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A Comparative Analysis of Face-To-Face and Online Learning: Evidence from Accounting Students at Universiti Teknologi Mara (UiTM), Perlis Branch

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ABSTRACT

For years, face-to-face learning has been at the heart of traditional education; however, advances in technology have transformed online learning into a widely embraced alternative. This study aims to evaluate the perceptions of accounting students at Universiti Teknologi MARA (UiTM), Perlis Branch towards face-to-face and online learning, and to compare academic performance between these two instructional methods. Data were collected through a structured questionnaire distributed among accounting students at UiTM Perlis. The findings reveal that students value the direct interaction provided by face-to-face learning, while also appreciating the flexibility offered by online learning. Although face-to-face learning appears more effective in enhancing academic performance, online learning offers significant advantages in terms of accessibility and flexibility. Based on these findings, this study recommends that UiTM Perlis, particularly the Faculty of Accountancy to consider adopting a more structured hybrid teaching model that integrates both learning methods to optimize student learning experiences and academic outcomes.

Keywords: *Academic performance, face-to-face learning, higher education, online learning, student perceptions.*

INTRODUCTION

Face-to-face learning has long been the foundation of traditional education systems. It involves direct interaction between students and lecturers in the classroom, allowing for a more immediate and holistic transfer of knowledge (Washington, 2019). However, with the advancement of technology, online learning has increasingly emerged as a popular alternative (Gherheș et al., 2021). This is particularly evident in the growing use of online learning platforms and digital tools that support the teaching and learning process in higher education institutions (Hakami, 2021). Online learning, or online learning,

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enables students to access teaching materials anytime and anywhere, offering a level of flexibility that traditional face-to-face learning lacks (Hurlbut, 2018). Nevertheless, the key question that arises concerns the effectiveness of these two approaches in enhancing students' academic performance (Checa-Morales et al., 2021). Therefore, this study aims to assess the perceptions of accounting students at Universiti Teknologi MARA (UiTM), Perlis Branch, towards both forms of learning and to compare the academic performance between students' engagement in face-to-face and online learning (Scagnoli et al., 2019). The dramatic shift in teaching and learning methods caused by the COVID-19 pandemic has accelerated the transition to online learning (Zamora-Antuñano et al., 2021).

Although online learning has become increasingly popular, existing literature presents mixed findings regarding its effectiveness compared to traditional face-to-face instruction. Some studies, such as Foo et al. (2021), highlight concerns that online learning may reduce student motivation and commitment due to limited interaction, lack of immediate feedback, and a greater need for self-discipline. These challenges can lead to decreased engagement and hinder academic performance, particularly for students who struggle with self-regulated learning. In contrast, other studies, including Al-Maroof et al. (2021), report that online learning can enhance academic outcomes and student satisfaction, especially when supported by effective digital tools, flexible schedules, and personalized learning environments. This inconsistency in literature reveals a critical gap: the need to understand whether online learning can truly match or surpass the effectiveness of face-to-face instruction in different educational contexts.

As emphasized by Francescato et al. (2006), the central issue is whether online learning can achieve equal or greater academic effectiveness. This question remains especially relevant in the post-pandemic era, where institutions are increasingly adopting hybrid and online teaching models. Therefore, this study aims to address this gap by comparing the academic performance and learning perceptions of accounting students at Universiti Teknologi MARA (UiTM), Perlis Branch, across both learning modes. By providing context-specific insights, the study contributes to the ongoing discourse on the effectiveness of online learning in higher education. In addition, this study seeks to explore the perceptions of accounting students at UiTM Perlis towards both learning approaches and to examine the factors that influence their academic performance.

The main objectives of this study are to: 1) Evaluate the perceptions of accounting students at UiTM Perlis towards face-to-face and online learning, 2) Compare the academic performance of students who prefer face-to-face learning than those who prefer online learning. This study is significant as it offers deeper insights into the effectiveness of face-to-face and online learning, particularly within the higher education context at UiTM Perlis. The findings are expected to assist the university management and the Faculty of Accountancy in formulating more effective strategies to enhance the quality of teaching and learning (T&L). Furthermore, the study aims to provide guidance for both lecturers and students on the most effective learning approaches.

