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Developing an evidence-based model to enhance student engagement and academic performance in hybrid learning in business education

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Abstract

Aim. This study examined the learning modality preferences and academic performance of undergraduate students enrolled in Business Administration and related programs, comparing HyFlex (hybrid-flexible) and traditional face-to-face delivery. It further explored students' experiences in HyFlex environments to develop an evidence-based strategic model aimed at enhancing engagement and academic outcomes.

Methodology. A convergent mixed-methods design was employed. One hundred undergraduate students from Rizal Technological University completed a researcher-developed survey capturing learning modality preference and most recent semester grade categories. A purposive subsample participated in semi-structured interviews to provide experiential insights. Quantitative data were analyzed using descriptive statistics and the Chi-Square Test of Independence to examine the relationship between modality preference and academic performance. Qualitative data were analyzed inductively to identify recurring themes. Institutional approval and informed consent were secured.

Results. Seventy-four percent of respondents preferred HyFlex Learning, frequently citing flexibility, autonomy, and access to synchronous and asynchronous materials. Students who preferred HyFlex displayed higher proportions in the Outstanding (28%) and Very Satisfactory (58%) grade bands compared to those preferring Traditional Learning (23% and 42%, respectively). The Chi-Square analysis indicated a statistically significant association between learning modality preference and academic performance. Interview findings revealed key benefits—including flexible scheduling, enhanced interaction options, and the ability to revisit recorded materials—as well as challenges such as technological disruptions, unstable connectivity, and diminished online social presence. Synthesizing both data strands led to the development of a five-component strategic model comprising: (1) instructor training, (2) technology access and support, (3) student support systems, (4) continuous feedback and iterative improvement, and (5) flexible blended pathways.

Conclusion. HyFlex Learning was associated with higher engagement and more consistent academic performance in this sample. Institutions may enhance HyFlex implementation through sustained faculty development, improved technological infrastructure, and comprehensive academic and psychosocial support systems.

Keywords: *HyFlex, hybrid learning, student engagement, academic performance, higher education, strategic model*

INTRODUCTION

Hybrid or HyFlex (Hybrid-Flexible) learning has become a transformative innovation in higher education, responding to shifting student expectations and disruptions such as the COVID-19 pandemic. Unlike the traditional face-to-face classroom, Hybrid Learning integrates physical and digital environments, enabling students to choose how they participate—either in person, synchronously online, or asynchronously through recorded sessions and digital modules. This approach supports inclusivity, accessibility, and personalized learning (Niyomves et al., 2024).

Globally, higher education institutions have adopted Hybrid Learning to accommodate diverse learning needs, schedules, and technologies. In business education, where theoretical frameworks intertwine with practical applications, Hybrid Learning enhances engagement and retention through simulations, case-based activities, and collaborative discussions. It promotes the three domains of engagement—behavioral, cognitive, and emotional—by providing opportunities for participation, critical thinking, and intrinsic motivation.

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Despite its potential, gaps persist in Philippine research on HyFlex learning, particularly in understanding its effects on academic performance and learning preferences in business-related courses. Many studies emphasize student satisfaction but overlook the interaction between modality choice, instructor readiness, and institutional support. This study addresses these gaps by examining the relationship between learning preferences and academic performance while proposing a strategic model to improve Hybrid Learning implementation in higher education.

Review of Related Literature

International research consistently shows that Hybrid Learning has become an essential mode of academic delivery, particularly during the COVID-19 disruption. Institutions worldwide blended online and face-to-face instruction to ensure continuity of learning. Hybrid formats have been documented to promote greater flexibility, student satisfaction, and engagement by supporting varied learning styles, enabling self-paced progression, and integrating interactive digital tools (Heilporn & Lakhal, 2021)These approaches also support global educational goals—particularly in strengthening digital resilience and innovation—as reflected in the proposed SDG Target 4.8 on "Digital-Resilient Education," which highlights equitable access, instructor digital competence, and continuity planning (Martins et al., 2025).

