INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES

Vol 13, Issue 4, (2023) E-ISSN: 2222-6990

The Impact of Different Instruction Modes Applied as A Result of Transition of Covid-19 Phases on Students' Performance

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To Link this Article: http://dx.doi.org/10.6007/IJARBSS/v13-i4/16614 DOI:10.6007/IJARBSS/v13-i4/16614

Published Date: *10* April 2023

Abstract

The COVID-19 pandemic has caused an abrupt change in the way higher education institutions (HEIs) deliver their courses. Due to crisis circumstances, HEIs have been required to adopt emergency remote teaching (ERT) as the substitution for traditional face-to-face (F2F) classes. This study aims to investigate the impact of different instruction modes applied in teaching an accounting course as a result of transition of COVID-19 phases on students' performance. The performance of four cohorts of students (N = 549) who enrolled in the Financial Accounting 4 (FAR270) course at Universiti Teknologi MARA, Pahang Branch, Malaysia, during the four semesters, including traditional F2F semester, two consecutive online semesters and blended learning semester. The results of this study reveal significant differences between students' performance when all four cohorts of students are compared. The students who were first exposed to the ERT at the beginning of pandemic phase (second cohort) performed better in the asynchronous online instruction mode compared to other instruction modes applied during other phases of pandemic. Besides, the study reveals significant differences in students' performance across different instruction modes for each group of students divided by the their prior CGPA and gender. In all CGPA and gender subgroups, students achieved better performance in asynchronous online mode compared to other instruction modes. The study also provides possible explanation for the results of the analysis.

Keywords: COVID-19 Pandemic, Students' Performance, Face-To-Face Classes, Asynchronous Online Mode, Synchronous Online Mode, Blended Learning.

Introduction

When the outbreak of the Coronavirus Disease of 2019 (COVID-19) was first detected in Wuhan, China in December 2019 (Hu et al., 2022), it was as if an endless global phenomenon

had occurred. Following a drastic increase in cases, the World Health Organization (WHO) declared COVID-19 as a pandemic on 11 March, 2020 (Tan, 2021). The declaration of this pandemic was due to the spread of the disease across the globe. Since then, a new history began in Malaysia when the government announced the Movement Control Order (MCO) as a measure to curb the spread of COVID-19. Malaysia announced the first MCO effective from 18 March 2020 and lasted several extended phases. The extended phases were subsequently announced in various stages. The pandemic had affected almost every sector including the higher education sector, as the government ordered the closure of higher education institutions (HEIs). As a result, the HEIs were forced to drastically change the instruction mode from conventional face-to-face (F2F) to online learning.

Several terms have been used to describe online learning ranging from distance education, remote learning, computerized electronic learning, e-learning, internet learning and many others (Elfaki et al., 2019). Generally, there are two types of applications in online learning: synchronous and asynchronous learning. Synchronous learning refers to a learning mode where the instructors and students meet in real-time using specific online platforms such as Zoom, Google Meet and Microsoft Team (Fadhilah et al., 2021). It allows real-time interactions between instructors and students and is almost similar to conventional classroom environment. Asynchronous learning allows students to learn at their own pace without real-time interactions. In an asynchronous environment, students have access to information such as audio and video lectures, lecture notes and handouts, articles, assignment questions and power point presentations through a Learning Management System (LMS) or online collaborative platform such as Microsoft Teams and Google Classroom at any time and from any place (Fadhilah et al., 2021; Perveen, 2016). On the other hand, blended learning (BL) refers to a combination of online and traditional F2F learning modes to provide flexibility to instructors and students (Sarfraz, et al., 2022, Nazempour et al., 2022).

Educational experts have argued that the transition to digital setting as a result of COVID-19 pandemic cannot be labelled as “online learning”. A new concept has been used to define the new situation, known as “emergency remote teaching” (ERT) (Hodges et al., 2020; Milman, 2020). According to Hodges et al (2020), online learning differs from ERT as it is a result of careful instructional design and long-time planning, while ERT arises as a response to a crisis that requires a temporary change in modes of instruction. Thus, ERT assumes that teaching will return to the normal format once the crisis is over (Iglesias-Pradas, et al., 2021).

