moderate anxiety (range: 10–14), and severe anxiety (15–21).

The research questionnaire was subjected to validity testing by five teachers having the same characteristics as the target respondents for the study. The reliability analysis of the research

questionnaire was conducted using Cronbach's alpha. Coefficient values for responsibility and independence were 0.892, 0.868, and 0.897 for goal achievement and anxiety, respectively. This showed good internal consistency and was considered acceptable to provide us with reliable results, according to Sekaran (2010).

Data Analysis

Data analysis of the study was analyzed using the descriptive method of statistics and performed using the SPSS software. Percentage and Frequency were used to describe the socio-demographic profile of the participants. Mean and Standard deviation was used to determine the student perceptions on the impact of remote teaching on learning responsibility, goal achievement, and anxiety level. Finally, the Pearson correlation coefficient was applied to evaluate the correlation between the different studied parameters

Results

Socio-demographic Profile

A total of 649 students of the College of Education participated in the study. Students from the Bachelor of Secondary Education across all majors and the Bachelor of Elementary Education account for 54.70% and 23.57% of the total sample. They are the two most extensive programs at the College of Education (Table 1).

Table 1: Socio-demographic profile of the study population (N = 649)

Variable	N	%
Age		
16-20	461	71.03
21-25	173	26.66
26-30	5	0.77
31 and above	10	1.54
Sex		
Male	135	20.80
Female	514	79.20
Academic Program		

Bachelor of Secondary Education (BSEd)	355	54.70
Bachelor of Elementary Education (BEEd)	153	23.57
Bachelor of Physical Education (BPEd)	91	14.02
Bachelor of Science in Industrial Education (BSIE)	50	7.70
Year Level		
First Year	201	30.97
Second Year	280	43.14
Third Year	153	23.57
Fourth Year	15	2.31

Student responsibility and independence, goal achievement, and anxiety levels

The anxiety level results of students in Table 2 revealed that 6.32% had no anxiety and 31.12% had severe anxiety.

Table 2: Student scores for anxiety levels (N = 649)

Variable	N	%
Anxiety levels		
No anxiety (range: 0–4)	41	6.32
Low anxiety (range: 5–9)	187	28.81
Moderate anxiety (range: 10–14)	218	33.59
Severe anxiety (range: 15–21)	202	31.12

Perceptions of students of responsibility and independence in their learning during remote teaching are presented in Table 3. Students agreed that "The immediate shifting of remote teaching developed my sense of responsibility in learning," with a weighted mean of 3.13. Additionally, "The immediate shifting of remote teaching helped me to be an independent learner" and "The immediate shifting of remote teaching helped me to study at my own pace" have weighted mean of 3.09 and 2.98, respectively.

Table 3: Perceptions of Students of responsibility and independence in their learning during Remote Teaching

Items	WM	SD	VI
<i>The immediate shifting of remote teaching helped me organize my time efficiently and effectively</i>	2.86	.65	Agree
<i>The immediate shifting of remote teaching helped me to study at my own pace</i>	2.98	.58	Agree
<i>The immediate shifting of remote teaching helped me to be an independent learner</i>	3.09	.59	Agree
<i>The immediate shifting of remote teaching developed interaction between the instructor and me</i>	2.71	.65	Agree
<i>The immediate shifting of remote teaching helped me to be systematic and organized</i>	2.91	.60	Agree
<i>The immediate shifting of remote teaching developed my sense of responsibility in learning.</i>	3.13	.58	Agree
Average weighted mean	2.95	.61	Agree

Note: Strongly Agree (3.25-4.00); Agree (2.50-3.24); Disagree (1.75-2.49); Strongly Disagree (1.0-1.74)

In contrast, student perception of remote teaching on goal achievement was lower than responsibility and independence. The highest weighted mean was "Remote learning helped in knowledge acquisition and skills development," and "Remote learning allowed me to accomplish tasks, assignments, and projects more quickly and efficiently" with 2.86 (Table 4). When assessing the student's anxiety levels, we found out that students rated all anxiety questions as 'over half the days' (Table 5).