Studies further suggest that hybrid effectiveness depends on thoughtful instructional design, robust technological systems, and pedagogical strategies that promote collaboration and community (Gamage et al., 2022). Comparative findings indicate that face-to-face classes may foster higher emotional engagement, but hybrid environments offer substantial advantages in autonomy, flexibility, and self-regulation (Teoh et al., 2025; Palmer et al., 2022; Bensi et al., 2025).

Challenges in Hybrid Learning

Even with its benefits, Hybrid Learning presents challenges. Technical issues—such as unreliable connectivity, insufficient digital infrastructure, and limited device access—interfere with participation and learning continuity (Zhang et al., 2025). Students also report decreased social presence, fewer real-time interaction opportunities, and occasional feelings of isolation when attending online sessions (Detyna & Koch, 2023). These issues highlight the need for strategic institutional support, strong instructional design, and mechanisms for ongoing feedback and engagement.

Hybrid Learning in the Philippine Context

Philippine higher education institutions increasingly adopted hybrid modalities as a response to infrastructure limitations, varied student schedules, and the need for resilient instructional systems. However, disparities in internet access, digital literacy, and technological readiness remain significant barriers (Kunjiapu et al., 2025). These challenges hinder equitable participation and underscore the need for models tailored to the Philippine context—particularly in business education, where course delivery must integrate theoretical and applied learning components.

Synthesis

Across global and Philippine studies, Hybrid Learning proves beneficial in improving flexibility, engagement, and academic performance. Nonetheless, its success depends on institutional readiness, technological support, pedagogical design, and equitable access. While international evidence shows strong potential, the Philippine context presents unique challenges that demand localized, evidence-based strategies. Literature reveals a critical gap in examining the preference–performance relationship and in creating a practical model for hybrid implementation in higher education. This study responds to that gap by integrating quantitative outcomes with qualitative experiences to inform a strategic model designed for Philippine business education programs.

Theoretical framework

Self-Determination Theory (SDT) (Ryan et al., 2021) provided a meaningful lens for understanding how learning modality influenced student engagement and performance in Hybrid Learning environments. SDT explained why students' preferred learning modality affected their level of engagement, as learners were more motivated when they could choose a mode that aligned with their needs and circumstances. The autonomy afforded by HyFlex modalities supported performance by allowing students to regulate their learning pace and participation mode. Likewise, SDT clarified how technological and instructional support enhanced academic motivation by strengthening students' sense of competence through access to tools, clear learning pathways, and timely feedback. Conversely,

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challenges such as weak online interaction, technological barriers, or feelings of isolation undermined relatedness and consequently reduced learning effectiveness. Guided by these principles, SDT shaped the framing of the research questions, informed the interpretation of both quantitative and qualitative findings, and served as the theoretical anchor in developing an evidence-based strategic model intended to enhance engagement and academic performance in Hybrid Learning environments.

Statement of the Problem

Hybrid or HyFlex learning has expanded rapidly in higher education, particularly in response to the need for flexible instructional delivery in the post-pandemic landscape. Although global literature highlights its potential to enhance engagement, satisfaction, and learning outcomes, limited empirical evidence exists in the Philippine context—especially within business education programs. Existing studies tend to focus on student satisfaction or general perceptions and seldom examine the interaction between students' learning modality preferences and their actual academic performance. Furthermore, there is inadequate exploration of how institutional factors such as instructor readiness, technological support, and student services influence the effectiveness of Hybrid Learning implementation. These gaps highlight the need for a systematic investigation that links learning preferences, academic outcomes, and student experiences, and for the development of an evidence-based model to strengthen Hybrid Learning delivery in business education programs in the Philippines.

General Objective

To evaluate students' learning preferences and academic performance under Hybrid and Traditional Learning modalities in Business Administration and related courses, and to develop an evidence-based strategic model to enhance the effectiveness of Hybrid Learning.

Specific Objectives

1. To determine students' preferred learning modality.
2. To assess academic performance across Hybrid and Traditional Learning settings.
3. To explore students' experiences in Hybrid Learning environments.
4. To develop a strategic model that enhances student engagement and academic performance in Hybrid Learning.

Research Questions

1. What is the predominant learning modality preference among students?
2. How does academic performance differ between students in Hybrid and Traditional Learning modalities?
3. What positive and negative experiences do students encounter in Hybrid Learning?
4. What strategic model can be developed to enhance engagement and academic outcomes in Hybrid Learning environments?