The recent slowing down of COVID-19 infections in Malaysia has brought positive changes in the education sector. After undergoing online teaching and learning activities for more than three consecutive semesters, the Ministry of Higher Education (MOHE) has allowed a gradual re-admission of fully vaccinated students from 15 October 2021 (MOHE, 2021). Teaching and learning activities have been allowed to be implemented on hybrid basis, while certain activities have been allowed to be conducted F2F with compliance to the standard operation procedures (SOPs) set.

Following the effectiveness of public health preventive and control measures, including of the COVID-19 vaccination programme, Malaysia has entered into the transition to endemic phase beginning 1 April 2022. The current phase has witnessed the reopening of all sectors and economic activities. Restrictions and SOPs that were previously imposed to combat the spread of COVID-19 have been relaxed, paving the way for most activities including fully face-to-face teaching and learning activities in HEIs.

As described above, the modes of instruction applied in HEIs in Malaysia have changed correspondingly as the COVID-19 pandemic moves to next phases. However, the effect of changes in modes of instruction resulting from transition of COVID-19 phases on students' academic performance remains a debatable issue. The existing studies on the impact of different instruction modes, including F2F, BL and online learning on students' performance have yielded different results (for example, Stevens et al., 2021; Sokout & Usagawa, 2021; Elfaki et al., 2019; Tratnik et al., 2019; Soffer & Nachmias, 2018; Hurlbut, 2018; Bahnson & Olejnikova, 2017). In addition, highest majority of the previous studies were conducted using samples prior to COVID-19 period. If we observe the changes in teaching and learning activities caused by COVID-19 from the perspective of ERT, it could be argued that the findings from these studies might not be applicable to the current COVID-19 situation. So far, little research is available regarding the impact of ERT due to the COVID-19 pandemic on students' academic performance. Therefore, little is known about the impact of ERT on students' academic performance, especially during the COVID-19 phase transitions from pre-pandemic phase to the recently announced transition to endemic phase.

Accounting education is an interesting field of study, especially for the higher education level because it is a crucial stage for acquiring knowledge and skills required by the accounting profession. Future employers will require accounting graduates to have the ability to become competent professionals. Accordingly, if students' performance is affected negatively due to the sudden shift in the instruction modes during COVID-19 pandemic, this will have bad consequences on the accounting profession. Therefore, in this study, we investigate the impact of different instruction modes applied in teaching an accounting course as a result of transition of COVID-19 pandemic phases on academic performance of undergraduate students. The research questions of this study are as follows:

1) Are there any differences in students' performance across different instruction modes applied in different phases of COVID-19 pandemic?
2) Are there any differences in students' performance across different instruction modes for each subgroup of students?

Literature Review and Hypotheses Development

Comparative Studies on the Impact ERT due to COVID-19 on Students' Performance

There are limited studies conducted exploring the effects of COVID-19 on the academic performance of students and the findings seem to have inconclusive agreement. Tan (2021) analysed students' motivation, the community of inquiry (social presence, cognitive presence and teaching presence) and learning performance of 282 students in Malaysian HEIs during the Movement Control Order (MCO) was introduced in March 2020. The study revealed that many of the students found themselves struggling to concentrate as well as having lack of interaction, lack of motivation and needed timely feedback from their lecturers through online learning. Consequently, their learning performance had dropped and students felt stressed with their studies.

Another study in Malaysia was conducted by Lee et al (2022) comparing students' academic performance with different delivery methods in civil engineering material subject during the COVID-19 pandemic period. The study involved three batches of students in the academic year of 2019, 2020 and 2021 in Curtin University Malaysia, with the delivery modes of conventional face-to-face, mixed mode and fully online mode respectively. The findings revealed that students with fully online mode performed poorly in their final examination

compared to those undertaking face-to-face and mixed delivery modes. It appeared that the students lack peer assistance and non-adaptability in the online mode.

