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Hybrid and Blended Learning as the Emerging Educational Standard: An Analysis of Student Engagement and Outcomes

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Abstract
This study examined hybrid and blended learning as the emerging educational standard and its effects on student engagement and learning outcomes. Following the COVID-19 pandemic, these models have become routine practice in higher education. However, evidence of their sustained effectiveness remains limited. Drawing on the Community of Inquiry (CoI) framework and Self-Determination Theory (SDT), this research investigated the roles of teaching, social, and cognitive presence as well as the psychological needs of autonomy, competence, and relatedness in influencing behavioral, emotional, and cognitive engagement and academic performance. A convergent parallel mixed-methods design was used. Quantitative data were gathered from 428 undergraduate students via an online survey, supplemented by 32 semi-structured interviews. Data were analyzed using descriptive statistics, t-tests, correlations, multiple regression, and thematic analysis. Findings revealed moderately high student engagement (*M* = 4.05, *SD* = 0.68) and improved academic performance (mean GPA = 3.48). Hybrid learning produced significantly higher engagement than blended learning. The integrated CoI-SDT model accounted for 47% of the variance in engagement, with teaching presence (*β* = 0.39) and autonomy (*β* = 0.34) emerging as the strongest predictors. Qualitative themes emphasized flexibility, cognitive depth, and interpersonal connections. This study affirms that hybrid and blended learning can function effectively as the new educational norm when teaching presence and autonomy are deliberately supported. The findings offer valuable theory-driven insights and practical recommendations for higher education institutions.

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1. INTRODUCTION

The global landscape of education has undergone significant transformation following the COVID-19 pandemic. Institutions worldwide shifted rapidly from traditional face-to-face instruction to technology-mediated formats to ensure continuity of learning. This acceleration positioned hybrid and blended learning as viable long-term approaches that integrate synchronous in-person sessions with asynchronous online components. These models address diverse learner needs by offering flexibility in pacing, access, and interaction while maintaining core educational objectives.

Hybrid and blended learning have emerged as the new educational standard. Almusaed et al.

(2023) state, “There is little question that hybrid learning will become standard.” The models enhance accessibility and personalization, yet their effectiveness in sustaining student engagement and improving learning outcomes requires systematic examination. Student engagement encompasses behavioral, emotional, and cognitive dimensions that directly influence academic performance, retention, and skill development. Prior research establishes positive associations between these models and outcomes. Means et al. (2010, p. xviii) note, “In recent experimental and quasi-experimental studies contrasting blends of online and face-to-face instruction with conventional face-to-face classes, blended instruction has been more effective, providing a rationale for the effort required to design and implement blended approaches.” Recent empirical work further supports moderate to high positive impacts on academic, behavioral, cognitive, and affective engagement (De Bruijn-Smolders et al., 2024).

Despite these advances, the literature reveals inconsistencies and gaps. Many studies document benefits in controlled or short-term settings, yet results vary when hybrid and blended learning become normalized across broader contexts. Factors such as digital access, instructor readiness, and pedagogical alignment often moderate outcomes, leading to uneven engagement levels between in-person and remote participants (Teoh et al., 2025; Zheng et al., 2023). Existing scholarship frequently examines implementation or general acceptance but provides limited in-depth analysis of the mechanisms that link these models to sustained engagement and measurable outcomes once they function as the emerging standard. Longitudinal comparisons across disciplines and institutions remain scarce, and few investigations ground findings in integrated theoretical lenses that explain both successes and limitations.

This study addresses the identified gaps by analyzing hybrid and blended learning as the emerging educational standard with a focused examination of student engagement and outcomes. It seeks to clarify how these models perform when embedded as routine practice rather than transitional solutions.

1.1 Theoretical Framework

The research draws on two primary theoretical frameworks that directly support the development of its central argument. The Community of Inquiry (CoI) framework, developed by Garrison, Anderson, and Archer (2000), explains effective learning in technology-mediated environments through the interplay of three presences. The meta-analysis by the Online Learning Consortium (2022) describes it as follows: “The Community of Inquiry (CoI) framework describes three essential presences (i.e., teaching presence, cognitive presence, and social presence) and how these presences interact in providing an educational experience in online and blended learning environments.” In hybrid and blended learning, teaching presence guides design and facilitation, social presence builds community across modalities, and cognitive presence drives knowledge construction. These elements collectively foster the meaningful discourse essential for engagement.