Hypothesis

H_0: There is no significant relationship between students' learning preferences and their academic performance in business-related courses.

METHODS

Research Design

This study employed a convergent parallel mixed-methods research design, integrating quantitative descriptive–correlational analysis with qualitative thematic inquiry. The quantitative strand examined the association between students' learning preferences (HyFlex vs. Traditional) and their academic performance using survey data. Simultaneously, the qualitative strand explored students' lived experiences, challenges, and perceptions of Hybrid Learning through unstructured interviews.

Both strands were conducted independently but during the same period. After separate analyses, the findings were merged and triangulated, allowing quantitative patterns—such as higher Outstanding and Very Satisfactory scores among HyFlex learners—to be explained by qualitative insights related to autonomy, flexibility, access to recorded lectures, and interaction design. Negative themes such as connectivity issues, weak online social presence, and platform malfunctions illuminated the boundary conditions of Hybrid Learning effectiveness.

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The mixed-methods approach was appropriate because it combined measurable academic outcomes with contextual explanations of student experiences, increasing the depth, validity, and applicability of the findings (Creswell, 2014). The integration of results directly informed the development of a five-component strategic model for improving Hybrid Learning in Business Education.

Population and Sampling

The study involved 100 undergraduate students enrolled in Business Administration and related programs at Rizal Technological University during the Academic Year 2024–2025. For the quantitative phase, random sampling was used to select participants who completed the survey questionnaire.

For the qualitative phase, a purposive sampling technique was employed to select students who represented both learning modality preferences (Hybrid and Traditional). This ensured diversity in experiences based on level of engagement, academic performance, and frequency of modality use. Only students who voluntarily agreed and provided informed consent participated in interviews.

Instruments

All instruments were pilot-tested for clarity, coherence, and appropriateness before final use. Three instruments were used in this study:

1. Survey Questionnaire-This researcher-developed tool collected data on (a) students' preferred learning modality and (b) their most recent academic performance categorized into five levels (Outstanding, Very Satisfactory, Satisfactory, Fairly Satisfactory, Unsatisfactory). Content validity was established through expert review by three faculty members specializing in educational measurement.
2. Interview Guide-A semi-structured guide explored students' experiences in Hybrid Learning, focusing on flexibility, technological access, interaction quality, feedback, and perceived learning effectiveness.
3. Documentation Notes-Observational notes taken during encounters with respondents provided additional contextual information regarding students' behaviors and comments related to Hybrid Learning.

Data Collection

Data collection was conducted over a two-week period at the beginning of the 2024–2025 academic year.

For the quantitative phase, the survey questionnaire was administered personally at students' available time slots. Participants were informed about the purpose of the study, and participation was voluntary. They were assured that they could withdraw at any point without penalty. Completed questionnaires were collected and securely stored for analysis.

For the qualitative phase, unstructured interviews were conducted either in-person or online, depending on students' availability. With permission, interviews were audio-recorded and transcribed verbatim. Students were encouraged to share both positive and negative experiences with Hybrid Learning.

All raw data—including transcripts and notes—were kept in password-protected digital storage accessible only to the researcher.

Treatment of Data

For quantitative data analysis, survey data were encoded and analyzed using Microsoft Excel and SPSS. The following statistical techniques were applied:

- Descriptive statistics (frequency, percentage, mean, and standard deviation) to summarize modality preferences and academic performance.
- Chi Square were used to determine whether a significant relationship exists between learning modality preference and academic performance.

For qualitative data analysis, a thematic analysis (Braun & Clarke, 2022) was conducted. Themes focused on flexibility, autonomy, engagement, technological challenges, and interaction quality on the following these steps:

1. Familiarization with responses
2. Open coding of recurring patterns
3. Categorization of codes into themes
4. Refinement of themes into conceptual clusters
5. Interpretation of themes in relation to quantitative findings

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Integration of Data

After separate analyses, results were merged to create meta-inferences. Triangulation was used to validate findings by comparing numerical patterns with experiential narratives. The integrated insights guided the development of a strategic model to enhance Hybrid Learning effectiveness.