Table 4: Perceptions of Students on the impact of Remote Teaching on Goal Achievement

Items	WM	SD	VI
<i>Remote learning motivated better learning</i>	2.76	.68	Agree

<i>Remote learning helped in knowledge acquisition and skills development</i>	2.86	.61	Agree
<i>Remote learning helped me understand the subject matter and materials</i>	2.77	.64	Agree
<i>Remote learning allowed me to accomplish tasks, assignments, and projects more quickly and efficiently</i>	2.86	.69	Agree
<i>Remote learning enhanced the quality of my studies.</i>	2.74	.69	Agree
Average weighted mean	2.80	.66	Agree

Note: Strongly Agree (3.25-4.00); Agree (2.50-3.24); Disagree (1.75-2.49);
 Strongly Disagree (1.0-1.74)

Table 5: Student General Anxiety Disorder-7 scores

Items	WM	SD	VI
<i>Feeling afraid as if something awful might happen</i>	2.56	.89	Over half the days
<i>Becoming easily annoyed or irritable</i>	2.56	.90	Over half the days
<i>Being so restless that it's hard to sit still</i>	2.65	.91	Over half the days
<i>Trouble relaxing</i>	2.63	.89	Over half the days
<i>Worrying too much about different things</i>	2.93	.91	Over half the days
<i>Not being able to control worrying</i>	2.73	.92	Over half the days
<i>Feeling nervous, anxious, or on edge</i>	2.79	.92	Over half the days
Average weighted mean	2.69	.91	Over half the days

Note: Nearly every day (3.25-4.00); Over half the days (2.50-3.24);
 Several days (1.75-2.49); Not at all (1.0-1.74)

3.3 Correlation between responsibility and independence, goal achievement, and anxiety level

Table 7 summarizes the correlation between responsibility and independence, goal achievement, and anxiety. Pearson's *r* showed a moderate positive correlation between student perceptions of

responsibility and independence in their learning and learning goal achievement ($r = 0.699$; $p < 0.001$). In addition, there was a weak positive correlation between student's anxiety level and their perceptions on responsibility and independence ($r = .144$; $p < 0.001$) as well as learning goal achievement ($r = .177$; $p < 0.001$) (Table 7).

Table 7. Correlation between responsibility and independence, goal achievement, and student anxiety levels during Remote Teaching (N = 649)

		Responsibility and Independence	Goal Achievement	Anxiety
Responsibility and Independence	Pearson Correlation	1	.699**	.144**
	Sig. (2-tailed)		.000	.000
Goal Achievement	Pearson Correlation	.699**	1	.177**
	Sig. (2-tailed)	.000		.000
Anxiety	Pearson Correlation	.144**	.177**	1
	Sig. (2-tailed)	.000	.000	

** . Correlation is significant at the 0.01 level (2-tailed).

Legend: $+1.00-.90$ (Very Strong Correlation - VS); $+0.89-0.70$ (Strong Correlation - S);
 $+0.69-0.40$ (Moderate Correlation - M); $+0.39-0.10$ (Weak Correlation - W);
 $+0.09-0.00$ (Negligible Correlation - N) (Schober et al., 2018)

Discussions

This research study evaluated the perception of the Teacher Education Students of NEUST in their learning during the shift of education from face to face to remote learning in response to the COVID-19 pandemic, measuring characteristics associated with the perception of independence/responsibility, achievement of learning goals, and anxiety towards learning.

Research findings revealed that teacher education students agree on the outcome of the shift from face-to-face to remote teaching on their independence and their responsibilities towards their learning with an average weighted mean of 2.95 and a standard deviation of 0.61. Undeniably, students agree that the immediate shifting of remote teaching helped them organize their time effectively, enabled them to learn and study at their own pace, and be independent learners. Moreover, they also agree that the shifting developed their interaction with the instructor, allowed them to be systematic and organized, and developed their sense of responsibility in learning. This understanding of learning responsibility is a significant determinant (Ayish&Deveci, 2019). Chen & Jones (2017) stressed that the online and traditional student proficiencies were no different. However, personal responsibility in remote teaching and online learning can lead to life-long learning by overcoming various challenges essential in developing meaningful learning opportunities (Chen & Jones, 2017). Also, the perception of the success of learning goals was associated with the perception of independence in learning (Almoayad, 2020). Therefore, achieving these learning goals was a factor of effective learning (Sungu&Senle, 2010).