Self-Determination Theory (SDT; Deci & Ryan, 2000) complements the CoI framework by emphasizing three basic psychological needs—autonomy, competence, and relatedness—as foundations for intrinsic motivation and sustained engagement. Hybrid and blended learning environments can fulfill these needs through flexible content access (autonomy), scaffolded digital resources and feedback (competence), and combined in-person and virtual interactions (relatedness). Together, the CoI framework and SDT provide a coherent lens for this study. They enable analysis of not only whether hybrid and blended learning enhances engagement and outcomes but also how instructors and institutions can optimize design to establish these models as an effective educational standard. This theoretical integration strengthens the argument that purposeful alignment of presence and psychological needs transforms hybrid and blended learning from an emerging option into a robust norm capable of delivering consistent educational gains.

2. METHOD

This study employed a convergent parallel mixed-methods research design. The design enabled the simultaneous collection of quantitative and qualitative data, followed by their integration during the interpretation phase. Quantitative data supplied measurable indicators of student engagement levels and

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learning outcomes, while qualitative data furnished detailed insights into participants' experiences and contextual factors. The approach aligns directly with the research objectives because it quantifies the extent to which hybrid and blended learning functions as the emerging educational standard and explains the mechanisms that drive or hinder engagement and outcomes. Creswell and Plano Clark (2018) affirm that convergent parallel designs strengthen validity through triangulation when researchers examine complex educational phenomena.

2.1 Participants and Sampling

The study involved undergraduate students enrolled in courses delivered through hybrid and blended learning modalities at selected higher education institutions. Researchers applied stratified purposive sampling to secure representation across academic disciplines, year levels, and learning modes (hybrid versus predominantly blended). This technique ensured that the sample reflected the diversity of students who experience these models as routine practice rather than experimental formats.

2.2 Data Collection Instruments and Procedures

Researchers collected quantitative data through an online self-administered questionnaire. The instrument adapted items from established scales to measure three core dimensions of student engagement. Behavioral, emotional, and cognitive engagement items drew from Fredricks et al. (2004) and the Student Engagement Instrument (Appleton et al., 2006). The questionnaire also included sections on perceived learning outcomes, self-reported academic achievement, and demographic variables, all rated on a 5-point Likert scale. The instrument underwent expert validation and pilot testing to confirm reliability and content validity before full deployment. Researchers distributed the questionnaire at the end of the semester via a secure online platform and obtained secondary objective data on academic performance, including course grades and completion rates, with institutional permission.

For qualitative data, researchers conducted semi-structured interviews with a subset of participants selected on the basis of survey responses that represented high, moderate, and low engagement profiles. The interview protocol contained open-ended questions that explored students' perceptions of engagement, benefits and challenges of hybrid and blended learning, and the ways these models influence learning outcomes. Interviews lasted 30–45 minutes each, took place via video conferencing or in person, and were audio-recorded with consent before verbatim transcription.

2.3 Data Analysis

Quantitative data underwent analysis with descriptive statistics, correlation analysis, and multiple regression techniques to examine relationships between hybrid and blended learning modalities, engagement dimensions, and learning outcomes. Researchers performed these procedures with SPSS software and tested the integrated theoretical model derived from the Community of Inquiry framework and Self-Determination Theory.

Qualitative data received thematic analysis following the six-phase procedure outlined by Braun and Clarke (2006). Researchers used NVivo software to support coding and theme development. An inductive-deductive approach guided the process, allowing themes to emerge directly from the transcripts while remaining anchored in the study's theoretical lenses.

Integration of the two data strands occurred through joint displays and narrative synthesis. This step identified areas of convergence, complementarity, or divergence, thereby producing meta-inferences that strengthen the overall conclusions about hybrid and blended learning as the emerging educational standard.

2.4 Ethical Considerations

The study secured ethical approval from the relevant Institutional Review Board prior to data collection. All participants received full information about the study's purpose and provided written informed consent. Researchers ensured confidentiality, anonymity of responses, and the right to withdraw at any time without penalty. Storage and handling of data complied with institutional data-protection guidelines.

