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**ONLINE VS FACE-TO-FACE LEARNING: STUDENT
ACHIEVEMENT COMPARISON IN TAXATION COURSE**

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Abstract

A worldwide pandemic known as COVID-19 that was brought on by the SARS-CoV-2 coronavirus has resulted in lockdowns, including in Malaysia. This pandemic has affected education and tested the readiness of academic institutions to deal with this crisis. As a result, online learning was rapidly included in the teaching and learning processes. Universiti Tenaga Nasional (UNITEN) has decided to use synchronous and asynchronous online teaching techniques as the primary mode of instruction throughout the pandemic. When the Malaysian Government announced Phase 4 National Recovery Plan on 3 January 2022, UNITEN decided to implement hybrid learning (mixed mode) starting in Semester 2 2021/2022. This study compares the impact of online versus in-person learning on undergraduate students taking a taxation course. The variables studied in this study included the final course grade, the style of instruction (online or in-person/face to face), and demographic factors (gender and race). This study employed a sample of 133 students from the academic year 2019 until 2022. The results indicate that there is a gender difference in student achievement but no significant racial variances. Additionally, there are considerable differences between online and in-person (face to face) students' levels of achievement.

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1. Introduction

SARS-CoV-2 coronavirus is the cause of COVID-19. The World Health Organization (WHO) discovered about this new virus on 31 December 2019, following a report of an outbreak of "viral pneumonia" cases in Wuhan, China. There is currently no cure for COVID-19, while certain medications are being researched (Wu et al., 2020). Consequently, this pandemic is becoming a major worry for global health and education. As a result, at the conclusion of Semester 1 2020/2021, both the final examination and the delivery of learning materials at Universiti Tenaga Nasional (UNITEN) were conducted online. UNITEN decided to implement online learning by using synchronous and asynchronous online teaching techniques as the primary mode of instruction throughout the pandemic. Asynchronous online learning allows for flexible access to online content by students, whereas synchronous online learning involves instructors and students meeting at a predetermined time.

Higher education courses can be delivered in three different ways: traditional or face-to-face (F2F), online learning, and blended learning (Spencer & Temple, 2021). Blended or hybrid learning bridges the gap between traditional and online education by combining both in-person and virtual interactions between students and teachers with the use of learning tools to accomplish learning goals (Alexander et al., 2019). When the Malaysian Government announced Phase 4 National Recovery Plan on 3 January 2022, UNITEN decided to implement hybrid learning (mixed mode) starting in Semester 2 2021/2022. Both instructors and students need time to adjust to the new normal of teaching-learning methodology after switching from F2F to online learning and hybrid learning. The instructors made use of the UNITEN BRIGHTEN learning management system to share information and lesson plans, engage in online discussion (forum), publish online tests, and more.

This paper tends to extend the existing studies in this field by comparing multi-semester students' achievement or performance during pre and post COVID-19. This study compares the achievement of undergraduate students taking a taxation course online versus in-person. This research has determined specific objectives: (i) Are there any significant differences in the demographic factors (i.e., gender and race) related to student achievement? (ii) Are there any significant differences between learning methods towards student achievement?

1.1. Problem statement

Many researchers focused on assessing the differences between either online or F2F courses when higher education institutions (HEI) had to transition to online learning (Fatzel et al., 2021). Studies comparing grade-based achievement for in-person training vs online training produced mixed findings. According to Stack (2015), Students enrolling in traditional and online versions of the course did not significantly differ in their final exam results, which is consistent with Geng and McGinley (2021). However, Faidley (2018) discovered that for the purposes of determining their final course grades, students significantly outperformed one another in traditional in-person classes. Elfaki et al. (2019) discovered that the average test scores of the e-learning group were statistically considerably higher than those of the traditional group. Face to face and learning both have benefits and drawbacks. This research will benefit

HEIs, academics, the general public, and other interested parties who want to improve students' achievement at universities.

1.2. Literature review and hypotheses development

A student's academic achievement is the most important aspect of the study. Students' academic achievement is calculated and measured based on what they have learned throughout the course. Studies have shown that there is no significant variance in students' achievement between traditional and online teaching. The dependent variable in this study will be student achievement, which is a combination of their grades for assignments, quizzes, the midterm exam, and participation. The course delivery mode (F2F or online) and demographic factors (gender and race) will be examined as independent variables in this study.

Gender differences have been studied in recent years. There are numerous differences (mixed findings) between male and female students, implying that gender does influence academic achievement. Prior researchers commonly found female students are more performed compared to male students in traditional F2F and online learning for undergraduate courses (Amro et al., 2015; Bayrak & Gulati, 2015; Friday et al., 2006; Hanafiah et al., 2015; Wladis et al., 2015). A research conducted by Alfian and Othman (2005) discovered that female students outperform male students. However, some researchers contend that gender may not have any differences in the results of students (Maceli et al., 2011). Hence, the first hypothesis, H1, contends that age significantly influences student achievement.

