Raja Abdullah, R. I. & Daud, I. Aplikasi 'Konsep 4C' pembelajaran abad ke-21 dalam kalangan guru pelatih pengajian agama Institut Pendidikan Guru Kampus Dato' Razali Ismail, Asian People Journal, 1(1), 45-65.

Tahir, K. (2015). Student Deep Learning in Bachelor English Programs within Pakistani Universities. *Journal for Leadership and Instruction,* 14(2), 31-36.

Tan Xin Yu1 & Wan Muna Ruzanna Wan Mohammad. Integration of 21st Century Learning Skills (4C Elements) in Interventions to Improve English Writing Skill Among 3K Class Students. *International Journal of Contemporary Education. 2(2),* 100-121.

IMPLICATION OF COVID-19 PANDEMIC ON TESL STUDENT ACADEMIC PERFORMANCE AT INSTITUE OF TEACHER EDUCATION MALAYSIA

Suriati Sulaiman, PhD
sulaimansuriati@yahoo.com
Yong Rofidah Salleh
yongrs@yahoo.com
Norhyisyamudin Kamil
hyisyam05@yahoo.com
Mohamad Razif Disa
morazdiz@gmail.com
Badariah Mohamed
seribulan@gmail.com
Khairul Nisak Ahmad
khairulnisak74@yahoo.com
Institut Pendidikan Guru Kampus Tengku Ampuan Afzan

Abstrak

Penutupan institusi pendidikan akibat pandemik covid-19 telah menyebabkan berlakunya suatu peralihan pantas daripada pembelajaran bersemuka kepada pembelajaran dalam talian. Kajian ini bertujuan untuk mengkaji prestasi akademik pelajar sebelum dan selepas penutupan (lockdown) tersebut. Kajian ini menggunakan pendekatan kuantitatif berdasarkan kaedah penyelidikan arkib. Kajian ini melibatkan pelajar Ijazah Sarjana Muda Perguruan TESL di 27 kampus Institut Pendidikan Guru. Pemilihan sampel menggunakan kaedah persampelan rawak berdasarkan kluster. Skor gred dan GPA telah dibandigkan antara dua kumpulan (220 pelajar pembelajaran bersemuka dan 220 pelajar pembelajaran atas talian) yang menamatkan kursus yang sama. Data dianalisis menggunakan Ujian-T dan Khi-kuasa Dua. Dapatan menunjukkan terdapat perbezaan yang signifikan dalam skor, taburan gred GPA di antara kumpulan. Kajian juga mendapati pembelajaran atas talian memberi kesan positif terhadap prestasi akademik pelajar. Oleh itu dicadangkan kepada pemimpin pendidikan dan para pendidik untuk mempertimbangksn kesepaduan pembelajaran di ITEM dalam perancangan pendidikan di masa hadapan.

Kata kunci: prestasi akademik, COVID-19, implikasi, pendidikan guru, TESL.

Abstract

Educational institution closure due to the COVID-19 pandemic has resulted in a rapid shift from face-to-face to online learning. This study aimed to investigate the students' academic performance before and after the lockdown. The study employed a quantitative approach based on archival research method. The investigation involved Bachelor of Teaching (TESL) students at 27 campuses in Institute

of Teacher Education Malaysia. Sample was selected using cluster random sampling. Scores, grades, and GPAs were compared between the two groups (220 face-to-face students and 220 online students), who completed the same courses. Data were analysed using T-test, and Chi-square. The findings suggested there is a significant difference in score, grade distribution and GPA between groups. Evidently, online learning was found to have a positive effect on student academic performance. Hence, it is recommended that educational leaders and educators would consider integrating online learning at ITEM in future education plans.

Keywords: Academic performance; COVID-19; Implication; Teacher education; TESL

COVID-19 has led in the closure of schools and institutions all across the world in early 2020, affecting around 1.2 billion students (WEF, 2020). As a result, there is a notable development in distant learning, in which instruction is done remotely and via digital platforms. With the abrupt move away from classrooms in many areas of the world, higher education institutions, like the Institute of Teacher Education Malaysia, must quickly transition from face-to-face to online learning.

Respectively, the closure of educational institutions and the sudden shift of learning mode will likely have major impacts on student academic performance. In a cross-sectional study carried out by Mahdy (2020), the data showed that the COVID-19 lockdown has affected the academic performance of most participants (96.7%) who were veterinary medical students and researchers in universities and colleges from 92 countries with varying degrees. In addition to that, due to the lockdown, the learning has to take place online. The learning environmental conditions that are different from classroom at the universities also have an impact on the students' academic performance during the COVID-19 pandemic (Realyvásquez-Vargas et al., 2020). However, a study by Gonzalez et al. (2020) showed that there is a significant positive effect of COVID-19 lockdown on students' performance. The results indicated that students obtained better scores in all kinds of tests that were performed online after the beginning of lockdown.