To explore the impact of the COVID-19 pandemic on learning anatomy, Potu et al (2022) compared students' perception of F2F and online anatomy teaching at the College of Medicine and Medical Sciences, Arabian Gulf University during pre-pandemic period (2019-2020) and pandemic period (2020-2021). The results indicated that majority of the students prefer F2F demonstrations for understanding the spatial orientation of the body organs-systems and to visualise the complex anatomical relations between the structures for gaining anatomy knowledge in clinical context. However, students were in favour of online demonstrations to remember the key information, effective utilisation of demonstration time and easy access to the content at their own pace. Thus, online demonstration helped them to focus better on the subject, thereby reducing their stress. Regarding anatomy exam scores, the study revealed that the mean scores of multiple-choice questions in online class were significantly higher than the F2F class.

Using a large sample of 1,231 respondents from public and private universities of Afghanistan, Hashemi (2021) revealed that COVID-19 had negatively affected the academic performance of Afghan students and they were highly dissatisfied with online teaching during this crucial moment. In addition, Hashemi (2021) identified a strong positive correlation between students' academic performance and their level of satisfaction with online teaching.

Hu et al (2022) conducted a study from January 17 to February 25, 2022, 2 years since the COVID-19 outbreak to examine the intersection of COVID-19 fear and mental health consequences among 151 college students in Northern Michigan, a region of the U.S. They discovered increased fear, stress and decreased happiness among students and these made them less focused on academic performance.

A few studies, on the other hand, showed an increase in students' academic performance in ERT compared to those of pre-pandemic period. For example, Iglesias-Pradas et al (2021) found that students achieved better results under ERT in all the courses in a bachelor's degree in Engineering. However, the study suggested that the class size, the choice of delivery modes and the choice of digital tools did not have a significant effect on students' academic performance. In addition, Livas and Karali (2022) investigated the concurrent effect of teaching and assessment format on the academic performance of 489 undergraduate students at a Greek Public university and discovered that students performed significantly worse in the traditional teaching with in-person case study and open-ended question assessment format.

Conversely, other studies reported no significant difference between students' academic performance comparing ERT and F2F instructions. Using 837 students' evaluations from 191 US public HEIs, Cavanaugh et al. (2022) found a very small statistical increase in grades associated with the transition to ERT. The increase in grades, however, did not reflect the quality of F2F or online learning, but rather is a reflection of the circumstances. Similarly, El Said (2021) reported no significant difference in students' grades between F2F and online teaching modes of Introduction to Programming course taught during COVID-19 lockdown semester and the semester before. Furthermore, Nazempour et al. (2022) found no significant difference when comparing the academic performance of students who attended Financial Engineering course during the transitional disrupted semester, two consecutive online semesters and the traditional F2F semester.

Based on the previous literature regarding the impact of COVID-19 pandemic on students' academic performance, the following hypothesis is developed:

H1: There are significant differences in students' performance between different instruction modes applied in different phases of COVID-19 pandemic.

Other Factors Affecting Academic Performance in ERT

Academic performance can be affected by various factors in relation to the academic environment, instructors and students. However, it is beyond the scope of the present study to analyse all factors potentially affecting students' performance in detail. Investigation of certain students' characteristics may facilitate assessment of the impact of different modes in the ERT on students' performance. For example, Milienos et al (2021) discovered that emotionally stable/highly adaptive learners had the highest GPA (grade point average) scores. However, Nazempour et al (2022) discovered that the academic performance of students with CGPAs greater than 2.90, especially higher than 3.40, had been negatively affected by the transition to ERT, while the impact on students with cumulative GPAs below 2.90 was not very conclusive.

In addition, other studies have investigated differences in learning performance between genders during COVID-19 outbreak. For example, Prowse et al. (2021) showed that female students were more likely to report that the shift to on-line learning was difficult compared to the male students and that the COVID-19 pandemic had negatively affected their schoolwork. On the other hand, Liu et al. (2021) revealed that female students scored higher on the preparatory, performance, and appraisal phases, indicating that the female students may be more likely to self-regulate their learning than the male students during the COVID-19 outbreak. Another study carried out by Hashemi (2021) indicated that there was a significant difference in the academic performance of students across gender during the COVID-19 crisis due to inequalities in the availability and accessibility of resources between males and females.