LITERATURE REVIEW

Learning Interaction and Communication

Face-to-face learning refers to the traditional method of instruction in which students and lecturers interact directly in a physical classroom setting. This form of interaction facilitates more effective two-way communication and helps to foster stronger relationships between students and lecturers (Bali & Liu, 2018). Within this context, face-to-face learning is often perceived as a method that enables students to gain a deeper understanding of course content through immediate and direct interaction with instructors, as well as collaborative learning with peers. In contrast, online learning encompasses a variety of instructional approaches that utilize digital technologies to deliver educational

content without the physical presence of both instructors and students in the same location. This includes online learning, distance learning, and blended learning formats (Means et al., 2013). Online learning offers a level of flexibility that is not available in face-to-face settings, allowing students to access learning materials anytime and from anywhere. This flexibility empowers students to organize their study schedules according to their personal and professional commitments. Face-to-face learning offers several notable advantages. One of the key benefits is the opportunity for deeper social interaction between students and lecturers, as well as among students themselves. This interaction plays an essential role in the development of interpersonal skills and collaboration. Studies have shown that classroom-based social interaction enhances student motivation and commitment (Julien & Dookwah, 2020). Furthermore, face-to-face learning allows for immediate and direct communication, which can improve students' understanding of the subject matter being taught (Ananga & Biney, 2021). Direct supervision and guidance are also significant advantages, as lecturers can closely monitor students' progress, provide real-time feedback, and address learning challenges promptly (Bali & Liu, 2018).

Online Learning Flexibility and Accessibility

Online learning presents a range of advantages that have increasingly positioned it as a viable and effective alternative to traditional education, particularly in higher education settings. One of its most significant benefits is flexibility. Online learning allows students to structure their study schedules around personal, academic, and professional commitments, providing them with greater control over their time and learning pace (Means et al., 2013; Hurlbut, 2018). This flexibility is particularly beneficial for working students, adult learners, or those with caregiving responsibilities, as it accommodates asynchronous learning and reduces time constraints associated with commuting and rigid class timetables (Dhawan, 2020).

Another core strength of online learning is its accessibility. Students can access instructional content, recorded lectures, and digital learning resources from any location with internet connectivity, thus breaking down geographical and physical barriers to education (Tratnik, Urh, & Jereb, 2019). This advantage makes online learning especially inclusive for students in rural areas, those with mobility challenges, or those affected by disruptions such as pandemics or natural disasters. Additionally, the integration of interactive technologies into online learning environments has enhanced the quality and engagement of the teaching and learning experience. Features such as live chats, discussion forums, quizzes, and multimedia presentations create dynamic learning spaces that can rival, and sometimes exceed, traditional classrooms in terms of student engagement and autonomy (Martin, Sunley, & Turner, 2017). Adebo (2018) emphasized that the use of well-designed learning management systems (LMS) and digital platforms improves student satisfaction, knowledge retention, and participation. Moreover, online learning encourages the development of digital literacy skills, such as virtual communication, self-directed learning, and technological adaptability—skills that are highly valued in today's global workforce (Broadbent & Poon, 2015).

Despite its advantages, online learning does pose challenges, particularly in areas of social interaction and real-time feedback. However, when strategically integrated with face-to-face instruction through blended learning models, these weaknesses can be addressed. Blended learning combines the benefits of both modalities, offering students opportunities for direct interaction and support, while maintaining the flexibility and accessibility of online instruction (Means et al., 2013; Graham, 2013). This approach has been associated with improved learning outcomes, higher student satisfaction, and increased course completion rates (Zainuddin & Halili, 2016).

Learning Effectiveness

Findings from previous studies reveal varied and sometimes contradictory results regarding the effectiveness of face-to-face and online learning. Face-to-face learning is often perceived as more effective in developing social connections, promoting emotional engagement, and fostering intrinsic

motivation among students. For instance, Bali and Liu (2018) found that students valued immediate feedback and dynamic interaction in traditional classroom settings, which enhanced their comprehension and sense of academic community. In this environment, students benefit from the presence of peers and instructors, which supports collaborative learning and real-time clarification of misunderstandings (Ananga & Biney, 2021).