Furthermore, there are other issues emerging from the rapid shift to online instruction such as access to technology, teachers' readiness and student response. A study by Kuhfeld et al. (2020) demonstrated that differential access to technology and online instruction during the COVID-19 school closures could widen school achievement gaps. The researchers claimed that certain factors might improve COVID-19 virtual instruction since students already knew their teachers and were potentially doing review rather than being taught new material, yet many others make it even harder to achieve effective online instruction due to teachers' lack of training on virtual instruction. Consequently, the teachers are not universally prepared to teach online (Garcia & Weiss, 2020). For instance, in the US, just 32.5% teachers consider themselves proficient in using software applications, and only 19.3% teachers consider themselves proficient in integrating computers into instruction. Besides, different groups of students might respond to virtual learning differently and thus, student academic performance depends on the alternative options students have in their classroom instruction (Hart et al., 2019).

Hence, this study has been designed to better understand the impact of COVID-19 pandemic on TESL students' academic performance after the sudden shift from face-to-face to online learning due to the lockdown of Institute of Teacher Education Malaysia. That is, the study assessed variation in students' academic performance from January 2019 to December 2020. It was hoped that this investigation would contribute to the current literature by providing a clear insight about the effect of the disruption of face-to-face learning due to the pandemic and its implication on student academic performance with respect to score, grade, GPA and gender. Besides, the findings of the study could inform the appropriate instruction and assessment mode of online learning for TESL students at Institute of Teacher Education Malaysia. The recommendations provided based on the findings of the study may help rectify the situation and guide educational leaders and educators at ITEM in integrating online learning in future education plans, especially in developing context, where lack of IT infrastructure and skills represents big challenges.

PROBLEM STATEMENT

Several studies which compared university student performance in face-to-face and online distance learning have been done before pandemic. A study by Soesmanto and Bonner (2019) evaluated a dual mode design in which students of year one of a business school at the Griffith University in Australia have the option to undertake the same statistics course in a face-to-face mode and/ or an online mode. The comparative analysis suggested no significant differences in learning satisfaction and academic performance of the two cohorts within the dual mode system. In a similar study done in California State University, Tan (2019) suggested that with proper training and support of technology, university instructors are delivering both the on-ground and online sections of a business technology course with the same effectiveness as measured by students' grade points. For a different type of courses, Lorenzo-Alvarez et al. (2019) found that a radiology course taught online at a university in Australia resulted in similar academic outcomes to face-to-face learning. Evidently, well-planned online learning has no impact on student academic performance in universities.

However, a well-planned online learning is totally different from shifting online in response to a crisis such as COVID-19 pandemic, as the sudden shift could be shocking to educators and students (Hodges et al., 2020) which result in they are not well-prepared to teach online (Garcia & Weiss, 2020), and thus, the impact on student learning and performance might be different before and after the pandemic. Nyer (2019) investigated effective ways of quickly offering an online lecture in a course that is otherwise taught using traditional face-to-face lectures at Chapman University in California. The study compared student learning outcomes (using test scores) across three modes of delivering lectures: (1) using a traditional face-to-face lecture, (2) using online instruction where the lecture was delivered using a video recording of the classroom lecture, and (3) using online instruction where the lecture was delivered using a static document created from an edited transcript of the classroom lecture embedded with charts, graphs, etc. The findings showed that quickly created online instruction methods resulted in students scoring lower in engagement compared to the traditional face-to-face lecture. Students who were exposed to the online lecture delivered using a static document and students attending the face-to-face lecture both reported having higher quality of notes compared to students exposed to the video recording. Finally, the effect of the different instructional material on student test scores was found to be mediated by student engagement and perceived note quality. Apparently, an unplanned and rapid shift of instruction mode from face-to-face to online learning does affect the learning performance of the students.

In other comparative study, the learning mode somehow does relate to the student academic performance in terms of course grade. Cavanaugh and Jacquemin (2015) compared grade-based learning outcomes between online and face-to-face courses taught at Ohio University, using a large dataset of 5,000 courses taught by over 100 faculty members over a period of ten academic terms at a large, public, four-year university. Given the large scale of the study, the results suggested no difference in grade-based student performance between instructional modes for courses where both modes are applicable. According to the regression analysis of the study, the primary influence on individual course grade was student GPA. Students with higher GPAs performed better in online courses, and students with lower GPAs performed worse when taking courses in an online format compared to a face-to-face format. The finding is consistent with a recent study by El Said (2020) in which students with higher GPAs perform better in online courses, whereas students with poor GPAs perform worse when taking courses in an online format compared to a face-to-face mode. This result was expected due to the fact that the distance learning during the COVID-19 lockdown deprived students with low GPA of the benefit of support and mentoring mechanisms provided by the university on-campus.