One of the principles for efficient education is the motivation to learn (Harandi, 2015). This motivation is a vital component for students to participate in e-learning (Kim & Frick, 2011). Some research studies have connected students' motivation to goal achievement (Yang & Cao, 2013). Though the weighted mean of student's responses agreeing to the item 'Remote learning motivated better learning' was not high, with 2.76 and a standard deviation of 0.68, this did not reflect their overall perception about the impact of remote learning on goal achievement with an average weighted mean of 2.80. Moreover, teacher education students perceived that remote learning helped their knowledge and skill acquisition and their understanding of the subject material. The effectiveness of remote learning to improve knowledge and skills varied (Shah & Stefaniak, 2016). However, it was observed to be necessary as traditional instruction (Yılmaz, 2012). As a result, the impact of e-learning on knowledge or skill development may vary depending on the context, source material, and delivery method. It is recommended that in the remote learning approach, students should be highly self-disciplined and should devote more work and attention to understanding the subject matter on their own.

These students' responsibility and independence and the achievement of learning goals may also be associated with their anxiety levels. This study revealed a positive and significant correlation between the anxiety level and the perception of learning effectiveness. Students experienced anxiety "over half the days" with an average weighted mean of 2.69 and a standard deviation of 0.91. Adesola and Li (2018) explored the influence of emotions, including anxiety, on academic achievement and setting. It was revealed that academic emotions and anxiety are significantly correlated to student motivation, self-regulation, learning strategies, academic achievement, and academic control.

On the other hand, anxiety is among the most commonly reported emotions due to e-learning (George Saadé et al., 2017). The present study used the General Anxiety Disorder-7 to assess anxiety, whereas previous research was part of a comprehensive questionnaire involving certain academic emotions associated with e-learning. However, Son et al. (2020) mentioned that a higher level of anxiety had been previously stated in general by university students. Furthermore, some studies specified that one of the most common emotions reported as a result of remote learning was anxiety (Stephan et al., 2019). Besides this, issues about the COVID-19 pandemic may be contributing to the overall anxiety experienced by students.

The research findings showed that the level of anxiety of teacher education students was significantly correlated to the perceived responsibility/independence towards their learning and their goal achievement. Respondek et al. (2017) reported that anxiety influence a student's perceived academic control. Saddik et al. (2020) examined the anxiety levels in university students using GAD-7. They stated that anxiety affects academic tasks and may trigger learning disruptions during the COVID-19 pandemic. Nevertheless, they reported a lower level of anxiety (0.9% had severe anxiety) than the levels attained in this research study (31.12% of students had experienced severe anxiety). Also, Biswas & Biswas (2021) investigated the anxiety level of students in India during the pandemic concerning remote learning using GAD-7. Results showed that the percentages for the anxiety levels were comparable to this study. As a result, educational institutions should promote student mental well-being and learning during a crisis that forces a transition from a traditional setting to remote learning, such as the COVID-19 pandemic or any similar emergency.

Conclusion

This study highlights the connection between perception of the learning experience and the anxiety levels of teacher education students of NEUST – San Isidro Campus during the shift of education from a traditional setting to virtual learning in response to the COVID-19 pandemic.

(1) Students agree on the outcome of the remote teaching on their responsibilities and their independence towards their learning. (2) Regarding the perceived impact of remote teaching on goal achievement, students agree that remote learning helped them in their knowledge and skill acquisition and their understanding of the subject material, but not high in terms of motivation. (3) The remote learning and total lockdown in response to the COVID-19 pandemic resulted in dramatically high anxiety levels among students, which could be considered a reasonable consequence of the remote learning and total lockdown. (4) This level of anxiety had a moderate positive correlation on students' perceptions of their academic responsibility and independence and their goal achievement. Furthermore, given that 31.12% of teacher education students experienced severe anxiety, it is suggested that (1) a strategy be developed to include both specific education, providing mental health services, particularly online counseling services, and encouraging physical activity regularly that could decrease perceived anxiety levels. (2) While remote learning is encouraged in a health crisis, well-designed learning activities and strategies are considered to ensure that students are highly motivated. (3) Students likewise needed social support from family, teachers, and friends to reduce the psychological pressure. (4) Further research studies are needed to discover that would develop and improve student learning experience during the current COVID-19 pandemic.