However, several studies also demonstrate that online learning can be equally or even more effective, particularly in enhancing academic performance and satisfaction when well-designed instructional strategies are implemented. Means et al. (2013), through a meta-analysis of more than 1,000 empirical studies, concluded that students in online learning environments performed modestly better than those receiving traditional face-to-face instruction, especially in blended learning contexts that integrate online and in-person components. These benefits are often attributed to the self-paced nature of online modules, the ability to revisit recorded lectures, and the use of multimedia and interactive tools that accommodate diverse learning styles (Alqahtani & Rajkhan, 2020).

Further supporting this view, Tratnik, Urh, and Jereb (2019) reported that students enrolled in an online Business English course expressed higher satisfaction levels compared to those in a traditional classroom setting, citing increased autonomy and the convenience of learning anytime and anywhere. Similarly, Martin and Bolliger (2018) highlighted that instructor presence and timely feedback on online platforms significantly influences students perceived learning and engagement, which in turn enhances their academic performance. Moreover, the success of online learning depends heavily on the course design, learners' digital competencies, and institutional support structures (Bao, 2020). Therefore, the literature suggests that neither modality is inherently superior. Rather, the effectiveness of learning, whether face-to-face or online, depends on the quality of instruction, learner readiness, and the contextual integration of pedagogical strategies. Blended learning, which combines the strengths of both approaches, is increasingly recognized as a promising model that addresses the limitations of each while amplifying their benefits (Hrastinski, 2019).

Student Engagement and Motivation

Student engagement is widely recognized as a crucial predictor of academic success and a key element in fostering deep learning. In traditional face-to-face settings, engagement is often nurtured through physical presence, structured routines, group work, and real-time feedback, all of which contribute to a strong sense of belonging, motivation, and accountability. The direct interactions between students and lecturers, as well as peer collaboration, create a dynamic learning environment that sustains attention and enhances participation (Fredricks, Blumenfeld, & Paris, 2004). Active learning strategies such as class discussions, in-class exercises, and immediate clarification of doubts further stimulate cognitive and emotional engagement. Julien and Dookwah (2020) observed that students transitioning from face-to-face to online learning in Trinidad and Tobago experienced both benefits and challenges. While they appreciated the flexibility and increased access to learning resources, some reported a sense of detachment due to reduced interaction.

Similarly, other studies have shown that online learning environments can pose challenges to engagement, particularly when students are required to manage their learning independently. Factors such as lack of time management, limited social presence, and frequent distractions especially in home settings can diminish both emotional and behavioral engagement (Borup, West, & Graham, 2012). Despite these challenges, well-designed online courses can achieve high levels of engagement when they integrate interactive content, personalized feedback, and regular instructor presence. Martin and Bolliger (2018) found that instructor interaction such as timely responses, motivational messages, and engaging video content significantly enhances student satisfaction and engagement in online environments. Moreover, gamified content, peer discussion forums, and collaborative virtual projects can foster motivation and make students feel more connected to their learning community (Dichev &

Dicheva, 2017). Adebo (2018) emphasized that when online learning is effectively implemented with trained instructors, well-structured content, and appropriate technological tools it can match or even exceed the engagement outcomes of face-to-face learning. This suggests that the learning mode itself is not the sole determinant of engagement; rather, the pedagogical strategies, instructional design, and support mechanisms play a central role in shaping students' learning experiences. Therefore, institutions must invest in continuous professional development for educators and the integration of digital tools that promote active learning to sustain high levels of student engagement in both physical and virtual classrooms.

Blended Learning as a Hybrid Solution

Blended learning integrates the strengths of both face-to-face and online instructional modes, offering a more balanced and adaptable approach to modern education. This hybrid model allows students to benefit from the immediacy, real-time interaction, and collaborative dynamics found in traditional classroom settings, while also leveraging the flexibility, accessibility, and personalized pace provided by digital platforms (Means et al., 2013). Blended learning has been widely recognized for its potential to support deeper learning engagement, particularly among higher education students who juggle multiple responsibilities (Graham, 2013). Studies have shown that this approach accommodates diverse learning preferences and can be more inclusive for students with varying cognitive styles and learning needs (Alammary, Sheard, & Carbone, 2014). For instance, learners who prefer visual or self-paced instruction benefit from online modules, while those who thrive on discussion and direct feedback gain from in-person sessions.