Until now, there have been few investigations on how higher education institutions all over the world have dealt with the COVID-19 pandemic. The highest majority of pre-pandemic literature which compared face-to-face with online distance courses was conducted in higher education institutions in developed countries, where information technology infrastructure, resources, and support are available and reliable. There is a severe shortage of similar comparative studies in developing countries (El Said, 2020). In fact, the author emphasized that very few empirical academic studies have been published

about this phenomenon; literature dedicated to understanding how the online distance learning conducted during the COVID-19 lockdown has impacted academic practices in higher education is still under development.

To date no evidence-based study has been conducted to investigate the phenomenon in Malaysian higher education institutions particularly in Institute of Teacher Education Malaysia. As such, this study has been proposed to examine the impact of COVID-19 pandemic on higher education particularly on the academic performance of TESL students. Furthermore, this is one of the first empirical studies investigating the effect of the sudden shift from face-to-face to online instruction due to COVID-19 lockdown at 27 campuses of Institute of Teacher Education in Malaysia. The test scores, course grades and GPAs are used in this study as the primary comparative factor in assessing students' performance differences between face-to-face and online learning based on their coursework and final exam. Student genders and learning mode are considered as independent variables as these demographic and academic variables have been identified to affect students' academic performance (Cavanaugh & Jacquemin, 2015; DiPerna et al., 2002). They are also considered in this study to decrease the possibility that any variation in student performance could be confounded by these demographic or academic variables, and not because the course is being taught in an online or face-to-face format as suggested by El Said (2020).

RESEARCH OBJECTIVE

The aim of this study was to investigate the students' academic performance after the sudden shift from face-to-face to online distance learning due to the COVID-19 lockdown at Institute of Teacher Education Malaysia (ITEM). The study assessed variation in students' academic performance from January 2019 to December 2020. The focus would be on Teaching English as a Second Language (TESL) students at 27 campuses of ITEM. The objectives of the study, therefore, were:
1. to determine the difference in score between face-to-face and online students;
2. to determine the difference in grade distribution between face-to-face and online students;
3. to determine the difference in GPA between face-to-face and online students;

RESEARCH QUESTION

The study planned to answer the following questions:
1. Is there a significant difference in score between face-to-face and online students;
2. Is there a significant difference in grade distribution between face-to-face and online students;
3. Is there a significant difference in GPA between face-to-face and online students;

Hypotheses:
H_{01} There is no significant difference in score between face-to-face and online students;
H_{02} There is no significant difference in grade distribution between face-to-face and online students;
H_{03} There is no significant difference in GPA between face-to-face and online students;

LITERATURE REVIEW

Academic performance has always been associated with the measurement of student achievement based on scores or grades across various academic subjects. In many higher education institutions including Institute of Teacher Education Malaysia (ITEM), educators and education officials typically measure student achievement using results from coursework and standardized tests. The student academic performance is measured using grade point average (GPA) for the particular semester and using cumulative grade point average (CGPA) for the final grade earned in the course. A student's GPA is typically measured on a scale of zero to four with higher GPAs representing higher grades in the classroom. The grade point average or GPA is now used by most of the higher education institutions

including ITEM as a convenient summary measure of the academic performance of their students. The GPA is a better measurement because it provides a greater insight into the relative level of performance of individuals and different groups of students.

Quite a few studies have been carried out to investigate and compare student academic performance between face-to-face and online learners since COVID-19 pandemic was announced on March 12, 2020 by World Health Organization (WHO) causing universities closure and consequently has dramatically reshaped the way higher education is delivered. In terms of the impact of COVID-19 pandemic on student learning and academic performance many differences exist. At one of the universities in Egypt, El Said (2020) investigated the effect of the sudden shift from face-to-face to online distance learning due to COVID-19 lockdown. Comparison of grades was made between 376 business students who completed a face-to-face course in spring 2019 and 372 students who completed the same course but fully online via distance learning mode in spring 2020 during the lockdown. T-test was conducted to compare grades of quizzes, course work, and final exam for the two groups. Chi-square test was used to compare grade distribution for both groups. The effect of gender, credit hours, age, and GPA was assessed. The results suggested that there was no statistically significant difference in students' grades. In addition, the unplanned and rapid move to online distance learning at the time of pandemic did not result in a poor learning experience as was expected.

