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ADAPTING HIGHER EDUCATION THROUGH STUDENT PERSPECTIVES ON ONLINE DISTANCE AND FACE-TO-FACE LEARNING

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Abstract:

Higher education is transforming online distance learning (ODL), which evolves from an emergency response into a core feature of teaching and learning. This study investigates Malaysian undergraduates' perceptions of ODL and face-to-face classes to inform the design of sustainable hybrid models. Data were collected through an online questionnaire completed by 246 students, combining quantitative Likert-scale items with qualitative open-ended responses. Statistical analysis revealed that ODL was valued for its cost savings, flexibility, and time efficiency; however, students highlighted challenges such as unstable internet connectivity, reduced focus, and weaker communication. In contrast, face-to-face learning was associated with better comprehension, stronger motivation, and richer interaction. While most students preferred face-to-face learning, many supported blended approaches

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that integrate the strengths of both face-to-face and online learning. The findings highlight the need to address digital inequities and redesign online components for engagement, ensuring hybrid higher education systems are resilient, inclusive, and student-centred.

Keywords:

Online Distance Learning, Face-to-Face Learning, Blended Learning, Student Perceptions, Higher Education, Digital Divide, Hybrid Learning

Introduction

Higher education has undergone profound changes over the past five years. What began as emergency remote teaching during the COVID-19 crisis has evolved into long-term experimentation with digital and hybrid learning models worldwide (McGivern & Shepherd, 2022; Ouma, 2021). In Malaysia, this transformation accelerated the use of online distance learning (ODL), exposing opportunities for flexibility but also widening gaps for students in rural and under-resourced communities (Latef et al., 2018; Zarei & Mohammadi, 2022). Challenges such as poor internet access, limited digital devices, and reduced interpersonal interaction highlighted the persistence of the digital divide and its impact on student achievement (Rakhmanina et al., 2021; Sah et al., 2023).

Since 2023, Malaysia has taken steps to institutionalise hybrid learning. The Ministry of Higher Education announced a flexible model in which students attend campus-based classes only in their first and final years, while the middle years are delivered online (Sinar Harian, 2023). This initiative reflects broader global trends in higher education that prioritise cost efficiency, independent learning, and digital literacy (Seong et al., 2022; Adams et al., 2018). Nevertheless, questions remain about how students adapt to these evolving environments: Do they view ODL as an equal substitute for face-to-face classes? What challenges persist despite policy reforms? Moreover, what kind of learning ecosystem do students see as most effective for their future?

This study addresses these questions by examining Malaysian undergraduates' perceptions of ODL and face-to-face learning after their return to campus. By focusing on student voices, the research provides evidence for designing future-ready learning environments that are not only technologically feasible but also responsive to the lived experiences, motivations, and needs of learners. These insights are crucial for policymakers, educators, and instructional designers aiming to develop more resilient and inclusive education systems in 2025 and beyond.

Literature Review

Online education has been integrated into higher education systems in developed countries for decades, supported by strong ICT infrastructure and teacher training (Naresh, 2015; Ahmadi & Ilmiani, 2020). In these contexts, technical access is relatively unproblematic, and online learning is often embedded as part of broader pedagogical strategies, however, even in developed countries such as the United Kingdom, the rapid expansion of online distance learning (ODL) during the pandemic exposed challenges related to learning environments, perceived value for money, and reduced opportunities for interaction (McGivern & Shepherd, 2022).

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In developing contexts, these issues were magnified. A systematic review by Ouma (2021) found that students in Asia and Africa reported significant obstacles, including unreliable internet access, high data costs, and weak communication between students and educators. Similar patterns were observed in Indonesia, where students described ODL as less effective for comprehension and hindered by unstable internet connections (Rakhmanina et al., 2021). Broader studies across developing countries also confirmed challenges such as poor digital infrastructure, unsuitable home learning environments, and limited peer interaction (Zarei & Mohammadi, 2022).

In Malaysia, the integration of ICT into education has been promoted since the 1990s as part of national policy (Hassan, n.d.). Higher education has since grown into a system of over 1.2 million students, with universities experimenting with MOOCs, micro-credentials, and immersive learning technologies to align with global trends (Sirat & Wan, 2022). However, implementation has remained uneven, especially in rural areas where weak internet connectivity and limited digital readiness constrain both students and lecturers (Tahir et al., 2020; Adnan, 2022; Latef et al., 2018).