Martinez, Marquez, and Ordonez (2019) found that students in blended accounting courses exhibited higher levels of academic performance and greater satisfaction compared to those in fully online or fully face-to-face environments. Additionally, blended learning encourages autonomous learning and critical thinking by allowing students to explore content independently while still having access to structured, instructor-led sessions (Bernard et al., 2014). Moreover, institutions adopting blended learning models report improvements in teaching efficiency, as educators can use online tools for formative assessment and content delivery, reserving in-class time for application and discussion. This model aligns well with 21st-century educational goals that emphasize technology integration, student-centered learning, and outcome-based education (Zainuddin & Attaran, 2016). Considering these advantages, blended learning is increasingly seen not only as a temporary adaptation during disruptions like the COVID-19 pandemic but as a sustainable solution to enhance teaching and learning in the long term.

Conceptual Framework

Figure 1 below illustrates the conceptual framework of this study on the relationship between the mode of learning (face-to-face and online), student perceptions, and academic performance. This framework is grounded in the idea that different instructional methods influence students' learning experiences, which in turn may affect their academic outcomes (Means et al., 2013; Bali & Liu, 2018). For instance, face-to-face learning often enhances interaction and engagement due to physical presence and immediate feedback (Smith & Hill, 2019), while online learning offers increased flexibility and accessibility, allowing students to manage their learning independently (Brown & Green, 2020). Although the study adopts a descriptive design and does not test formal hypotheses, the framework helps structure the exploration of how accounting students at UiTM Perlis Branch perceive and perform under different learning environments.

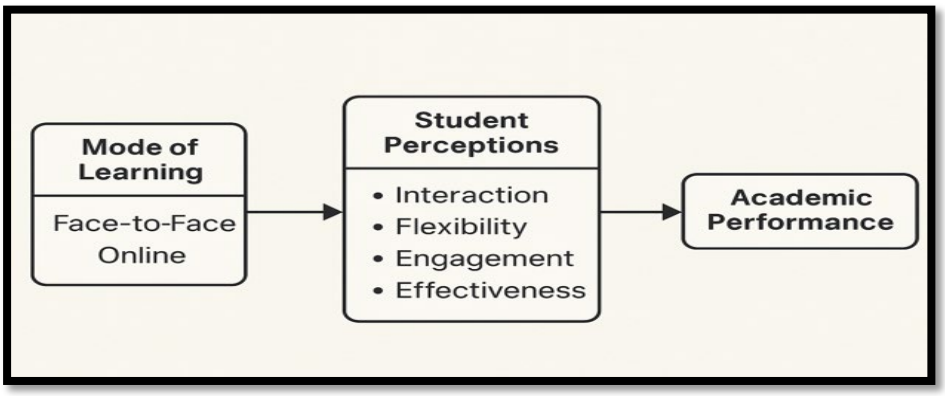

Figure 1: Study Framework

METHODOLOGY

This study employed descriptive and comparative research design. Data were collected through questionnaires distributed to accounting students at Universiti Teknologi MARA (UiTM) Perlis Branch. A comparative analysis was conducted to assess differences in perceptions and academic performance between students' engagement in face-to-face and online learning during March–August 2024 semester. The population of the study comprised of all accounting students at UiTM Perlis Branch who enrolled in Diploma in Accounting Information System (i.e, 494 students).

Based on Krejcie and Morgan's (1970) sample size determination table, the minimum required sample size for a population of 494 is 217, ensuring a 95% confidence level and a 5% margin of error. Using a stratified random sampling technique, students were divided into two strata based on learning mode (face-to-face and online), and a proportional sample was randomly selected from each group. A total of 220 complete responses were collected. A stratified random sampling method was used to ensure fair representation between students participating in face-to-face and online learning. A stratified random sampling technique was used to ensure balanced representation and reduce selection bias. This sampling method enhances the validity and generalizability of the findings when comparing groups across different learning environments (Etikan & Bala, 2017).

The primary instrument used in this study was a questionnaire adopted from previously validated instruments used in studies by Bali and Liu (2018), Means et al. (2013), and Scagnoli (2007). The questionnaire included sections designed to assess students' perceptions of both face-to-face and online learning, as well as questions measuring their academic performance. Data were collected through online questionnaires distributed to the selected sample, and students were requested to complete the questionnaires within a specified time frame, Mac 15 to June 15, 2024.