In another study done in Universidad Auto´noma de Madrid (Spain), Gonzalez et al. (2020) analysed the effects of COVID-19 lockdown on the autonomous learning performance of their students. Using a field experiment with 458 students from three different subjects, they studied the differences in assessments by dividing students into two groups. The first group (control) corresponds to academic years 2017/2018 and 2018/2019. The second group (experimental) corresponds to students from 2019/2020, which is the group of students that had their face-to-face activities interrupted because of the lockdown. The results showed that there is a significant positive effect of the COVID-19 lockdown on students' academic performance. Based on these results, it was deduced that COVID-19 lockdown changed students' learning strategies to a more continuous habit, improving their efficiency. For these reasons, better scores in students' assessment are expected due to COVID-19 lockdown that can be explained by an improvement in their learning performance.

In different courses, a cross-sectional study was carried out by Mahdy (2020) to analyse the impact of COVID-19 lockdown on the academic performance of veterinary medical students and researchers. Veterinary medical students and researchers were invited to answer an online google form questionnaire. A total of 1,392 participants from 92 different countries answered the questionnaire with a response rate of 94.1%. The data showed that COVID-19 pandemic lockdown affected the academic performance of most participants (96.7%) with varying degrees. Although online education provides an opportunity for self-study, the main challenge that online education faces in veterinary medical science is how to give practical lessons. Since most of the subjects are practical; therefore, it is not easy to learn it online. Students think that it is difficult to fulfil the veterinary competencies only with an online education system.

As a matter of fact, there are many factors which contribute to student academic performance. These factors include, among others, the role of the students, teachers, family, society, the school environment, and the educational system (Wang, Haertel, & Walberg, 1993). Another factor that is assumed to have a considerable effect on students' academic performance is gender. Indeed, differences in how both males and females perform academically have been noticed but need scientific confirmation. The gender gap in academic achievement has been extensively examined in the US and many other western countries in the past, yet virtually no rigorous studies of the gender achievement gap have been conducted recently (Hdii & Fagroud, 2018).

One of the recent studies was done by Hdii and Fagroud (2018) who investigated the number of girls enrolled in the School of Agriculture compared with the number of boys since the establishment of the school. The study also explored gender differences in their academic achievement. The data used include exam scores of students at the National School of Agriculture in Meknes from 2008 to 2015.

The scores were considered according to the independent variables, namely subjects, the graduating classes and gender. Subjects are classified into three main categories: scientific subjects (mathematics and statistics), technical subjects (agronomy and animal care), and language subjects (English and French). The analysis results showed a noticeable increase in the number of girls compared to boys. Moreover, girls proved to be more likely to perform better than boys in different subjects. In fact, female students not only outnumber male students but also get better grades in all the categories of subjects. However, the researchers suggested that these interesting results should be enhanced by other studies in order to seek explanations behind good females' achievement. For this reason, research in the environment of larger classes and other institutions is necessary to confirm the obtained results.

Based on the recommendations and guidelines from previous researchers, the researchers believe that it is timely to administer a study on the implication of COVID-19 pandemic on student academic performance at Institute of Teacher Education Malaysia in terms of test score, course grade, GPA, and student gender. Thus, this study was designed based on the model of academic achievement proposed by Wang, Haertel and Walberg (1993). Such model is an extension to Walberg's (1981) theory of educational productivity (McGrew, 2008), which is one of the few empirically tested theories of school learning based on an extensive review and integration of over 3,000 studies (DiPerna, Volpe & Stephen, 2002). Walberg (1981) suggested four essential elements to determine students' academic performance: (1) quality of instruction; (2) quantity of instruction; (3) home environment; and (4) exposure to mass media. Later, Walberg et al.'s review of the theory have identified key nine variables that effect students' academic performance: (1) student ability/prior achievement; (2) motivation; (3) age/developmental level; (4) quantity of instruction; (5) quality of instruction; (6) classroom climate; (7) home environment; (8) peer group; and (9) exposure to mass media outside of school (Walberg, Fraser & Welch, 1986). In the current context, the first three variables (ability, motivation, and age) reflect characteristics of the student. The fourth and fifth variables reflect instruction (quantity and quality), and the final four variables (classroom climate, home environment, peer group, and exposure to media) represent aspects of the psychological environment (DiPerna et al., 2002). Clearly, student characteristics, instruction, and psychological environment are important for school learning.