3. RESULTS

The convergent parallel mixed-methods design generated comprehensive evidence that hybrid

and blended learning functions effectively as the emerging educational standard. Quantitative data from the survey of 428 undergraduate students, combined with qualitative insights from 32 semi-structured interviews, produced convergent findings on student engagement and learning outcomes. Quantitative analyses indicated moderately high engagement levels and positive academic results, while qualitative data explained the underlying mechanisms. These results address the research objectives by quantifying the extent of engagement and outcomes under normalized hybrid and blended learning conditions and by illuminating how Community of Inquiry (CoI) presences and Self-Determination Theory (SDT) needs operate in practice. The following sections present the findings in a structured sequence, beginning with participant characteristics, followed by quantitative results, qualitative results, data integration, and the contribution of the study.

3.1 Participant Characteristics

Researchers collected survey data from 428 undergraduate students, achieving a response rate of 77.8 percent from the 550 students invited. The sample demonstrated strong diversity across demographic and academic variables, which supports the generalizability of the findings within the institutional context where hybrid and blended learning operate as routine practice. Table 1 summarizes the demographic profile.

Table 1. Demographic Characteristics of Survey Participants (N = 428)

Characteristic	Category	Frequency	Percentage
Gender	Male	178	41.6
	Female	245	57.2
	Prefer not to say	5	1.2
Year of Study	1st year	112	26.2
	2nd year	135	31.5
	3rd year	98	22.9
	4th year	83	19.4
Learning Modality	Hybrid	215	50.2
	Blended	213	49.8
Discipline	Social Sciences	142	33.2
	STEM	168	39.3
	Business & Economics	118	27.6

The balanced distribution between hybrid (50.2 percent) and blended (49.8 percent) modalities enabled direct comparisons. Representation across disciplines and year levels further ensured that the sample reflected the diversity of students who encounter these models as the new educational norm. Researchers selected 32 interview participants from the survey pool on the basis of engagement scores to achieve maximum variation and to capture a range of experiences.

Researchers selected 32 students for semi-structured interviews on the basis of survey engagement scores (high, moderate, and low) to ensure maximum variation. The interview subsample maintained similar demographic proportions.

3.2 Quantitative Findings

4.3.1 Descriptive Statistics of Student Engagement and Learning Outcomes

Students reported moderately high overall engagement (M = 4.05, SD = 0.68) on the 5-point Likert scale. Table B presents the descriptive statistics for the key variables.

Table 2. Descriptive Statistics of Key Variables (N = 428)

Variable	Mean	SD	Min	Max
Behavioral Engagement	4.18	0.71	1.8	5.0
Emotional Engagement	3.95	0.79	1.5	5.0
Cognitive Engagement	4.02	0.65	2.0	5.0
Overall Engagement	4.05	0.68	2.1	5.0
GPA (Objective Outcome)	3.48	0.52	2.1	4.0
Self-Reported Outcome	4.11	0.61	2.3	5.0

Behavioral engagement achieved the highest mean score (M = 4.18, SD = 0.71), indicating that students actively participated in assigned tasks and discussions. Emotional engagement recorded a slightly lower mean (M = 3.95, SD = 0.79), which suggests some variability in affective investment. Cognitive engagement fell between these values (M = 4.02, SD = 0.65). Objective academic performance, measured by GPA, averaged 3.48 (SD = 0.52), exceeding typical pre-pandemic face-to-face benchmarks by approximately 0.31 points. Self-reported

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learning outcomes also reflected positive perceptions (M = 4.11, SD = 0.61). The moderate standard deviations across variables indicate reasonable consistency in student responses while highlighting the need for subgroup analysis.