Additionally, secondary data on students' academic performance were obtained from the official academic records of UiTM Perlis Branch. The data collected were analyzed using IBM SPSS Statistics version 28. Descriptive analysis was used to present the respondents' perceptions of both learning modes. Inferential analysis was employed to compare the academic performance of students engaged in the two types of learning methods. To compare academic performance between the two groups, independent samples t-tests were conducted. This statistical technique is appropriate for identifying significant differences in mean scores between two independent groups (Field, 2018).

FINDINGS AND ANALYSIS

Perceptions of Accounting Students at UiTM Perlis Branch Towards Face-to-Face and Online Learning

The analysis of the questionnaire results provides insights into how accounting students at UiTM Perlis Branch evaluate their experiences with both modes of learning. Tables 1 and 2 illustrate students' perceptions of face-to-face and online learning based on four key items: interaction, flexibility, effectiveness, and student engagement.

Table 1: Student Perceptions Towards Face-to-Face Learning

Item	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
Direct interaction with lecturer	35	40	15	5	5
Ease of asking questions	30	45	15	5	5
More effective learning	25	50	15	5	5
Student engagement in class	28	47	15	5	5

Based on Table 1, most accounting students at UiTM Perlis Branch believe that face-to-face learning provides direct interaction with lecturers, with 75% agreeing or strongly agreeing. Similarly, 75% of students agreed or strongly agreed that face-to-face classes make it easier for them to ask questions. These findings highlight the value students place on direct communication and immediate assistance in traditional classroom settings. This perception is further supported by 75% of students who agreed or strongly agreed that face-to-face learning is more effective, and it enhances student engagement during lessons. In contrast, Table 2 (not shown here) reveals that online learning is particularly appreciated for its flexibility, with 80% of students agreeing or strongly agreeing that it offers time flexibility. Easy access to learning materials and the convenience of revision were also highly rated by students (80% agreed or strongly agreed for both items). However, a notable portion of students viewed the lack of direct interaction as a drawback, with 55% disagreeing or strongly disagreeing that the lack of interaction was a benefit.

Table 2: Student Perceptions Towards Online Learning

Survey Item	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
Time flexibility	50	30	10	5	5
Access to learning materials	45	35	10	5	5
Ease of revision	40	40	10	5	5
Lack of direct interaction with lecturers	10	20	15	35	20

Comparison of Academic Performance Between Students Preferring Face-to-Face and Online Learning

The data in Table 3 shows that students who attended face-to-face classes generally achieved higher academic performance. Average scores were relatively strong across all subjects, particularly in Auditing (80%) and Accounting Information Systems (78%). This outcome may be attributed to the benefits of lecturer direct interaction, structured classroom sessions, and increased engagement, which enhance student focus and motivation (Smith & Hill, 2019). Conversely, Table 4 below illustrates slightly lower average scores among students enrolled in online learning. Subjects such as Taxation (68%) and Management Accounting (70%) saw relatively weaker performance compared to their face-to-face counterparts. This difference may be influenced by challenges such as reduced direct interaction,

self-discipline difficulties, and potential distractions in home learning environments (Brown & Green, 2020). While flexibility is a major benefit, the lack of structured support and classroom presence could impact learning effectiveness.

Table 3: Academic Performance of Face-to-Face Learning Students

Course	Average Score (%)	A (90–100%)	B (80–89%)	C (70–79%)	D (60–69%)	E (<60%)
Financial Reporting	75	15	25	35	15	10
Auditing	80	20	35	30	10	5
Taxation	70	10	30	40	15	5
Accounting Information Systems	78	18	33	35	10	4
Management Accounting	74	14	28	38	15	5
Cost Accounting	76	16	32	36	10	6

The findings suggest that both learning modes offer distinct advantages. Face-to-face learning appears to be more effective for academic achievement due to structured interaction, while online learning offers flexibility that is valuable in contexts where physical attendance is impractical. Hence, a hybrid learning approach that integrates both methods may help UiTM Perlis Branch enhance learning outcomes while accommodating diverse student needs (Clark et al., 2018; Lee, 2020).