The forced adoption of ODL during the pandemic intensified these issues. Students struggled with technical barriers, disengaging content, and limited teaching support (Abas, 2020). Beyond academic difficulties, ODL also shaped student behaviour and social norms—for example, declining motivation, multitasking during lessons, or avoiding camera use in synchronous classes (Marpuah et al., 2022). Malaysian studies have confirmed that while students appreciate synchronous online formats as more engaging than asynchronous ones, they prefer a blended approach over purely online learning the most (Mat et al., 2021; Sah et al., 2023).

Despite these challenges, scholars have also highlighted positive outcomes of ODL. Online learning has been shown to foster student independence, creativity, and digital literacy (Marpuah et al., 2022). Teachers adapted by using low-bandwidth platforms, such as WhatsApp and Telegram, and recorded lectures to increase accessibility (Ibrahim et al., 2021). Such adaptations reveal not only short-term resilience but also the potential of ODL as a component of more flexible learning ecosystems.

Recent reviews have argued that research on ODL must move beyond the pandemic context to examine long-term student perceptions and readiness for hybrid learning models (Mustapha et al., 2021; Omar et al., 2021). This is particularly urgent given Malaysia's introduction of a hybrid learning policy in 2023**,** which allows students to attend campus classes only in their first and final years of study (Kementerian Pendidikan Tinggi Malaysia, 2023). Global literature also supports this shift, with blended learning increasingly seen as a sustainable model for future higher education (Seong et al., 2022).

Taken together, these studies suggest that while the pandemic exposed systemic weaknesses, it also accelerated a structural shift in higher education. What remains less understood, however, is how students in Malaysia have navigated this transition once campuses reopened and hybrid learning became institutionalised. This study contributes to the emerging field of ODL by examining student perceptions of ODL and face-to-face classes in the post-pandemic era, offering insights into how learning environments can be designed to be more resilient, inclusive, and future-ready.

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Methodology

Three research questions guided this study:

1. What are students' perceptions of online distance learning (ODL) classes?
2. What are students' perceptions of face-to-face classes?
3. Which learning method do students prefer overall?

To address these questions, a mixed-method design was employed, combining quantitative and qualitative approaches to capture both breadth and depth of student perceptions. This approach was selected to ensure a more comprehensive understanding of learning experiences, as recommended in prior studies on education transitions (Mustapha et al., 2021; Omar et al., 2021).

An online questionnaire was developed using Google Forms, a widely used and accessible tool suitable for reaching large student cohorts (Vasantha Raju & Harinarayana, 2016). The survey consisted of twenty-two (22) Likert-scale items, two (2) open-ended questions, and one multiple-choice item. Likert-scale questions captured general perceptions and preferences, while open-ended questions provided richer insights into challenges and motivations.

The questionnaire was distributed randomly among undergraduate students from the Faculty of Creative Technology and Heritage at Universiti Malaysia Kelantan (UMK) over a period of two months. A total of 246 valid responses were collected, representing students from different programmes and years of study. Participation was voluntary, and respondents provided informed consent before completing the survey.

This study explicitly distinguishes between online learning and online distance learning (ODL). While online learning may occur in a blended classroom setting with the presence of instructors, ODL refers to fully remote learning in which teaching, communication, and assessment occur entirely through digital platforms (Stauffer, 2020). This distinction was emphasised to ensure clarity in student responses.

Quantitative data were analysed using the open-source software R. The Shapiro–Wilk test was first applied to examine data normality. Given the sample size, an independent t-test was conducted to compare mean differences between students' perceptions of ODL and face-to-face learning, as well as across different academic departments. Qualitative data from open-ended responses were analysed using NVivo software. A thematic analysis approach was employed to identify recurring themes, facilitating a deeper understanding of students' lived experiences.

Hypotheses

To guide analysis, two hypotheses were formulated:

- **Null Hypothesis (H_0):** No significant difference exists between students' ODL and face-to-face learning preferences.
- **Alternative Hypothesis (H_a):** Students prefer face-to-face learning over ODL.