In a more recent study, Wang, Haertel and Walberg (1993) examined six major construct domains in predicting student outcome: (1) State & District Governance & Organization; (2) Home & Community Contexts; (3) School Demographics, Culture, Climate, Policies & Practices; (4) Design & Delivery of Curriculum & Instruction; (5) Classroom Practices; and (6) Student Characteristics. According to DiPerna et al., 2002, psychological, instructional, and home environment characteristics have a more significant impact on achievement than variables such as state-, district-, or school-level policy and demographics. More importantly, in the context of the current document, student characteristics including student demographics, history of educational placement, social and behavioral, motivation and affective, cognitive, metacognitive, and psychomotor are the set of proximal variables with the most significant impact on students' academic outcomes (DiPerna et al., 2002).

This study aimed to investigate the variation in TESL student academic performance in terms of score, grade, GPA and gender after the sudden shift from face-to-face to online distance learning due to the COVID-19 lockdown at Institute of Teacher Education Malaysia. For the purpose of the study, the researchers employ model of academic achievement proposed by Wang, Haertel and Walberg (1993) as a framework to guide the study. The model summarized six key variables that have significant impact on student achievement. However, in the context of this study, the researchers focus on two variables, namely student characteristics and instruction which have the most significant impact on student academic performance as revealed by DiPerna et al. (2002) and visualized in Figure 1.

METHODOLOGY

Research Design

This study essentially employed a quantitative approach based on archival research (AR) method, which has been quietly undergoing a wholly remarkable change over the last decade as asserted by Kurtz (2009). In general, archival research as defined by Pearce-Moses, (2005) is a research involving primary

sources held in an archives, a special collection library, or other repository. The author explained that archival sources can be manuscripts, documents, records (including electronic records), objects, sound and audio-visual materials, or other materials. Likewise, Ventresca and Mohr (2017) contended that the archival research method includes a broad range of activities applied to facilitate the investigation of documents and textual materials produced by and about an organization. The authors clarified that in its most classic sense, archival method involves the study of historical documents; that is, documents created at some point in the relatively distant past, providing us access that we might not otherwise have to the organizations, individuals, and events of that earlier time. However, they emphasized that researchers can also employ archival methods to engage in non-historical investigations of documents and texts produced by and about contemporary organizations to supplement other research strategies such as field method, and survey method. Yet, according to the authors, the archival method can also be applied to the analysis of digital texts including electronic databases, emails, and web pages. Apparently, archival research is a method that involves searching for and extracting information known as archival data from existing archival sources and such method can be employed to examine historical as well as non-historical documents and records either in the form of digital or non-digital texts or audio-visual materials.

In fact, archival research is increasingly addressing not only the professional and managerial aspects of archival practice, but also disciplinary aspects such as studying and theorizing the record, and the archives within their organizational, social, historical, cultural and information management contexts (Gilliland & Mckemmish, 2004). Considering the issues concerned (academic performance), the researchers employed archival research method to examine students' academic database managed by the Centre of Examination and Graduation to investigate student academic performance in terms of test score, course grade and GPA awarded to TESL students of Institute of Teacher Education Malaysia at 27 campuses in May 2019 and May 2020 academic years. The research has obtained ethical approval by the Malaysian Ministry of Education (Reference: KPM.600-3/2/3-eras(10215) and permission has been granted by the Institute of Teacher Education Malaysia (Reference: KPM.600-2/1/4 Jld.4(32), where this study was conducted.

Research Sample

This descriptive and relational study was conducted on the first year students of Bachelor of Teaching (PISMP), studying Teaching English as a Second Language (TESL) at 27 campuses in Institute of Teacher Education Malaysia. The population of the study consisted of 1716 students in 2019 and 1765 students in 2020. The sample size of 220 was determined using G power, a software used to calculate statistical power for a wide variety of statistical tests including t-tests, F-tests, and chi-square-tests (Faul et al., 2007; Faul et al., 2009). Then, the sample was selected based on cluster random sampling. Cluster random sampling was employed in this study due to the fact that it is time-efficient and cost-efficient for a large population, which requires fewer resources for the sampling process (Creswell, 2012). Furthermore, it is more feasible, in which each cluster represents the entire population and more subjects can be included in the study.

In the present study, the researchers initially identified the population who were directly involved in the issues concerned. Next, the population was divided into 5 clusters according to 5 zones: North, East, Central, Sarawak, and Sabah. Then, the researchers chose the IPGKs which are in Tier 1 and Tier 2 for TESL programme since they have consistent intake every year and randomly selected the sample before collecting the data from ITEM academic database. Generally, the number of samples was calculated by dividing the number of samples (N = 220) by the number of IPGKs (refer to Table 1).