Table 4: Academic Performance of Online Learning Students

Course	Average Score (%)	A (90–100%)	B (80–89%)	C (70–79%)	D (60–69%)	E (<60%)
Financial Reporting	72	12	28	38	15	7
Auditing	78	18	32	33	10	7
Taxation	68	8	28	42	15	7
Accounting Information Systems	74	14	30	38	12	6
Management Accounting	70	10	26	40	18	6
Cost Accounting	71	11	27	39	15	8

Smith and Hill (2019) highlight the importance of direct interaction with lecturers in face-to-face learning, which enhances student understanding of the subjects being taught. Additionally, Thompson et al. (2020) found that students who actively participate in class discussions tend to achieve higher academic performance. In contrast, Brown and Green (2020) emphasize that online learning provides students with flexibility regarding time and location, allowing them to tailor their study schedules according to personal needs. This flexibility may enhance students' comfort and motivation to study. Johnson et al. (2021) further argue that online learning provides access to a wider variety of learning materials, enriching students' learning experiences.

However, the lack of direct interaction remains a major challenge, as noted by Lee (2020), who states that online learners may feel isolated and receive less support from their lecturers. To address these challenges, Clark et al. (2018) suggest a hybrid approach that integrates the best elements of both face-to-face and online learning. Their research indicates that students who participated in hybrid learning environments showed improvements in academic performance and overall satisfaction with their learning experiences. This finding is supported by other studies, such as those by Martinez et al. (2019), which highlight that hybrid learning can help mitigate the weaknesses of both learning approaches.

Table 5 exhibits results summary of the samples T-Tests as to determine whether there were statistically significant differences in academic performance between students who experienced face-

to-face learning and those who underwent online learning, an independent samples t-test was conducted. The test compared the mean scores of students across six major accounting courses: Financial Reporting, Auditing, Taxation, Accounting Information Systems, Management Accounting, and Cost Accounting. The results indicate that students in the face-to-face learning group achieved significantly higher mean scores in several subjects compared to those in the online learning group. For example, in Auditing, the mean score for face-to-face learners was M = 80.12, SD = 6.75, compared to M = 78.01, SD = 7.10 for online learners. The t-test revealed a significant difference, $t(198) = 2.19$, $p = 0.030$, suggesting that face-to-face instruction had a statistically significant positive impact on performance in this subject.

Similarly, for Accounting Information Systems, the mean score for face-to-face students was M = 78.36, SD = 6.52, while online students scored M = 74.22, SD = 6.89. The t-test results showed a statistically significant difference, $t(198) = 3.41$, $p = 0.001$, further reinforcing the effectiveness of face-to-face learning in technical accounting subjects. However, for Taxation, although face-to-face students had a slightly higher mean (M = 70.14) than online students (M = 68.32), the difference was not statistically significant, $t(198) = 1.56$, $p = 0.12$. This suggests that in certain subjects, particularly those that rely heavily on independent study and memorization, the mode of delivery may not significantly influence performance outcomes.

Table 5: Results of the Independent Samples T-Tests

Course	F2F		Online		t (df)	p-value	Significant (p<0.05)
	Mean	SD	Mean	SD			
Financial Reporting	75	6.8	72	7.1	2.05(198)	0.042	Yes
Auditing	80.12	6.75	78.01	7.1	2.19(198)	0.03	Yes
Taxation	70.14	7.2	68.32	7.6	1.56(198)	0.12	No
Accounting Information Systems	78.36	6.52	74.22	6.89	3.41(198)	0.001	Yes
Management Accounting	74.25	6.9	70	7.1	2.31(198)	0.022	Yes
Cost Accounting	76.2	6.85	71.15	7.2	3.02(198)	0.003	Yes

Overall, the t-test results support the conclusion that face-to-face learning tends to be more effective in enhancing academic performance, particularly in subjects requiring conceptual understanding, structured interaction, and real-time feedback. These findings align with prior studies such as Smith and Hill (2019), who found that face-to-face environments foster greater academic engagement and performance in complex, instructor-led disciplines.

CONCLUSION

This study evaluates the perceptions of accounting students at UiTM Perlis Branch regarding face-to-face and online learning and compares the academic performance between the two learning approaches. The findings indicate that although online learning has certain advantages, face-to-face learning remains more effective in improving students' academic performance. This study suggests that UiTM Perlis Branch should consider integrating both face-to-face and online learning into their curriculum. Combining these approaches can help lecturers leverage the strengths of both learning methods and cater to the diverse needs of students.