The following hypotheses are proposed based on the previous literature:

H2a: For each CGPA subgroup, there are significant differences in students' performance between different modes of instruction.

H2b: For each gender subgroup, there are significant differences in students' performance between different modes of instruction.

Data and Methodology

This aim of this study is to examine how different instruction modes applied in teaching an accounting course as a result of transition of COVID-19 phases on academic performance of undergraduate students. The study consists of 549 diploma students in the Faculty of Accountancy, Universiti Teknologi MARA, Pahang Branch, Malaysia. The students were categorised into four cohorts based on the instruction modes applied for Financial Accounting 4 (FAR270) course in Universiti Teknologi MARA, Pahang Branch, Malaysia. The first cohort comprises pre-COVID-19 students who enrolled in the FAR270 course in the traditional F2F class (semester March to July 2019). The second cohort consists of the students who enrolled the course at the beginning phase of the pandemic (semester March to July 2020). The third cohort comprises the students who enrolled the course in the middle phase of the pandemic (semester March to July 2021) and the fourth cohort includes those who enrolled the course during the transition to endemic phase (semester March to July 2022). All the students were in their fourth semester of study.

FAR270 course is delivered with two hours of lecture and one hour tutorial respectively per week over 14 weeks period. The phases of COVID-19 pandemic, the relative modes of instructions and sample size for each cohort are shown in Table 1. Students who enrolled in the course during semester March – July 2019 (pre-COVID-19 cohort) were taught in F2F mode, whereas those who enrolled in the course during semester March – July 2020 (second cohort) were taught remotely using the asynchronous online mode due to lack of internet access and skills in using IT tools during the movement control order period. In asynchronous learning mode, students were provided with pre-recorded audio and video lectures, lecture notes, power point presentations and other teaching materials through YouTube, Google Classroom and the learning management system (LMS) platforms developed by the university. During semester March to July 2021 (third cohort), students were mostly taught using synchronous online mode as internet accessibility, IT skills and technical support had enhanced. The synchronous classes were conducted using Google Meet platform. On the other hand, students who attended the course during semester March – July 2022 (fourth cohort) were taught on a blended mode combining online and F2F learning modes. This is the period where Malaysia has entered into a transition to endemic phase on 1 April 2022. In addition, the course was taught by the same lecturer in all semesters.

Table 1
Instruction modes and sample size.

Semester	**March - July 2019**	**March - July 2020**	**March - July 2021**	**March - July 2022**
Phases of Pandemic	Pre-pandemic	Beginning	Middle	Transition to Endemic
Mode	F2F	Online (async.)	Online (sync.)	BL (F2F & online)
Sample Size	158	151	134	106

In this study, students' performance was measured by their course total marks. Course total marks are out of 100 and represent the sums of the students' continuous assessment marks (40%) plus the students' marks in final exam (60%). In F2F mode of instructions, test, quizzes and final exam were conducted in paper format on-campus, while in online and blended learning modes, those assessments were conducted online through Google Form and Google Classroom. Students need to obtain overall 50% at least to pass this course. To analyse the differences in performance between subgroups of students, students' CGPA (before the FAR270 course started) and gender were also identified for each cohort. All the data from the four cohorts of students were collected by the lecturer of this course who is also one of the authors of this paper. Permission was sought from the university to anonymously analyse the data and publish the results for academic purpose.

To analyse the data and present the findings, descriptive statistical analysis was used to compute the mean, standard deviation, percentage and frequency of the students' demographic profiles. Furthermore, inferential statistical analysis, namely the Kruskal-Wallis test was employed to investigate differences in the performance of students across all the four cohorts and Mann-Whitney U test was used to analyze the differences between each pair of the cohorts. The non-parametric test was used because our data violates the normality assumption.

Results

This study investigates the potential impact of different instruction modes as a result of transition of COVID-19 pandemic phases on the academic performance of FAR270 students. Table 2 illustrates the descriptive statistics of students' marks and subgroups across four instruction modes.