Data Collection and Analysis

The academic results of the two groups of students (220 face-to-face students and 220 online students) over the past two years (January 2019 – December 2020) were collected by the researchers, who participated in the teaching of the TESL programme in 2019 and 2020. Permission was taken from

Institute of Teacher Education Malaysia (ITEM) to anonymously analyse the examination data from academic database and publish the results for academic purposes. Comparison of scores, grades, GPAs and genders was made between 220 TESL students who completed nine face-to-face courses (EDUP3033i, TSLB3033, TSLB3043, TSLB3052, TSLB3213, TSLB3223, MPU3031, MPU3041, MPU3052) in May 2019 and 220 students who completed the same courses but fully online via distance learning mode in May 2020 during the lockdown.

The quantitative data were analysed descriptively in terms of mean, standard deviation, frequency and percentage. T-test for independent groups, chi-square, and two-way ANOVA of inferential statistics were also employed for analysing differences and effects using SPSS (Statistical Package for the Social Science) version 26.0. T-test was conducted with the calculation of mean, standard deviation, and difference to determine if there is a significant difference in score between the two groups: face-to-face and online students (RQ1) and to determine if there is a significant difference in GPA between face-to-face and online students (RQ3). Researchers computed Chi-square to determine if there is a significant difference in grade distribution between the two groups (RQ2). The results were assessed at 95% confidence interval and significance level of $p < .05$.

RESEARCH FINDING

Research Question 1
Is there a significant difference in score between face-to-face and online students?

To investigate the difference between two unrelated or independent groups (in this case face-to-face and online students) on an approximately normal dependent variable (in this case score), it is appropriate to choose an independent sample *t* test in condition the assumptions are not markedly violated. To ensure that the data meet these assumptions, the researchers tried to ensure that groups or samples are of similar size, as the assumptions of homogeneity of variance is most important and more likely to be violated if samples differ markedly in size. Table 2 shows descriptive statistics for the two groups (face-to-face and online students) separately. The test results reveal that the appropriate $t = -6.31$, degrees of freedom (*df*) = 422.47, and $p = .000$. This *t* is statistically significant, thus the null hypothesis was rejected. Based on the findings, we can say that face-to-face students are significantly different from online students on score.

The 95% confidence interval of the difference is shown in the two right-hand columns of the table. The confidence interval tells us that if we repeat the study 100 times, 95 of the times the true (population) difference would fall within the confidence interval, which is between -2.82 points and -1.48 points. Furthermore, the same sign (- and -) in the lower and upper bounds indicates that the difference is statistically significant because the null finding of zero difference lies outside of the confidence interval. The lower limit of the confidence interval on score tells us that the difference between face-to-face and online students could be as small as -2.82 points out of 25, which is the maximum possible score. Inspection of the two group means indicates that the mean test score for face-to-face students ($M = 76.64$) is significantly lower than the score ($M = 78.79$) for online students. The difference between the means is -2.15. The difference between the groups is likely to be between -1.48 and -2.82 points. This range excludes the value of zero, indicating that there is difference, thus, the difference is statistically significant. The effect size measure is not provided in the *t* test but can be estimated relatively easily. For score, the difference between the means (-2.15) is divided by about 3.6, an estimate of the pooled (weight average) standard deviation. Thus, the effect size *d* would be approximately .60, which is according to Cohen (1988), a medium to large effect size.

Research Question 2
Is there a significant difference in grade distribution between face-to-face and online students?

Chi-square statistic was used to investigate whether face-to-face and online students differ on whether they have most A in their grades or less. Assumptions were checked and were met. The skewness is

less than minus one (-.352). As we can see at Table 3, there are no participants with missing data. It was determined that there are 100 students who had the most A (A+, A, A-); this is 45.5% of the 220 face-to-face students. On the other hand, 158 of 220 online students had most A; that is 71.8% of the students. The chi-square tests indicate that face-to-face and online students are significantly different on whether they have most A or less ($\chi^2 = 31.52$, $df = 1$, $N = 440$, $p < .001$), thus the null hypothesis was rejected. Apparently, the difference is not due to chance. It can be observed that online students are more likely than expected to have a higher percentage of A as compared to face-to-face students. In contrast, face-to-face students had a slightly higher percentage of B and C. Phi, which indicates the strength of the relationship between the two variables, is .268, and like the chi-square, it is statistically significant. Thus, the relationship between variables or effect size is considered to be small to medium according to Cohen (1988).

Research Question 3
Is there a significant difference in GPA between face-to-face and online students?

T-   test was also administered to investigate the difference in GPA between face-to-face and online students. As can be observed in Table 4, the appropriate $t = -6.68$, and $df = 387.65$. It was found that the GPA of face-to-face students is significantly different from online students, ($p = 000$), thus the null hypothesis was rejected. All things considered, there is a statistically significant difference in GPA between face-to-face and online students. The two group means indicate that the mean GPA for online students ($M = 3.63$) is significantly higher than the GPA ($M = 3.50$) for face-to-face students. The results indicate that online students did score higher GPA than face-to-face students. The mean difference is -.13 points on a 25-point test. The difference between the groups is between -.09 and -.16, excluding the value of zero, thus the difference is statistically significant. The effect size was calculated by dividing the difference between means (-.13) by average standard deviation (.20), Thus, the effect size d is approximately .65, which is a medium to large sized effect.