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Results and Discussion

The questionnaire received 246 responses from Malaysian undergraduate students. The faculty comprises two departments: the Department of Heritage Studies and the Department of Creative Technology Design. The Bachelor of Heritage Studies with Honours is a program offered by the Department of Heritage, while the Department of Creative Technology Design offers the Bachelor of Creative Technology with Honours. Based on Table 1, although the respondents from Heritage Study were 15% higher than the Creative Technology Design Department students, the difference
can be considered insignificant. The insignificant difference between the respondents from the two fields of study is beneficial as it helps this research obtain balanced data.

Table 1: Programs Offered by the Faculty of Creative Technologies and Heritage, UMK

No.	Programs	Frequency	Percentage (%)
1.	Bachelor of Creative Technology with Honours	105	42.7
2.	Bachelor of Heritage Studies with Honours	141	57.7
TOTAL		246	100

Overall Results for Likert Scale Questions

The first part of the analysis presented the overall results received from the respondents, aiming to determine the students' perceptions of ODL and face-to-face learning. An Independent T-Test was run to find the differences in results between the two platforms: ODL and face-to-face learning. A two-tailed P-value was then tested to find the probability and to justify the null hypothesis given:

Table 2: Descriptive Analysis of the Likert-Scaled Questions

No	Statements	ONLINE			PHYSICAL			ONLINE VS PHYSICAL	
		Mean	SD	(%)	Mean	SD	(%)	T-Test	P-Value
1	Save on costs (I.e., food, accommodation, and transport)	4.5	0.842	90	2.65	1.236	53	19.4	0
2	Save time for class preparation	4.41	0.836	88.2	2.92	0.995	58.4	17.96	0
3	Requires a strong internet connection	4.4	0.874	88	3.13	1.183	62.6	13.57	0
4	Improve technology skills	4.32	0.902	86.4	3.53	1.068	70.6	8.85	0
5	Requires a compatible device	4.1	0.927	82	3.43	1.147	68.6	7.13	0
6	Increase the level of self-confidence	3.62	1.129	72.4	4.05	0.951	81	-4.58	0
7	Learning is more fun	3.61	1.1	72.2	4.03	0.901	80.6	-4.62	0
8	Easy to Understand	3.52	0.902	70.4	4.24	0.853	84.8	-8.99	0
9	Improve social skills	3.5	1.149	70	4.15	0.862	83	-7.15	0
10	Improve communication skills	3.49	1.142	69.8	4.17	0.848	83.4	-7.44	0
11	Increase motivation to attend class	3.62	1.128	72.4	3.76	1.071	75.2	-1.35	0.18

Overall, as many as 90% of the respondents strongly agreed that staying at home for online learning helps them save on their daily costs, as they no longer need to spend on accommodation, transportation, and food. The respondents also fully agreed that ODL saves time in terms of getting ready for class, waiting for the bus, and commuting to the campus. Open distance learning (ODL) provided them with the opportunity to attend classes from any

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location at their own convenience. Some respondents were also attending classes while travelling in the car. Respondents realised that ODL indirectly helps them improve their technological skills and knowledge. They were able to explore new learning tools and troubleshoot the computer or system themselves. While ODL garnered favourable feedback, the findings indicated the need to address specific matters before fully implementing ODL. Students expressed apprehension that the adoption of ODL had compromised their interpersonal and communication skills, potentially stemming from the absence of in-person interactions both during and after classes, given that students were geographically dispersed. The opportunity for mingling and collaborative activities was constrained due to the remote nature of learning in their respective hometowns. Over 85% of students indicated that ODL required them to have compatible devices and robust internet connectivity as compared to face-to-face classes.

Regarding their understanding of the learning content, most respondents agreed that face-to-face classes could help them better understand the content delivery and make learning more engaging than online distance learning. The T-test results of 8.99 and 4.62 indicate that the differences between face-to-face and ODL are statistically significant. Compared to ODL, face-to-face classes were perceived to be more effective in upskilling respondents' communication and social skills, and the differences between those two platforms are also significant. The analysis has yielded that most of the P-values for the statements were less than 0.05; hence, the null hypothesis was rejected. It is transparent that the study showed significant differences between the two pairs: online distance learning (ODL) and face-to-face learning.