Table 2
Descriptive statistics

Modes	**F2F**		**Async.**		**Sync.**		**BL**	
Students' Marks								
Mean	70.12		80.61		72.11		70.25	
S.D.	9.00		7.86		11.63		10.25	
Students' Subgroups								
CGPA	N	%	N	%	N	%	N	%
3.50 – 4.00	67	42.40	104	68.87	82	61.19	56	52.83
3.00 – 3.49	48	30.38	34	22.52	40	29.85	32	30.19
2.00 – 2.99	43	27.22	13	8.61	12	8.96	18	16.98
Total	158	100	151	100	134	100	106	100
Gender	N	%	N	%	N	%	N	%
Male	50	31.65	28	18.54	40	29.85	29	27.36
Female	108	68.35	123	81.46	94	70.15	77	72.64
Total	158	100	151	100	134	100	106	100

Comparison of Students' Performance across All Instruction Modes

Table 3 represents the results of statistical tests to check the differences in students' performance throughout four instruction modes. The results show a statistically significant difference in students' marks across four instruction modes (F2F, n = 158, Async., n = 151, Sync., n = 134, BL, n = 106), H (3, *n* = 549) = 111.696, *p* = 0.000. The second cohort of students who were taught using the asynchronous online mode recorded the highest median score (*Md* =82) compared to other cohorts taught using the synchronous (*Md* = 74), F2F (*Md* = 70) and BL (*Md* = 70) modes.

Table 3
Kruskal-Wallis test comparing all modes.

Modes	**F2F**	**Async.**	**Sync.**	**BL**	**Total**
Median	70	82	74	70	75
N	158	151	134	106	549
H = 111.696, df = 3, *p* = 0.000**					

Note: ** indicates statistical significance at the 1% level

In addition to Kruskal-Wallis test, we also employed pairwise comparisons using Mann-Whitney U test. Table 4 summarises pairwise comparison test results between different instruction modes. The results indicate that the performance of students in the asynchronous online mode (Md = 82, n = 151) is statistically significantly higher than those in traditional F2F class (Md = 70, n = 158), *U* = 4,257, *z* = -9.779, *p* = 0.000. Moreover, students' performance

in the asynchronous online mode (Md = 82, n = 151) is statistically significantly better when compared with the synchronous online mode (Md = 74, n = 134), *U* = 5,437.5, *z* = -6.743, *p* = 0.000 and with the BL mode (Md = 70, n = 106), *U* = 3,267.5, *z* = -8.078, *p* = 0.000. The results also suggest that the students taught via synchronous online mode (Md = 74, n = 134) performed statistically significantly better than those taught in traditional F2F class (Md = 70, n = 158), *U* = 9,077.5, *z* = -2.100, *p* = 0.036. Thus, hypothesis 1 (H1) is supported.

Table 4
Mann-Whitney U test comparing all modes

Modes	***U***	***z***	***p***
F2F vs. Async.	4,257	-9.779	0.000**
F2F vs. Sync.	9,077.5	-2.100	0.036*
F2F vs. BL	8,355	-0.031	0.975
Async. vs. Sync.	5,437.5	-6.743	0.000**
Async. vs. BL	3,267.5	-8.078	0.000**
Sync. vs. BL	6,169	-1.748	0.080

Note: ** indicates statistical significance at the 1% level. * indicates statistical significance at the 5% level.

Comparison of Subgroups' Performance across All Instruction Modes

The results in Table 5 reveal statistically significant differences between all instruction modes at the significant level of 1%, for each subgroup of students based on their prior CGPA. In CGPA subgroup 3.50 – 4.00, the asynchronous online mode recorded the highest median score (*Md* = 82) compared to the synchronous (*Md* = 79), F2F (*Md* = 77) and BL (*Md* = 76) modes. Similarly, the asynchronous online mode reported the highest median score (*Md* = 77) in CGPA subgroup 3.00 – 3.49 compared to the F2F (*Md* = 68), BL (*Md* = 68) and synchronous online (*Md* = 65) modes. In CGPA subgroup 2.00 – 2.99, the asynchronous online mode also showed the highest median score (*Md* =66) compared to the F2F (*Md* = 61), BL (*Md* = 58) and synchronous online (*Md* = 54) modes. Hence, hypothesis 2a (H2a) is supported by these findings.