References

- [1] Adesola, S., & Li, Y. (2018). Investigating the Impact of Learners Emotions on Academic Performance and Motivation Using Ethnography. *International Journal of Information and Education Technology*, 8(10), 730–735. <https://doi.org/10.18178/ijiet.2018.8.10.1130>
- [2] Algahtani, A. F. (2015). Evaluating the Effectiveness of the E-learning Experience in Some Universities in Saudi Arabia from Male Students' Perceptions.
- [3] 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. <https://doi.org/10.5539/hes.v10n3p16>

- [4] Almoayad, F. (2020). Health Professional Students ' Perceptions and Experiences of Remote Learning During the COVID-19 Pandemic. 19(8), 313–329.
- [5] Arkorful, V., &Abaidoo, N. (2015). The role of e-learning, advantages, and disadvantages of its adoption in higher education. *International Journal of Instructional Technology and Distance Learning*.
- [6] Ayish, N., &Deveci, T. (2019). Student Perceptions of Responsibility for Their Learning and for Supporting Peers' Learning in a Project-based Learning Environment. *International Journal of Teaching and Learning in Higher Education*, 31(2), 224–237. <http://www.isetl.org/ijtlhe/>
- [7] Barton, D. C. (2020). Impacts of the COVID-19 pandemic on-field instruction and remote teaching alternatives: Results from a survey of instructors. *Ecology and Evolution*. <https://doi.org/10.1002/ece3.6628>
- [8] Beaty, L., & McGill, I. (2020). Action Learning in Higher Education. *Action Learning*, 230–252. <https://doi.org/10.4324/9781315042480-21>
- [9] Bedford, J., Enria, D., Giesecke, J., Heymann, D. L., Ihekweazu, C., Kobinger, G., Lane, H. C., Memish, Z., Oh, M. don, Sall, A. A., Schuchat, A., Ungchusak, K., &Wieler, L. H. (2020). COVID-19: towards controlling of a pandemic. In *The Lancet* (Vol. 395, Issue 10229, pp. 1015–1018). Lancet Publishing Group. [https://doi.org/10.1016/S0140-6736\(20\)30673-5](https://doi.org/10.1016/S0140-6736(20)30673-5)
- [10] Berndt, A. E. (2020). Sampling Methods. *Journal of Human Lactation*. <https://doi.org/10.1177/0890334420906850>
- [11] Biswas, S., & Biswas, A. (2021). Anxiety level among students of different college and universities in India during lock down in connection to the COVID-19 pandemic. *Journal of Public Health (Germany)*, 1. <https://doi.org/10.1007/s10389-020-01431-8>
- [12] CHED COVID ADVISORY No. 6. (2020). Guidelines for the Prevention, Control and Mitigation of the Spread of the 2019-Novel Coronavirus Acute Respiratory Disease in Higher Education Institutions - CHED. <https://ched.gov.ph/guidelines-for-the-prevention-control-and-mitigation-of-the-spread-of-the-2019-novel-coronavirus-acute-respiratory-disease-in-higher-education-institutions/>

- [13] Chen, C. C., & Jones, K. T. (2017). Blended Learning vs. Traditional Classroom Settings: Assessing Effectiveness and Student Perceptions in an MBA Accounting Course. *Journal of Educators Online*. <https://eric.ed.gov/?id=EJ907743>
- [14] Dorfman, P. W., Javidan, M., Hanges, P. J., de Luque, M. F. S., & House, R. J. (2017). Research Methodology and Design. In *Strategic Leadership across Cultures: The GLOBE Study of CEO Leadership Behavior and Effectiveness in 24 Countries* (pp. 101–156). <https://doi.org/10.4135/9781506374581.n4>
- [15] Fawaz, M., & Samaha, A. (2021). E-learning: Depression, anxiety, and stress symptomatology among Lebanese university students during COVID-19 quarantine. *Nursing Forum*, 56(1), 52–57. <https://doi.org/10.1111/nuf.12521>
- [16] Galeon, D. H., Garcia, P. G., & Cruz, J. Dela. (2019). E-learning roadmap for open distance learning in Cordillera Administrative Region. *IOP Conference Series: Materials Science and Engineering*. <https://doi.org/10.1088/1757-899X/482/1/012012>
- [17] George Saadé, R., Kira, D., Mak, T., & Nebebe, F. (2017). Anxiety & Performance in Online Learning. *Proceedings of the 2017 InSITE Conference*, 147–157. <https://doi.org/10.28945/3736>
- [18] Ghenghesh, P., Croxford, L., & Nagaty, K. (2018). Students and Teachers Attitudes and Satisfaction toward E-Learning: A Case Study in Egypt. *The Journal of Middle East and North Africa Sciences*. <https://doi.org/10.12816/0044059>
- [19] Gostin, L. O., & Wiley, L. F. (2020). Governmental Public Health Powers during the COVID-19 Pandemic: Stay-at-home Orders, Business Closures, and Travel Restrictions. *JAMA - Journal of the American Medical Association*, 323(21), 2137–2138. <https://doi.org/10.1001/jama.2020.5460>
- [20] Harandi, S. R. (2015). Effects of e-learning on Students' Motivation. *Procedia - Social and Behavioral Sciences*, 181, 423–430. <https://doi.org/10.1016/j.sbspro.2015.04.905>
- [21] Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). Remote Teaching and Online Learning. *Educause Review*.