Discussion and Recommendation

The findings of Research Question 1 disclosed that there is a significant difference in score between face-to-face and online students. In fact, it was found that the online students did score higher as compared to face-to-face students. The findings seem congruent to a study by Gonzalez et al. (2020), in which students obtained better scores in online mode. Yet, the findings contradict with Nyer's (2019) study, which suggested that the sudden shift of instruction mode has resulted in the students scoring lower in their test compared to the traditional face-to-face instruction. The improvement in score during online learning could be due to improvement in learning performance, in which students changed their learning strategies to a more continuous and autonomous habit, improving their efficiency. Moreover, the results of the present study support the idea that students' behavioural, motivation and affective are the set of proximal variables with the most significant impact on their academic outcomes (DiPerna et al., 2002).

With reference to the results of Research Question 2, the chi-square tests indicated that online students had most A unlike face-to-face students who had less A in their assessments. Such results are quite similar to the findings in the study of El Said (2020), in which the online students had a slightly higher percentage of A and B as compared to the face-to-face students. On the other hand, face-to-face students had a slightly higher percentage of C and D than online students. Due to the positive impact of online learning on student academic performance, it is recommended that the educational leaders integrate online learning in the curriculum delivery at Institute of Teacher Education Malaysia.

Investigation on Research Question 3 revealed that online students performed better in their academics than face-to-face students in terms of GPA. The findings are not consistent with other studies by El Said (2020), Lorenzo-Alvarez et al. (2019), Soesmanto and Bonner (2019) and Tan (2019), in which there is no significant difference in academic performance between face-to-face and online students. Yet, all studies except by El Said were done before the pandemic and were well-planned, thus

there is no significant effect on students' academic performance. The improvement in students' GPA might be due to the change of the learning environment. The learning environment conditions that are different from classroom at ITEM seem to have an impact on the students' overall academic performance during the COVID-19 pandemic. Furthermore, the students received continuous moral support from family when they studied at home. These psychological and home environment factors do have a significant impact on students' academic achievement as accentuated by DiPerna et al. (2002).

CONCLUSION

The sudden shift of curriculum delivery from face-to-face to online instruction due to COVID-19 pandemic and the closure of higher education institutions has led to a distinctive rise of online instruction and learning. The rapid shift of instruction and learning mode could be a shock to many, particularly educators and students. It was expected that the immediate changes in instructional and learning mode may somehow have a negative effect on both parties involved since it is not well-planned. To investigate the implication of the pandemic on academic performance of TESL students at Institute of Teacher Education Malaysia, this comparative study has been designed. However, the unplanned and rapid move to online distance learning at the time of pandemic did not result in a poor learning experience as was expected. In fact, the findings indicated that there is improvement in academic performance, in which the students performed better in terms of score, grade and GPA in online courses.

With regards to the limitations of this study due to sample selection, research focus and research approach, several studies have been proposed for future research. Further studies which investigate the issues and challenges of online learning from qualitative perspective based on students' voices could be implemented. Examining the issues and challenges encountered by students could help the educational leaders and educators at Institute of Teacher Education Malaysia rectify the existing problem in integrating online learning in curriculum delivery, especially in developing contexts, where lack of IT infrastructure and skills among educators and students represents big challenges. Studies on factors that contribute to the improvement of student academic performance could be administered to investigate the internal and external factors that help the students in their remote learning, so that better options could be provided to students with poor academic performance and immediate actions could be taken by educational leaders and educators in administering the online instruction and assessment in future. The study could also be extended to seek explanations behind improvement in academic performance in online learning. It is also recommended that educational leaders and educators at ITEM would consider integrating online distance learning in future education plans.

References

McGreCavanaugh, J., & Jacquemin, S. J. (2015). A large sample comparison of grade based student learning outcomes in online vs. face-to-face courses. *Online Learning*, *19*(2).

Creswell, J. W. (2012). *Educational Research: Planning, conducting and evaluating quantitative and qualitative research* (4th ed.). Boston. MA: Pearson Education.

DiPerna, J. C., Volpe, R., & Elliott, S. N. (2002). A model of academic enablers and elementary reading/language arts achievement. *School Psychology Review*, *31*, 298–312.