Jackson et al. (2011) and Hanafiah et al. (2015) show that race has an impact on students' academic achievement. Previous studies have shown that minority students performed academically worse than White students in traditional F2F courses (Farruggia et al., 2018). According to studies by O'Connell et al. (2018) and Wladis et al. (2015), minority students did worse than majority students. According to Alfian and Othman (2005), Chinese students outperform Malay and Indian students. As a result, the second hypothesis will be, H2: Race and student achievement differ significantly.

The COVID-19 epidemic prompted higher education institutions (HEI) to immediately adjust to the online learning environment. This study seeks to assess the differences of online versus in-person education on student achievement in the UNITEN undergraduate taxation course. A study by Spencer and Temple (2021) suggests that students performed better in the traditional F2F format but overall perceptions of online learning were positive. Similar to this, prior research has shown that F2F and online modalities of instruction tend to affect students' achievement differently (Fatzel et al., 2021; Krasodomska & Godawska, 2020; Elfaki et al., 2019; Sohn & Romal, 2009). As a result, the following hypothesis has been made: H3: There is a considerable difference in teaching methods and student achievement.

2. Methodology

Simple random sampling has been used as the sampling method of this study. The simple online questionnaire was distributed to 169 students from the academic year 2019 until 2022 undergraduate students who enrolled in a taxation course (ATXB223) at the College Business and Administration (COBA) UNITEN Muadzam Campus using Google Forms. Student needs to provide information about their

demographics such as gender, race, ATXB223 course grade, and which semester took the course. Although the respondents were strongly encouraged to complete the survey, their participation was entirely voluntary.

This study managed to employ a sample of 133 students, representing 78.7% of the total questionnaires, and then were analyzed using SPSS version 27.

3. Findings

The normality test uses to determine if the data used is normal or abnormal distributed. The Kolmogorov-Smirnov statistic uses a sample size of more than one hundred. A normal distribution is considered if the significance level is higher than 0.05. The significance level is 0.000, hence the distribution is considered non-normal (Kumar et al., 2013).

As seen in Table 1, respondents who participated in the study comprised 27.8% male and 72.2% female. The majority of the respondents are Malay (91%).

Table 1. Demographic profile (n = 133)

		Frequency	Percent
Gender	Male	37	27.8
	Female	96	72.2
Race	Malay	121	91.0
	Chinese	3	2.3
	Indian	9	6.8
ATXB223 Final Course Grade	A+	7	5.3
	A	37	27.8
	A-	12	9.0
	B+	19	14.3
	B	20	15
	B-	15	11.3
	C+	6	4.5
	C	8	6.0
	C-	7	5.3
	D+	1	0.8
	D	1	0.8

Table 2 provides a descriptive study of the number and percentage of students taking the ATXB223 course, as well as course grades for the academic year 2019 through 2022, both in F2F and online classrooms. In contrast to the online semester, where 53.69 percent of students participated, the F2F semester showed 43.61 percent of students enrolled in the ATXB223 course.

Table 2. Student enrollment and number of grades achieved

ATXB223	No	%	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Online	75	53.69	6	31	9	15	5	4	2	2	1	0	0
F2F	58	43.61	1	6	3	4	15	11	4	6	6	1	1
Total	133		7	37	12	19	20	15	6	8	7	1	1
Percentage		100	5.3	27.8	9.0	14.3	15.0	11.3	4.5	6.0	5.3	0.8	0.8

The graph of achievement during online learning is shown in Figure 1, and it demonstrates a sharp rise in the proportion of students who did well in the ATXB223 course. Findings by Tan et al. (2017), Fatzel et al. (2021), and Betihavas et al. (2016) all come to the same conclusion and demonstrates that online learning does result in a considerable boost in grades, with the majority receiving an A mark (41% during online learning compared to 10% when learning in-person).