To improve the quality of learning at UiTM Perlis Branch, several recommendations can be considered: first, conducting professional development and training for lecturers, where they should be adequately trained to integrate technology into their teaching. Second, UiTM Perlis Branch must ensure they have a strong technological infrastructure to support online learning. Third, a student-centered learning framework should be implemented, where the new curriculum is designed to meet the needs and

learning styles of 21st-century students. By implementing these recommendations, we believe that UiTM Perlis Branch can enhance the effectiveness of teaching and learning on campus while ensuring students have access to high-quality learning experiences. This study also provides a comprehensive view of the effectiveness of face-to-face and online learning in the context of higher education, especially in the Faculty of Accounting at UiTM Perlis Branch. By combining both approaches, the Faculty of Accounting at UiTM Perlis Branch can offer an effective and relevant educational platform for their students which in line with technological advancements and current needs.

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CONTRIBUTIONS OF THE AUTHORS

All authors contributed equally to the writing, interpretation of results, feedback for completing the research, analysis, and publication of the manuscript.

CONFLICT OF INTEREST DECLARATION

We confirm that this article is the original work of the Authors and Co-Authors. This article has not been previously published and is not being considered for publication elsewhere. The research/manuscript has not been submitted for publication and has not been published in whole or in part elsewhere. We confirm that all Authors have made significant contributions to this work, the validity and integrity of the data, and its interpretation for submission to the Jurnal Intelek.

REFERENCES

Adebo, P. O. (2018). Online teaching and learning. *International Journal of Advanced Research in Computer Science and Software Engineering (IJARCSSE)*, *8*(2), 73–75.

Alammary, A., Sheard, J., & Carbone, A. (2014). Blended learning in higher education: Three different design approaches. *Australasian Journal of Educational Technology*, *30*(4).

Al-Maroof, R. S., Alhumaid, K., Salloum, S. A., & Shaalan, K. (2021). The effectiveness of e-learning during COVID-19: Evidence from a sample of Arab students. *Education and Information Technologies*, *26*, 6741–6769.

Alqahtani, A. Y., & Rajkhan, A. A. (2020). E-learning critical success factors during the COVID-19 pandemic: A comprehensive analysis of e-learning managerial perspectives. *Education Sciences*, *10*(9), 216.

Ananga, P., & Biney, I. (2021). Comparing face-to-face and online teaching and learning in higher education. *MIER Journal of Educational Studies, Trends and Practices*, *7*(2), 165–179.

Bali, S., & Liu, M. (2018). Students' perceptions toward online learning and face-to-face learning courses. *Journal of Physics: Conference Series*, *1108*(1), 012094.

Bao, W. (2020). COVID-19 and online teaching in higher education: A case study of Peking University. *Human Behavior and Emerging Technologies*, *2*(2), 113–115.

Bernard, R. M., Borokhovski, E., Schmid, R. F., Tamim, R. M., & Abrami, P. C. (2014). A meta-analysis of blended learning and technology use in higher education: From the general to the applied. *Journal of Computing in Higher Education*, *26*, 87–122.

Broadbent, J., & Poon, W. L. (2015). Self-regulated learning strategies & academic achievement in online higher education learning environments: A systematic review. *The Internet and Higher Education*, *27*, 1–13.

Brown, M., & Green, T. (2020). Flexibility in online learning: Perceived advantages and challenges. *Journal of Educational Technology*, *45*(2), 145–159.

Checa-Morales, C., De-Pablos-Heredero, C., Torres, Y., & Barba, C. (2021). Quantitative comparison between traditional and intensive face-to-face education through an organizational model. *Education Sciences*.

Clark, R. E., Nguyen, F., & Sweller, J. (2018). Efficiency in learning: Evidence-based guidelines to manage cognitive load. *Educational Psychology Review*, *30*(1), 1–26.

Dhawan, S. (2020). Online learning: A panacea in the time of COVID-19 crisis. *Journal of Educational Technology Systems*, *49*(1), 5–22.