- [22] Khan, B. H. (2015). Managing e-learning strategies: Design, delivery, implementation and evaluation. In *Managing E-Learning Strategies: Design, Delivery, Implementation and Evaluation*. <https://doi.org/10.4018/978-1-59140-634-1>
- [23] Kim, K. J., & Frick, T. (2011). Changes in student motivation during online learning. *Journal of Educational Computing Research*. <https://doi.org/10.2190/EC.44.1.a>
- [24] Moore, J. L., Dickson-Deane, C., & Galyen, K. (2011). E-Learning, online learning, and distance learning environments: Are they the same? *Internet and Higher Education*. <https://doi.org/10.1016/j.iheduc.2010.10.001>
- [25] Pinchot, J., & Poullet, K. (2014). Different Keystrokes for Different Folks: Addressing Learning Styles in Online Education. In *Information Systems Education Journal (ISEDJ)* (Vol. 12, Issue 2). www.aitp-edsig.org/www.isedj.org
- [26] Rajkumar, R. P. (2020). COVID-19 and mental health: A review of the existing literature. *Asian Journal of Psychiatry*. <https://doi.org/10.1016/j.ajp.2020.102066>
- [27] Respondek, L., Seufert, T., Stupnisky, R., & Nett, U. E. (2017). Perceived academic control and academic emotions predict undergraduate university student success: Examining effects on dropout intention and achievement. *Frontiers in Psychology*, 8(MAR), 243. <https://doi.org/10.3389/fpsyg.2017.00243>
- [28] Roddy, C., Amiet, D. L., Chung, J., Holt, C., Shaw, L., McKenzie, S., Garivaldis, F., Lodge, J. M., & Mundy, M. E. (2017). Applying Best Practice Online Learning, Teaching, and Support to Intensive Online Environments: An Integrative Review. *Frontiers in Education*, 2, 59. <https://doi.org/10.3389/feduc.2017.00059>
- [29] Saddik, B., Hussein, A., Sharif-Askari, F. S., Kheder, W., Temsah, M.-H., Koutaich, R. A., Haddad, E. S., Al-Roub, N. M., Marhoon, F. A., Hamid, Q., & Halwani, R. (2020). <p>Increased Levels of Anxiety Among Medical and Non-Medical University Students During the COVID-19 pandemic in the United Arab Emirates</p>. *Risk Management and Healthcare Policy*, Volume 13, 2395–2406. <https://doi.org/10.2147/RMHP.S273333>
- [30] Samonte, K., & De Guzman, P. (2019). ICT Competencies among Public Secondary School MAPEH Teachers: An Assessment. *JPAIR Institutional Research Journal*. <https://ejournals.ph/article.php?id=15278>