Overall Results for Short Answer Questions

This section analyses the unstructured responses from 246 respondents, capturing the nuances of their experiences with both full implementation of ODL and the subsequent return to campus. This was a continuation of the Likert-scale questions that were previously answered, intended to confirm the answers given in the previous questions. A thematic analysis identified nine emergent themes for each mode of learning. These themes, ranked by frequency of occurrence, are summarised in Table 3.

Table 3: Thematic Analysis of Open-Ended Responses (Ranked by Frequency)

Rank	Online Distance Learning (ODL) Themes	Face-to-Face Learning Themes
1	Internet and Devices	Cost of Living
2	Understanding and Focus	Time and Self-Management
3	Communication Skills	No Issues
4	No Issues	Transportation
5	Motivation	Social Interaction / Awkwardness
6	Environment	Academic Comprehension & Motivation
7	Healthcare	Connectivity / Facilities
8	Time Management	Healthcare
9	Others	Others

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Perceptions of Online Distance Learning (ODL)

The analysis reveals that the primary challenges of ODL were structural and technical in nature. The most frequently cited theme was (1) Internet and Devices. Students overwhelmingly reported that unstable networks and the financial burden of purchasing high-speed data were significant obstacles to their learning. Many respondents reported that poor connectivity and device incompatibility caused them to miss synchronous sessions, resulting in academic exclusion.

A second major challenge related to (2) Understanding and Focus. The home environment often proved inconducive to deep learning; students reported that multitasking and household distractions, such as family commitments and noise, severely disrupted their ability to concentrate. Consequently, students found it more difficult to comprehend complex learning content in an uncontrolled classroom setting.

Furthermore, a critical theme emerged regarding the degradation of (3) Communication Skills. The absence of physical interaction limited opportunities for collaborative learning. This issue was exacerbated by the common practice of turning cameras off during video conferences to conserve bandwidth, which limited communication to unidirectional voice interactions. While the use of asynchronous video presentations was a necessary adaptive strategy to accommodate poor connections, it inadvertently hindered the development of spontaneous speaking skills and interpersonal competencies. These findings align with broader literature on digital communication competence, suggesting that without active pedagogical intervention, remote learning can significantly reduce social presence and engagement (Bao, 2020; Dhawan, 2020). The unconducive learning environment at home also affected the students' motivation to study. Respondents reported difficulties staying focused on their studies due to other family commitments, such as the noise made by other siblings or the environment, the need to help parents with household chores, taking care of younger siblings, and even working part-time to increase their income. This ordeal has significantly contributed to students struggling to manage their time between learning and other external factors, thereby affecting their motivation to sustain their studies. The findings of this study are consistent with previous research done on the challenges faced by most students during ODL, as cited previously in this paper (McGivern & Shepherd, 2022; Ouma, 2021; Rakhmanina et al., 2021; Zarei & Mohammadi, 2022). Besides the unstable Internet facilities, the challenges faced via this study are similar to those of many other countries, developed, developing, or underdeveloped.

Perceptions of Face-to-Face Learning

In contrast, when students returned to face-to-face learning, a different set of themes emerged. While students generally reported better Academic Comprehension, noting that physical classes made it "easier to understand" and connect with instructors, they faced significant logistical and economic hurdles.

The most prevalent challenge was the (1) Economic Burden, specifically the rising cost of living. After saving money during ODL, students struggled with the resumption of expenses for house rental, food, and daily commuting. This was closely linked to (4) Transportation issues. Although university bus services are provided, schedules are often rigid. Students who missed a bus faced long waits or were forced to find alternative transport in a rural area where public transit and e-hailing services are scarce. This lack of mobility highlights broader

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structural inequities in access to higher education facilities, a concern that resonates in national policy discussions regarding rural education accessibility.

Socially, the return to campus presented a contradiction. While many enjoyed the interaction, a subset of students reported (5) Social Awkwardness. After two years of isolation, some respondents found it difficult to reintegrate, describing the transition back to face-to-face communication as uncomfortable. Additionally, (2) Time Management resurfaced as a struggle; students accustomed to the flexibility of ODL found it challenging to balance fixed bus schedules, rigid class timetables, and physical co-curricular activities. Finally, (8) Healthcare remained a valid concern, with students expressing anxiety regarding exposure to health risks in crowded lecture halls as social distancing mandates were relaxed.