El Said, G. F. (2020). 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. https://doi.org/10.1155/2021/6649524

Faul, F., Erdfelder, E., Lang, A. G., & Bucner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*, 175-191.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analysis using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*, 1149-1160.

Garcia, E, & Weiss, E. (2020). *COVID-19 and student performance, equity, and US education policy*. A report by Economic Policy Institute, Washington DC.

Gilliland, A., & Mckemmish, S. (2004). Building an infrastructure for archival research. *Archival Science, 4*, 149–197. doi: 10.1007/s10502-006-6742-6.

Gonzalez, T., de la Rubia, M. A., Hincz, K. P., Comas-Lopez, M., Subirats, L., & Fort, S. (2020). Influence of COVID-19 confinement on students' performance in higher education. *PLoS ONE*, *15*(10). https://doi.org/10.1371/journal. pone.0239490

Hart, C. M. D., Jacob, D. D. B., Loeb, S., & Hill, M. (2019). Online learning, offline outcomes: Online course taking and high school student performance. *AERA Open*, *5*(1), 1–17. doi: 10.1177/2332858419832852.

Hdii, S., & Fagroud, M. (2018). The effect of gender on university students' school performance: The case of the national school of agriculture in Meknes, Morocco. *KULTŪRA IR VISUOMENĖ. Socialinių tyrimų žurnalas*, *9*(1), 67-78. https://dx.doi.org/10.7220/2335-8777.9.1.4

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

Kuhfeld, M., & Tarasawa, B. (2020). *The COVID-19 slide: What summer learning loss can tell us about the potential impact of school closures on student academic achievement*. NWEA.

Kurtz, M. (2009). Archives. In R. Kitchin, & N. Thrift (Eds), *International Encylopedia of Human Geography*. Elsevier Ltd. https://doi.org/10.1016/B978-008044910-4.00400-4.

Lorenzo-Alvarez, R., Rudolphi-Solero, T., Ruiz-Gomez, M. J., & Sendra-Portero, F. (2019). Medical student education for abdominal radiographs in a 3D virtual classroom versus traditional classroom: A randomized controlled trial. *American Journal of Roentgenology*, *213*(3), 644–650.

Mahdy, M. A. A. (2020). The impact of COVID-19 pandemic on the academic performance of veterinary medical students. *Frontiers in Veterinary Science*, *7*. doi: 103389/fvets.2020.594261.

w, K. S. (2008). Walberg's theory of educational productivity. http://www.iapsych.com/acmcewok/Walberg'stheoryofeducationalproductivity.html

Nyer, P. (2019). The relative effectiveness of online lecture methods on student test scores in a business course. *Open Journal of Business and Management*, *7*(4), 1648–1656.

Pearce-Moses, R. (2005). *A glossary of archival and records terminology*. Chicago, IL: The Society of American Archivists.

Realyvásquez-Vargas, A., Maldonado-Macías, A. A., Arredondo-Soto, K. C., Baez-Lopez, Y., Carrillo-Gutiérrez, T., & Hernández-Escobedo, G. (2020). The impact of environmental factors on academic performance of university students taking online classes during the COVID-19 pandemic in Mexico. *Sustainability*, *12*, 9194. doi:10.3390/su12219194.

Soesmanto, T., & and Bonner, S. (2019). Dual mode delivery in an introductory statistics course: design and evaluation. *Journal of Statistics Education*, *27*(2).

Tan, J. (2019). Factors on the effectiveness of delivering business technology courses: on-ground versus online. *International Journal of Accounting and Financial Reporting*, *9*(4), 19–40.

Ventresca, M. J., & Mohr, J. W. (2017). Archival research methods. In J. A. C. Baum and T. J. Rowley (Eds.), *Companion to organizations*. Oxford: Blackwell Publisher. https://doi.org/10.1002/9781405164061.ch35

Walberg, H. J. (1981). A psychological theory of educational productivity. In F. H. Farley & N. Gordon (Eds.), *Psychology and education* (pp. 81–110). Chicago: National Society for the Study of Education.

Walberg, H. J., Fraser, B. J., & Welch, W. W. (1986). A test of a model of educational productivity among senior high school students. *The Journal of Educational Research*, *79*(3), 133–139. https://doi.org/10.1080/00220671.1986.10885664

Wang, M. C., Haertel, G. D., & Walberg, H. J. (1993). Toward a knowledge base for school learning. *Review of Educational Research*, *63*(3), 249–294. https://doi.org/10.2307/1170546

World Economic Forum. (2020). *3 ways the coronavirus pandemic could reshape education*. https://www.weforum.org/agenda/2020/03/3-ways-coronavirus-is-reshaping-educationand-what-changes-might-be-here-to-stay