Ethical Considerations

The study adhered to strict ethical standards:

- Institutional Permission: Approval was sought from university authorities before data collection.
- Informed Consent: Participants were briefed about the study's purpose, voluntary nature, confidentiality, and their right to withdraw at any moment.
- Confidentiality: All personal identifiers were removed; pseudonyms were used in interview transcripts. Data were stored securely in password-protected files.
- Data Privacy Compliance: Procedures complied with the Data Privacy Act of 2012 (RA 10173).
- Academic Integrity: All sources, quotations, and materials were properly cited to avoid plagiarism, and similarity checks were conducted prior to final submission.

RESULTS AND DISCUSSION

This section provides an overview of the respondents' profiles concerning their learning preferences, academic grades and experiences during the HyFlex modalities. A concept or model was developed in the study to enhance the students' performance and learning outcome.

1. Learning modality preference of students

The table below presents the learning preference of selected students in business related courses.

Table 1: Distribution of respondents on Learning Modality Preference

Learning Preference	Frequency	Percentage
Hybrid Learning	74	74%
Traditional Learning	26	26%
Total	100	100%

Out of 100 respondents, 74% preferred Hybrid Learning, citing flexibility and autonomy as major advantages. This aligns with Battestilli et al. (2023), who observed improved engagement when real-time and asynchronous components coexist.

2. Academic Performance of Students in Hybrid and Traditional Learning

Table 2: Academic Performance Based on Learning Preference

Semesterly Grade /Academic Performance	HyFlex Learning		Traditional Learning	
	Frequency	Percentage	Frequency	Percentage
Above or 1.50	28	28%	23	23%
1.75-2.00	58	58%	42	42%
2.00-2.25	10	10%	19	19%
2.50-3.00	4	4%	13	16%
Below 3.00	0	0	3	3%
Total	100	100%	100	100%

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Outstanding-1.00-1.50 (O) Very Satisfactory-1.75-2.00 (VS) Satisfactory-2.00-2.25 (S) Fairly Satisfactory-2.50-3.00 (FS) Unsatisfactory-below 3.00 (US)

Table 2 presented students' academic performance by preferred learning modality—HyFlex (Hybrid-Flexible) versus Traditional. Performance was grouped into five ranges: Outstanding (1.00–1.50), Very Satisfactory (1.75–2.00), Satisfactory (2.00–2.25), Fairly Satisfactory (2.50–3.00), and Unsatisfactory (below 3.00). Among HyFlex students, 28% attained *Outstanding* and 58% *Very Satisfactory*, compared with 23% and 42% in Traditional learning, respectively. Smaller proportions of HyFlex learners fell within lower bands (*Satisfactory* 10%; *Fairly Satisfactory* 4%; *Unsatisfactory* 0%) relative to Traditional learners (19%, 16%, and 3%, respectively). This distribution indicated that students who preferred HyFlex generally achieved higher and more consistent results, a pattern plausibly aligned with the flexibility, autonomy, and blended instructional opportunities characteristic of HyFlex delivery. At the same time, Traditional learning exhibited a more even spread across performance categories. Taken together, the findings supported the recommendation that institutions treat Hybrid/HyFlex as part of the post-pandemic instructional norm, while investing in faculty development, technology access, and structured student supports to ensure that heterogeneous learner needs are met (Mentzer et al., 2023). Further research with larger samples and objective grade records is warranted to confirm these trends and to examine causal mechanisms.

Hypothesis Testing

Table 3: Chi-Square Test of Independence

Variable 1	Variable 2	χ^2	df	p	Interpretation
Learning Modality	Academic Performance	**13.24**	**4**	**0.010**	Significant

Since the computed p-value (0.010) is less than the 0.05 level of significance, the result is statistically significant. This indicates that academic performance is not independent of learning modality. In other words, students' academic performance varies depending on the type of learning modality they use. Thus, the null hypothesis, which states that there is no significant relationship between learning modality and academic performance, is rejected. A significant association exists between the two variables, confirming that alignment between student choice and delivery modality enhances outcomes (Battestilli et al., 2023).