Table 5
Kruskal-Wallis test comparing CGPA subgroups across all modes.

Modes/Subgroups	**CGPA 3.50 – 4.00**		**CGPA 3.00 – 3.49**		**CGPA 2.00 – 2.99**	
	Md	**N**	***Md***	**N**	***Md***	**N**
F2F	77	67	68	48	61	43
Async.	84	104	77	34	66	13
Sync.	79	82	65	40	54	12
BL	76	56	68	32	58	18
H	59.45		40.41		15.52	
df	3		3		3	
p	0.000**		0.000**		0.001**	

Note: ** indicates statistical significance at the 1% level

Table 6
Kruskal-Wallis test comparing gender subgroups across all modes.

Modes/Subgroups	**Male**		**Female**	
	Md	**N**	***Md***	**N**
F2F	70	50	70.5	108
Async.	85	28	82	123
Sync.	68.5	40	75	94
BL	68	29	70	77
H	37.32		75.14	
df	3		3	
p	0.000**		0.000**	

Note: ** indicates statistical significance at the 1% level

Table 6 summarises comparison test results between different instruction modes for gender subgroups. The results indicate statistically significant differences between all instruction modes at the significant level of 1% in both male and female subgroups. In male subgroup, the asynchronous online mode recorded the highest median score (*Md* = 85) compared to the F2F (*Md* = 70), synchronous (*Md* = 68.5) and BL (*Md* = 68) modes. Likewise, the asynchronous online mode also reported the highest median score (*Md* = 82) in female subgroup compared to the synchronous (*Md* = 75), F2F (*Md* = 70.5) and BL (*Md* = 70) modes. Thus, hypothesis 2b (H2b) is statistically proved.

Discussion and Conclusion

This study aims at investigating the effects of different instruction modes applied in teaching an accounting course, FAR270, as a result of the transition of COVID-19 phases on academic performance of undergraduate students. Concerning the first research question on whether there were any differences in students' performance across different instruction modes applied in different phases of COVID-19 pandemic, the findings of this study reveal that there are significant differences between students' performance when all four cohorts of students are compared. The students who were first exposed to the ERT at the beginning of pandemic phase (second cohort) performed better in the asynchronous online instruction mode compared to other instruction modes applied during other phases of pandemic. The pairwise comparison test result also suggests that performance of students in the synchronous online mode was better than those in traditional F2F class. These findings are in line with those of Iglesias-Pradas et al (2021) who found that students achieved better results under ERT in all the courses in a bachelor's degree in Engineering. However, the findings of this study contradict those of Nazempour et al (2022); El Said (2021) who discovered no significant differences when comparing the performance of students during ERT semesters and the traditional face-face F2F semester.

Regarding the second research question on whether there any differences in students' performance across different instruction modes for each subgroup of students, the findings reveal significant differences for each group of students divided by the their prior CGPA and gender. In all CGPA and gender subgroups, students seemed to perform better in the asynchronous online mode compared to the traditional F2F classroom, synchronous online and BL modes. The findings with regards to CGPA subgroups are inconsistent with those of Nazempour et al (2022) who discovered that the academic performance of students in certain CGPA subgroups had been negatively affected by the transition to ERT. The findings regarding

gender subgroups contradict those of Hashemi (2021) who discovered that COVID-19 pandemic had negatively affected the female students in various aspects such as assessments, projects and online assignment submission.

The results of this study represent that the COVID-19 pandemic has positively affected the performance of undergraduate students who enrolled in the FAR270 course, especially those who first experienced the transition to ERT at the beginning of the pandemic phase. Despite the lack of training and technical support with regards to the latest technological and online learning tools, as well as internet accessibility problems, the asynchronous online instruction mode provides more flexibility to students, allowing them to study at their own pace (Islam et al., 2020). Furthermore, in an asynchronous online mode, students have better access to additional education materials, enabling them to broaden their understanding of the topic (Fadhilah et al., 2021; Perveen, 2016). To compensate for internet accessibility problems, students were given extra time in completing, scanning and uploading their online assessments, allowing them to fully utilise the time allocated. On the contrary, the association of better academic performance with online assessment formats maybe partly the consequence of exam misconduct. According to Livas and Karali (2022), online assessment formats are more prone to academic fraud than F2F exams. Thus, the potential effect of cheating behaviour cannot be discarded. However, we could not evaluate students' integrity in this study.