Online Distance Learning (ODL) Versus Face-to-Face Learning

The final section of the questionnaire required respondents to indicate their overall preference between the two learning modes. As illustrated in Figure 1, a majority of respondents (57.3%) preferred face-to-face classes, while 42.7% preferred ODL. This preference aligns with previous findings by Mat et al. (2021) regarding the attitudes of Malaysian undergraduates during the pandemic.

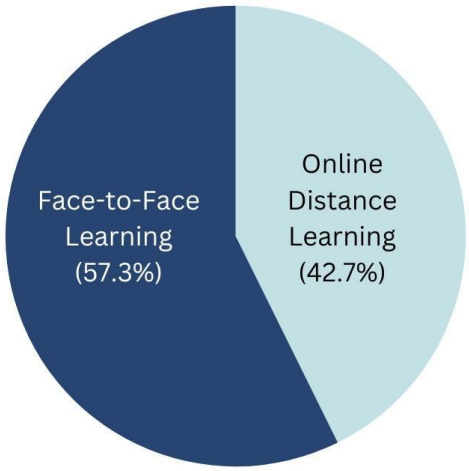

Figure 1: Students' Preferences Method

To determine the statistical significance of this preference, a Chi-squared goodness-of-fit test was conducted. The null hypothesis (H_0) posited that no significant difference exists between students' preferences for ODL and face-to-face learning. The test yielded a p-value of less than 0.05, indicating a statistically significant difference. Consequently, the null hypothesis is rejected, confirming a distinct preference among students for face-to-face learning environments, despite the flexibility offered by ODL.

Conclusion and Future Study

This study provides a timely benchmark for understanding how Malaysian undergraduates perceive online distance learning (ODL) and face-to-face education in the aftermath of the

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pandemic. The findings of this study provide valuable insights for shaping the design of higher education and informing the development of more resilient and inclusive learning environments. Students consistently valued ODL for its cost-effectiveness, flexibility, and contribution to digital skill development; however, they expressed more substantial confidence in face-to-face settings for comprehension, motivation, and communication skills. These dual findings underscore a crucial point: the future of higher education is not about replacing one mode with the other, but about strategically integrating the strengths of both into a blended learning ecosystem**.**

Notably, the results also reveal structural and pedagogical tensions that must be addressed for hybrid learning to succeed. Persistent inequalities in internet access and digital readiness risk exacerbating existing divides between rural and urban students. Similarly, cohorts who began their university journey entirely online show gaps in socialisation and communication skills, raising questions about the hidden costs of prolonged ODL. These challenges underscore the need for a holistic educational transformation that strikes a balance between cost efficiency, equity, and technological innovation, while also fostering human connection and engagement. For educators, the findings emphasise that learning design must move beyond simply transferring classroom practices online. Instead, digital components should be purposefully reimagined to support active, collaborative, and inclusive learning experiences. For policymakers, the evidence reinforces that infrastructure investments, digital subsidies, and student support services are not optional, but foundational for ensuring that hybrid models do not leave vulnerable learners further behind.

Ultimately, this study contributes to broader debates on the future of education by demonstrating that student voices are central to designing learning environments that are not only technologically feasible but also socially and pedagogically sustainable.

Future research should move in several important directions. First, longitudinal studies are needed to track how student perceptions evolve as hybrid learning becomes more established in higher education. The experiences of students who began their university journey entirely online should be compared with those who experience hybrid models from the outset. Such comparisons can help determine whether early exposure to ODL creates lasting benefits or disadvantages.

Second, design-based and intervention research should be prioritised to move beyond perception surveys. Trials of hybrid assessment models, peer-mentoring schemes, or low-bandwidth learning tools could generate actionable evidence on effective practices. This shift from descriptive to experimental approaches would strengthen the foundation for both pedagogy and policy.

Third, comparative and cross-cultural studies are essential, particularly within the ASEAN region and other developing contexts. Since many higher education systems face similar challenges, including digital inequity, shifting policies, and evolving expectations, comparative work would enable the identification of scalable strategies and regional best practices.

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Finally, future research should more explicitly engage with Human-Computer Interaction (HCI) and Interaction Design. Examining how usability, accessibility, and design features influence student engagement and learning outcomes will be critical for ensuring that emerging educational technologies are both practical and inclusive.

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