3. Students Experiences During Hyflex Modalities

Participants consistently valued the flexibility and autonomy afforded by HyFlex. The ability to choose among in-person, synchronous online, and asynchronous formats enabled students to align study with work and family obligations and to pace learning through recorded materials. As one participant noted, "The option to attend live or review recordings later fit my schedule and improved my learning." Reports also emphasized motivational benefits from real-time interaction during face-to-face sessions, which supported focus and persistence: "Face-to-Face sessions helped interact with instructors and classmates, keeping engaged." These accounts aligned with studies showing that hybrid formats support diverse preferences, strengthen engagement, and enhance competence when coupled with clear structure and interactive opportunities (Fabian et al., 2024).

Students also described technical barriers—background noise in recordings, video freezes, and inconsistent access to asynchronous materials—which required frequent rewinds and disrupted comprehension: "Sometimes videos freeze or have noise; I have to replay parts to follow the lesson." Connectivity issues during live sessions further impeded continuity: "If the internet is unstable, I miss parts of the lecture." Several participants perceived weaker online social presence, citing fewer immediate feedback opportunities and a reduced sense of belonging relative to face-to-face classes. These challenges mirrored prior findings that poor audio–video quality, unstable networks, and insufficiently designed online interaction can undermine engagement and relatedness (e.g., Detyna & Koch, 2023).

Consistent with the literature, students' narratives indicated that HyFlex was most effective when pedagogical structure, technology reliability, and support systems were jointly in place. Reports highlighted the value of clear expectations, formative checks, timely feedback, and recorded resources to scaffold competence; mentoring,

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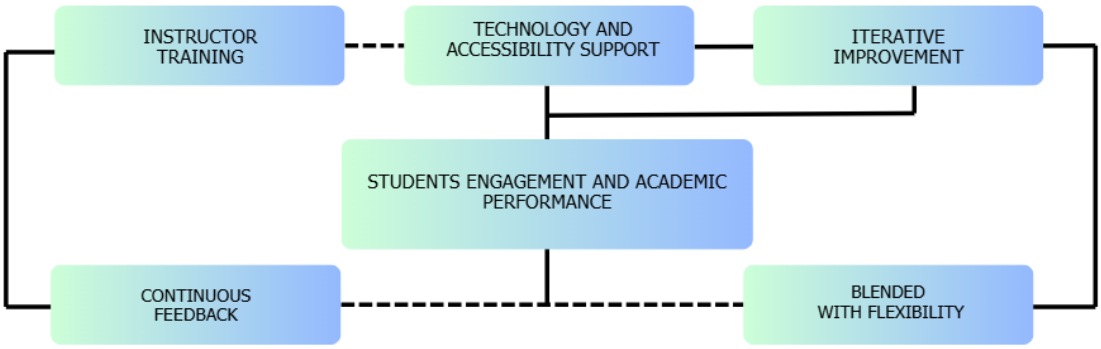
study groups, and counseling to bolster relatedness and resilience; and responsive course adjustments informed by pulse surveys, analytics, and brief reflections (Astawa & Purwaningrat, 2025).

In line with these findings, institutions implementing HyFlex should: (a) invest in faculty training focused on autonomy-supportive, interaction-rich hybrid pedagogy; (b) ensure equitable technology access and robust AV standards for recordings; (c) formalize student support services for both online and on-campus learners; and (d) institutionalize continuous feedback loops (weekly micro-surveys/learning analytics) to drive iterative improvement. These measures directly address the reported pain points while preserving the flexibility and autonomy that students identified as central benefits of HyFlex.