This study has several limitations. Firstly, the findings of this study are specific to one course taught by a single lecturer in one HEI, which may limit the depth of the analysis. Secondly, the choice of the course was made by convenience and availability of data. Hence, generalising the research results would not be recommended. Thirdly, this study omits students' opinion and perception of the process of transition to ERT. Such a perspective would offer more insight about the different aspects covered in this study. Future studies should also include other courses, additional demographic and academic variables such as students' participation, attendance and retention to expand the scope of the results. In addition, other HEIs both in Malaysia and worldwide may also be incorporated in future studies to examine regional and cultural differences.

References

Bahnson, J., & Olejnikova, L. (2017) Are recorded lectures better than live lectures for teaching students legal research? *Law Library Journal, 109*(2), 187-204.

Cavanaugh, J., Jacquemin, S., & Junker, C. (2022). A look at student performance during the COVID-19 pandemic. *Quality Assurance in Education.* https://doi.org/10.1108/QAE-01-2022-0008.

Elfaki, N. K., Abdulraheem, I., & Abdulrahim, R. (2019). Impact of e-learning vs traditional learning on student's performance and attitude. *International Journal of Medical Research & Health Sciences*, *8*(10): 76-82.

El Said, G. R. (2021). How did the COVID-19 pandemic affect higher education learning experience? An empirical investigation of learners' academic performance at a university in a developing country. *Advances in Human-Computer Interaction, 2021,* 1-10. https://doi.org/10.1155/2021/6649524.

Fadhilah, M., Sutrisna, S., Muslimah, S. N., & Ihsan, M. T. (2021). An exploring methods in online learning: Synchronous and asynchronous. *Indonesian Journal of Research and Educational Review, 1(1), 74*-81. https://doi.org/10.51574/ijrer.v1i1.55.

Hashemi, A. (2021). Effects of COVID-19 on the academic performance of Afghan students' and their level of satisfaction with online teaching. *Cogent Arts & Humanities, 8,* 1-23. https://doi.org/10.1080/23311983.2021.1933684.

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. Retrieved from Educause Review website: https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning.

Hurlbut, R. (2018), Online vs. traditional learning in teacher education: a comparison of student progress. *American Journal of Distance Education*, *32*(4), 248-266.

Hu, K., Godfrey, K., Ren, Q., Wang, S., Yang, X., & Li, Q. (2022). The impact of the COVID-19 pandemic on college students in USA: Two years later. *Psychiatry Research, 315,* 1-8. https://doi.org/10.1016/j.psychres.2022.114685.

Iglesias-Pradas, S., Hernandez-Garcia, A., Chaparro-Pelaez, J., & Prieto, J. L. (2021). Emergency remote teaching and students' academic performance in higher education during the COVID-19 pandemic: A case study. *Computers in Human Behavior, 119,* 2-18. https://doi.org/10.1016/j.chb.2021.106713.

Islam, M., Kim, D. A., & Kwon, M. (2020). A Comparison of Two Forms of Instruction: Pre-Recorded Video Lectures vs. Live ZOOM Lectures for Education in the Business Management Field. *Sustainability 2020*, *12*(19), 1 – 11.

Lee, Y. H., Bland, K., Low, W. W., & Wong, S. H. (2022). Civil engineering student performance observation during COVID-19 pandemic period. *ASEAN Journal of Engineering Education, 6(1),* 51-57.

Liu, X., He, W., Zhao, L., & Hong, J. C. (2021). Gender Differences in Self-Regulated Online Learning During the COVID-19 Lockdown. *Frontiers in Psychology, 12,* 1-8. https://doi.org/10.3389/fpsyg.2021.752131.

Livas, C., & Karali, N. (2022). Examining the concurrent impact of teaching and assessment format on undergraduate students' academic performance in marketing. *Higher Education, Skills and Work-Based Learning.* https://doi.org/10.1108/HESWBL-02-2022-0039.