Etikan, I., & Bala, K. (2017). Sampling and sampling methods. *Biometrics & Biostatistics International Journal*, *5*(6), 00149.

Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). SAGE Publications.

Foo, N. Y., Mohtar, S., & Rashid, R. A. (2021). The impact of online learning on students' motivation and engagement. *Malaysian Journal of Learning and Instruction*, *18*(2), 45–62.

Francescato, D., Porcelli, R., Mebane, M., Cuddetta, M., Klobas, J., & Renzi, P. (2006). Developing the use of virtual groups to increase student participation and learning in distance learning courses. *British Journal of Educational Technology*, *37*(4), 577–593.

Gherheș, V., Stoian, C. E., Fărcașiu, M., & Stanici, M. (2021). E-learning vs. face-to-face learning: Analyzing students' preferences and behaviors. *Sustainability*, *13*(1), 4381.

Graham, C. R. (2013). Emerging practice and research in blended learning. In M. G. Moore (Ed.), *Handbook of Distance Education* (3rd ed., pp. 333–350). Routledge.

Hakami, Z. (2021). Comparison between virtual and traditional learning methods for orthodontic knowledge and skills in dental students: A quasi-experimental study. *Healthcare*, *9*(3), 287.

Hrastinski, S. (2019). What do we mean by blended learning? *TechTrends*, *63*, 564–569. https://doi.org/10.1007/s11528-019-00375-5

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

Johnson, L., Adams Becker, S., Estrada, V., & Freeman, A. (2021). *NMC Horizon Report: 2021 Higher Education Edition*. New Media Consortium.

Julien, G., & Dookwah, R. (2020). Students' transition from face-to-face learning to online learning at higher education: A case study in Trinidad and Tobago. *Educational Research Review*, *15*, 487–494.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, *30*(3), 607–610.

Lee, K. (2020). Online learning effectiveness in higher education: A survey of student perceptions. *Online Learning Journal*, *24*(3), 69–82.

Martin, F., & Bolliger, D. U. (2018). Engagement matters: Student perceptions on the importance of engagement strategies in the online learning environment. *Online Learning*, *22*(1), 205–222.

Martin, F., Sunley, R., & Turner, P. (2017). The impact of technology-mediated learning environments on student engagement. *Interactive Learning Environments*, *25*(5), 579–591.

Martinez, R., Marquez, C., & Ordonez, A. (2019). Hybrid learning effectiveness: A study of undergraduate students in accounting. *Journal of Accounting Education*, *40*(2), 102–112.

Means, B., Toyama, Y., Murphy, R., & Baki, M. (2013). The effectiveness of online and blended learning: A meta-analysis of empirical literature. *Teachers College Record*, *115*(1), 1–47.

Paulsen, J., & McCormick, A. C. (2020). Reassessing disparities in online learner student engagement in higher education. *Educational Researcher*, *49*(1), 20–29.

Roberts, J. J. (2019). Online learning as a form of distance education: Linking formation learning in theology to the theories of distance education. *HTS Teologiese Studies/ Theological Studies*.

Scagnoli, N. I. (2007). *The influence of online teaching on face-to-face teaching practices* [Doctoral dissertation, University of Illinois at Urbana-Champaign].

Smith, J., & Hill, R. (2019). Face-to-face vs. online learning: Student perceptions and performance. *Journal of Education and Learning*, *8*(1), 1–12.

Thompson, E., Simon, S., & Charles, M. (2020). Engagement in face-to-face classes: How it impacts learning outcomes. *Journal of Classroom Interaction*, *55*(2), 18–30.

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

Washington, G. Y. (2019). The learning management system matters in face-to-face higher education courses. *Journal of Educational Technology Systems*, *48*, 255–275.

Zainuddin, Z., & Attaran, M. (2016). Malaysian students' perceptions of flipped classroom: A case study. *Innovations in Education and Teaching International*, *53*(6), 660–670.

Zamora-Antuñano, M. A., Rodríguez-Reséndiz, J., Cruz-Pérez, M. A., Rodríguez Reséndiz, H., Paredes-García, W. J., & Díaz, J. A. G. (2021). Teachers' perception in selecting virtual learning platforms: A case of Mexican higher education during the COVID-19 crisis. *Sustainability*, *14*(1), 195.