4. Strategic Model Development to Enhance the Learning Outcome and Academic Performance

Figure 1: Strategic Model to Enhance Students' Engagement and Academic Performance



Based on the finding the researchers proposed model composed of five interconnected components aimed at enhancing engagement and academic performance in Hybrid Learning. Instructor training prepared educators to design and facilitate structured, interaction-rich courses across face-to-face, synchronous online, and asynchronous modes. Technology access and support ensured reliable devices, connectivity, and platforms so that students could participate consistently and receive timely feedback. Student support systems—including tutoring, mentoring, and counseling—bolstered motivation, resilience, and self-efficacy. A flexible blended approach preserved learner choice of participation path, accommodating diverse schedules and preferences while maintaining clear expectations and alignment across modalities. Continuous feedback and iterative improvement used short pulse surveys, learning analytics, and assessment evidence to refine activities, pacing, and supports, with insights cycling back into instructor development and course redesign. In the conceptual diagram, dotted lines denoted enablers (e.g., technology access and flexible attendance options) that did not operate as constant direct drivers but strengthened the effectiveness of the core strategies. Together, these components functioned as an adaptive system that integrated instructor competence, technological reliability, student supports, flexibility, and data-informed iteration to sustain inclusive engagement and improved academic outcomes.

The findings indicated that Hybrid Learning (HyFlex) was the preferred modality for most students in Business Administration and related courses with 74% selecting it primarily for its flexibility. Students who preferred HyFlex generally attained higher proportions of Outstanding and Very Satisfactory grades than those who preferred Traditional learning. While causality could not be inferred, the pattern was consistent with the view that HyFlex can support engagement and comprehension through choice of attendance, access to recorded materials, and interaction-rich sessions.

A correlation exists between learning preference and academic performance further underscored the value of aligning instructional delivery with student needs. Consistent with Self-Determination Theory, students reported greater engagement when their learning pathways afforded autonomy (modality choice), built competence (clear structure, feedback, rewatchable content), and fostered relatedness (real-time interaction with instructors and peers).

While students identified constraints that dampened participation and learning: background noise in recordings, platform malfunctions, unstable connectivity, and reduced immediacy of feedback in online settings. These issues highlighted the need for reliable technology, explicit communication of expectations, and instructor development focused on designing interaction and presence across modalities.

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With this finding the study proposed a five-part model that integrated instructor training, technology access and support, student support systems, continuous feedback and iterative improvement, and a flexible blended approach. The model emphasized adaptability and responsiveness, using ongoing evidence of student outcomes to inform course redesign and faculty practice, thereby sustaining inclusive engagement and improving academic performance.

Conclusion

This study concluded that Hybrid Learning (HyFlex) conferred meaningful benefits for Business Administration students by enhancing engagement and supporting higher academic performance relative to Traditional learning. The modality's flexibility and learner autonomy enabled more personalized learning experiences and accommodated diverse study preferences. Nonetheless, technical and social challenges persisted. These were addressable through coordinated investments in faculty training for hybrid pedagogy, reliable technology and platform support, comprehensive academic and well-being services, and continuous feedback mechanisms to guide iterative improvement. The proposed five-component model offered a practical, evidence-informed framework for institutions to optimize Hybrid Learning in ways that remained adaptive, inclusive, and effectiveness-oriented. Future studies using larger samples and objective performance records are recommended to validate these findings and further clarify causal pathways.

Recommendations

Based on the findings of this study, the following recommendations are proposed to enhance the implementation and effectiveness of Hybrid Learning in business related courses:

1. Faculty Development- The school may implement ongoing, credit-bearing professional development on HyFlex pedagogy, covering autonomy-supportive teaching, designing parallel learning paths.
2. Technology Access and Reliability-institution may guarantee a baseline access to devices, bandwidth, and learning platforms through loaner programs and on-campus hotspots.
3. Student Academic and Well-being Supports-Institution may formalize tutoring, mentoring, and study-group options for both online and on-campus learners; integrate counseling and time-management coaching.
4. Course Design and Iteration-Institution may adopt a structured HyFlex template (weekly learning outcomes, modality-equivalent activities, formative checks, and rubrics).
5. Flexible Blended Pathways- Institutions may uphold students' ability to choose their mode of attendance for each session while ensuring that learning activities, instructional materials, and assessments remain equivalent across modalities..
6. Monitoring and Feedback Loops-Institution may track key indicators—attendance by modality, on-time submissions, grade distribution, variance in performance, drop/withdrawal rates, help-desk tickets.
7. Institution-Level Model Adoption: the researchers suggests or may utilize the five-component strategic model (faculty development, technology access, student supports, continuous feedback/iteration, flexible blended approach developed in this study.

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