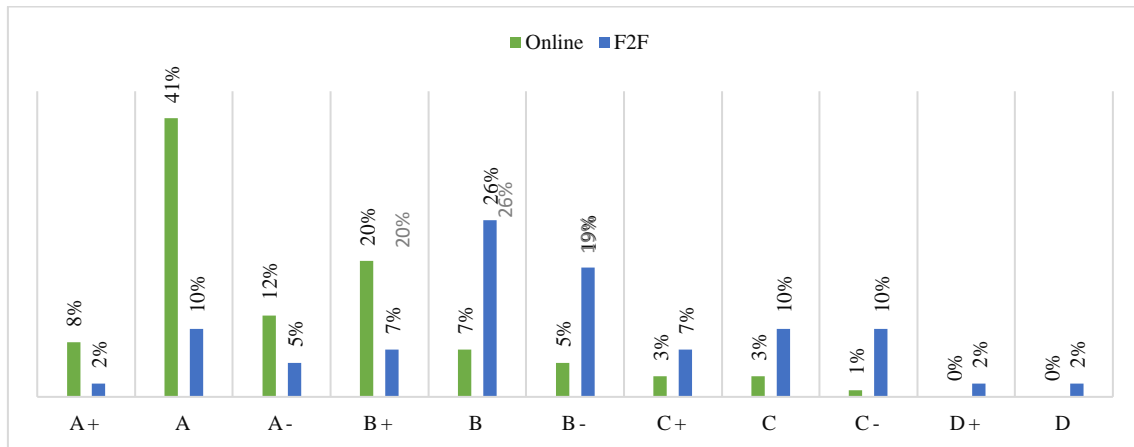


Figure 1. Comparison on students' grade

Table 3 and Table 4 show the differences between demographic factors (i.e., gender and race) related to student achievement. The Mann-Whitney U test investigates the possibility that two independent samples are drawn from the same population and have the same distribution (equivalent to the t-test). The result in Table 3 reveals that significant differences do exist in gender, $P < 0.05$. The result shows that gender does make a difference in student achievement. Amro et al. (2015), Bayrak and Gulati (2015), Friday et al. (2006), Hanafiah et al. (2015), Wladis et al. (2015) and all support this finding.

Table 3. Differences between demographic factor (gender) related to student achievement

	Student achievement (course grade)
Mann-Whitney U	1098.50
Z	-3.455
Asymp. Sig. (2-tailed)	.001

Meanwhile, the Kruskal-Wallis test is comparable to the ANOVA test, allowing the examination of potential differences between two or more groups. With a P-value of 0.334, Table 4 demonstrates that racial differences in student achievement are not statistically significant. This finding contradicts the findings of O'Connell et al. (2018), Wladis et al. (2015), and Hanafiah et al. (2015).

Table 4. Differences between demographic factor (race) related to student achievement

	Student achievement (course grade)
Kruskal-Wallis H	2.191
df	2
Asymp. Sig.	.334

Table 5 shows that differences do exist between F2F and online learning student achievement with a significant P-value < 0.005. The outcome shows that the scores between the F2F and ODL sessions differed significantly. The findings are in line with those of Krasodomska and Godawska (2020) and Fatzel et al. (2021), who discovered that students' participation in online learning improved their overall achievement. However, this result contradicts other researchers (Friday et al., 2006; Hughes & Lyons, 2017; Paul & Jefferson, 2019; Summers et al., 2005).

Table 5. Differences between F2F and Online Learning on student achievement

	Student achievement (course grade)
Kruskal-Wallis H	39.595
df	4
Asymp. Sig.	.000

According to this study, students performed academically significantly better when learning online than when learning in-person (F2F). This is seen by the overall percentage of students who earned the highest grades (A+, A, A-, and B+) in the ATXB223 taxation course. The findings indicate that students who learn online and those who learn in-person (F2F) have significantly different levels of student achievement. Transition in the learning and examination platform will help the students, who will do better during online learning if they are self-regulatory and effective in managing their time and creating their own goals. The study found a gender difference in student achievement. This study believes female students engaged in online class discussions more frequently than male students. The finding also reveals that, no significant difference concerning race. This may be due to the number of respondents in terms of race being very minimal.

This research had several limitations. First, the use of data from a single university restricted the study's potential to be generalised by referring to UNITEN only and examining the results of one taxation course with one lecturer. Second, while participation in the study was encouraged, it was entirely voluntary for the students. As a suggestion, several components and factors will need to be examined in order to obtain such real academic accomplishment. Future studies may concentrate on the variables that affect better achievement in online learning for the advantage of students, teachers, and the institution as a whole. Academic institutions' success or failure is determined by the academic achievement of the students (Narad & Abdullah, 2016). Additionally, as more technologically advanced generations engage in higher education, instructors must incorporate blended learning into the curriculum and create remote learning programmes that combine the best aspects of classroom instruction with in-person (F2F) instruction (Amir et al., 2020). In both traditional and online programmes, educators must make sure that every student succeeds. The educators must decide whether courses are suitable for online delivery. Educators need to choose which courses are appropriate for digital platform in order to enhance the learning environment overall. Then, by creating the best elements of both in-person and online learning, they must integrate blended learning into the curriculum. After all, the new hybrid or blended learning approaches that integrate in-person and online learning must be adapted by the students.

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