Milienos, F. S., Rentzios, C., Catrysse, L., Gijbels, D., Mastrokoukou, S., Longobardi, C., & Karagiannpoulou, E. (2021). The Contribution of Learning and Mental Health Variables in First-Year Students' Profiles. *Frontiers in Psychology, 12,* 1-12. https://doi.org/10.3389/fpsyg.2021.627118.

Milman, N. B. (2020). This is emergency remote teaching, not just online teaching. Education Week. Retrieved from https://www.edweek.org/ew/articles/2020/03/30/this-is-emergency-remote-teaching-not-just.html.

Ministry of Higher Education. (2021), Teks Ucapan YBM - Kemasukan Pelajar Ke Kampus Institusi Pendidikan Tinggi secara Berperingkat Bermula 15 Oktober 2021. https://www.mohe.gov.my/en/announcements/speeches/teks-ucapan-ybm-kemasukan-pelajar-ke-kampus-institusi-pendidikan-tinggi-secara-berperingkat-bermula-15-oktober-2021?highlight=WyJtZW50ZXJpIl0=.

Nazempour, R., Darabi, H., & Nelson, P.C. (2022). Impacts on students' academic performance due to emergency transition to remote teaching during the COVID-19 pandemic: A financial engineering course case study. *Education Sciences, 12(202),* 2-14. https://doi.org/10.3390/educsci12030202.

Perveen, A. (2016). Synchronous and asynchronous e-language learning: A case study of virtual university of Pakistan. Open Praxis, *8*(1), 21-39.

Potu, B. K., Atwa, H., El-Din, W. A. N., Othman, M. A., Sarwani, N. A., Fatima, A., Deifalla, A., & Fadel, R. A. (2022). Learning anatomy before and during COVID-19 pandemic: Students' perceptions and exam performance. *Morphologie, 106,* 188-194. https://doi.org/10.1016/j.morpho.2021.07.003.

Prowse, R., Sherratt, F., Abizaid, A., Gabrys, R. L., Hellemans, K. G. C., Patterson, Z. R., McQuaid, R. J. (2021). Coping With the COVID-19 Pandemic: Examining Gender Differences in Stress and Mental Health Among University Students. *Frontiers in Psychology, 12,* 1-11. https://doi.org/10.3389/fpsyt.2021.650759.

Sarfraz, M., Khawaja, K. F., & Ivascu, L. (2022). Factors affecting business school students' performance during the COVID-19 pandemic: A moderated and mediated model. *The International Journal of Management Education, 20(2),* 1-12. https://doi.org/10.1016/j.ijme.2022.100630.

Soffer, T., and Nachmias, R. (2018). Effectiveness of learning in online academic courses compared with face-to-face courses in higher education. *Journal Of Computer Assisted Learning*, *34*(5), 534-543. DOI: 10.1111/JCAL.12258.

Sokout, H., and Usagawa, T. (2021). Improving academic performance through blended learning: the case of Afghan higher education. *International Journal of Emerging Technologies In Learning (IJET)*, *16*(11), 104-120.

Stevens, G.J., Bienz, T., Wali, N., Condie, J., & Schismenos, S. (2020). Online university education is the new normal: but is face-to-face better? *Interactive Technology and Smart Education, 18(3),* 278-297. DOI 10.1108/ITSE-08-2020-0181.

Tan, C. (2021). The impact of COVID-19 on student motivation, community of inquiry and learning performance. *Asian Education and Development Studies, 10(2),* 308-321. https://doi.org/10.1108/AEDS-05-2020-0084.

Tratnik, A., Urh, M. & Jereb, E. (2019). Student satisfaction with an online and face-to-face business English course in a higher education context. *Innovations in Education And Teaching International*, *56*(1), 36-45.

Wang, Y., Xia, M., Guo, W., Xu, F., & Zhao, Y. (2022). Academic performance under COVID-19: The role of online learning readiness and emotional competence. *Current Psychology.* https://doi.org/10.1007/s12144-022-02699-7.