- [31] Sandybayev, A. (2020). The Impact of E-Learning Technologies on Student's Motivation: Student Centered Interaction in Business Education. *International Journal of Research in Tourism and Hospitality (IJRTH)*, 6(1), 16–24. <https://doi.org/10.20431/2455-0043.0601002>
- [32] Scagnoli, N. I., Choo, J., & Tian, J. (2019). Students' insights on the use of video lectures in online classes. *British Journal of Educational Technology*, 50(1), 399–414. <https://doi.org/10.1111/bjet.12572>
- [33] Schober, P., Boer, C., & Schwarte, L. A. (2018). Correlation Coefficients. *Anesthesia & Analgesia*, 126(5), 1763–1768. <https://doi.org/10.1213/ANE.0000000000002864>
- [34] Sekaran, U. (2010). *Research Methods For Business A Skill Building Approach*. In John Wiley & Sons, Inc. (Issue 1). <https://doi.org/10.1007/s13398-014-0173-7.2>
- [35] Setia, M. (2016). Methodology series module 5: Sampling strategies. *Indian Journal of Dermatology*. <https://doi.org/10.4103/0019-5154.190118>
- [36] Shah, S. J., & Stefaniak, J. E. (2016). A Review of the Effectiveness of e-learning on Knowledge and Skill Acquisition in Medical Education Old Dominion University 4101-A Education Building University of Georgia 208 River ' s Crossing 850 College Station Road. 160–168.
- [37] Smyrni, P., & Nikopoulos, C. K. (2010). (PDF) Evaluating the impact of video-based versus traditional lectures on student learning. *Educational Research*. https://www.researchgate.net/publication/228644065_Evaluating_the_impact_of_video-based_versus_traditional_lectures_on_student_learning
- [38] Soffer, T., Kahan, T., & Nachmias, R. (2019). View of Patterns of Students' Utilization of Flexibility in Online Academic Courses and Their Relation to Course Achievement | The International Review of Research in Open and Distributed Learning. *International Review of Research in Open and Distributed Learning*. <http://www.irrodl.org/index.php/irrodl/article/view/3949/5099>
- [39] Sohrabi, C., Alsafi, Z., O'Neill, N., Khan, M., Kerwan, A., Al-Jabir, A., Iosifidis, C., & Agha, R. (2020). World Health Organization declares global emergency: A review of the

- 2019 novel coronavirus (COVID-19). In *International Journal of Surgery*.
<https://doi.org/10.1016/j.ijssu.2020.02.034>
- [40] Son, C., Hegde, S., Smith, A., Wang, X., & Sasangohar, F. (2020). Effects of COVID-19 on college students' mental health in the United States: Interview survey study. In *Journal of Medical Internet Research* (Vol. 22, Issue 9). JMIR Publications Inc.
<https://doi.org/10.2196/21279>
- [41] Spitzer, R. L., Kroenke, K., Williams, J. B. W., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine*.
<https://doi.org/10.1001/archinte.166.10.1092>
- [42] Stephan, M., Markus, S., & Gläser-Zikuda, M. (2019). Students' Achievement Emotions and Online Learning in Teacher Education. *Frontiers in Education*, 4, 109.
<https://doi.org/10.3389/educ.2019.00109>
- [43] Sungu, S., & Senle, B. (2010). Students' achievement goals in relation to academic motivation, competence expectancy, and classroom environment perceptions. *Educational Research and Evaluation*, 16(4), 303–324. <https://doi.org/10.1080/13803611.2010.523291>
- [44] Toquero, C. M. (2020a). Challenges and Opportunities for Higher Education amid the COVID-19 Pandemic: The Philippine Context. *Pedagogical Research*.
<https://doi.org/10.29333/pr/7947>
- [45] Toquero, C. M. (2020b). Emergency remote education experiment amid COVID-19 pandemic. *International Journal of Educational Research and Innovation*, July.
- [46] Uziak, J., Oladiran, M. T., Lorencowicz, E., & Becker, K. (2018). Students' and instructor's perspective on the use of blackboard platform for delivering an engineering course. *Electronic Journal of E-Learning*.
- [47] WHO. (2020). Impact of COVID-19 on people's livelihoods, their health and our food systems. World Health Organization. <https://www.who.int/news/item/13-10-2020-impact-of-covid-19-on-people%27s-livelihoods-their-health-and-our-food-systems>
- [48] Yang, Y., & Cao, L. (2013). Differential influences of achievement approach goals and intrinsic/extrinsic motivation on help-seeking in e-learning. *Knowledge Management and E-Learning*. <https://doi.org/10.34105/j.kmel.2013.05.011>

- [49] Yılmaz, Y. (2012). KNOWLEDGE MANAGEMENT IN E-LEARNING PRACTICES. In TOJET: The Turkish Online Journal of Educational Technology (Vol. 11, Issue 2).
- [50] Zhai, Y., & Du, X. (2020). Addressing collegiate mental health amid COVID-19 pandemic. In Psychiatry Research (Vol. 288, p. 113003). Elsevier Ireland Ltd. <https://doi.org/10.1016/j.psychres.2020.113003>