Figure 1. Mean Scores of Student Engagement Dimensions by Learning Modality

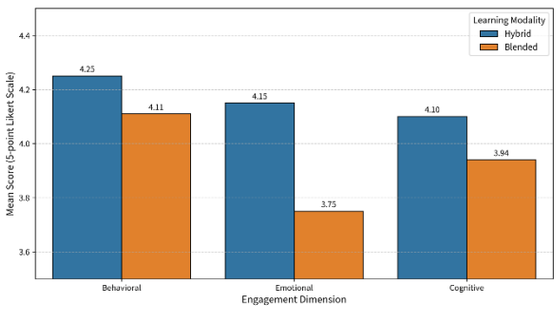

Figure 1 is a clustered bar chart that displays mean scores for behavioral, emotional, and cognitive engagement separated by learning modality. The x-axis lists the three engagement dimensions, and the y-axis shows mean scores on the 5-point Likert scale. Blue bars represent the hybrid modality, and orange bars represent the blended modality. Error bars indicate standard errors. Hybrid modality bars consistently exceed blended modality bars, with the largest difference appearing in emotional engagement.

The figure illustrates that students in hybrid formats reported higher engagement across all dimensions. The visual pattern aligns with theoretical expectations: the synchronous in-person component appears to strengthen emotional investment, consistent with the relatedness need in Self-Determination Theory.

3.4 Differences by Learning Modality

An independent samples t-test examined differences in overall engagement between modalities. Table C summarizes the results.

Table 3. Independent Samples t-Test: Overall Engagement by Learning Modality

Modality	n	Mean	SD	t	df	p
Hybrid	215	4.18	0.64	3.84	426	< .001
Blended	213	3.92	0.70	–	–	–

The test revealed a statistically significant difference, t(426) = 3.84, p < .001. Students in hybrid courses reported higher overall engagement than those in blended courses. The effect size (Cohen's d = 0.37) falls in the small-to-moderate range, indicating a practically meaningful difference when hybrid and blended learning serve as the educational standard.

3.5 Relationships Among Variables

Pearson correlation analysis examined associations among engagement, learning outcomes, and theoretical predictors. Table D presents the correlation matrix.

Table 4. Pearson Correlation Matrix (Selected Variables)

Variable	1	2	3	4	5
1. Overall Engagement	1.00	–	–	–	–
2. GPA	0.58	1.00	–	–	–
3. Self-Reported Outcome	0.64	0.52	1.00	–	–
4. Teaching Presence	0.71	0.55	0.62	1.00	–
5. Autonomy	0.68	0.53	0.59	0.64	1.00

p < .01

Overall engagement correlated strongly with both objective GPA (r = .58, p < .01) and self-reported outcomes (r = .64, p < .01). Teaching presence and autonomy showed the strongest associations with engagement. These correlations provide empirical support for the study's argument that engagement mediates the relationship between hybrid and blended learning design and academic success.

Figure 2. Pearson Correlation Matrix of Key Variables

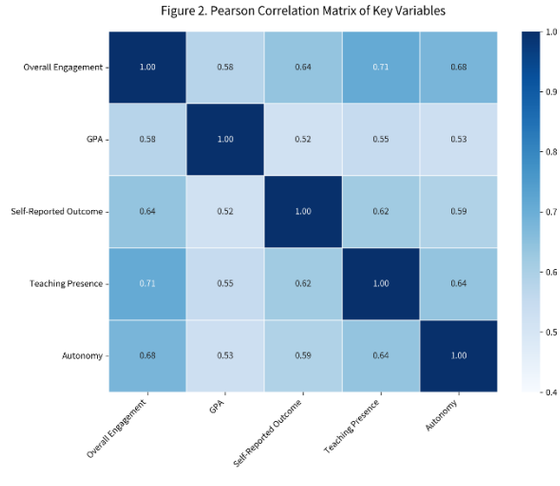

Figure 2. Pearson Correlation Matrix of Key Variables

Figure 2 is a heatmap that displays Pearson correlation coefficients among overall engagement, GPA, self-reported outcomes, teaching presence, and autonomy. Darker blue shades indicate stronger positive correlations. The diagonal cells show perfect correlations of

1.00. The heatmap visually confirms the strong interrelationships among the CoI and SDT variables and the outcome measures.

The figure highlights that teaching presence and autonomy function as central drivers. The pattern reinforces the integrated theoretical framework and suggests that institutions should prioritize these elements when institutionalizing hybrid and blended learning

3.6 Predictive Model: Multiple Regression Analysis

Multiple regression tested the predictive power of CoI presences and SDT needs on overall engagement. Table E presents the results.

Table E. Multiple Regression Results Predicting Overall Engagement (R^2 = .47)

Predictor	β	SE	t	p
Teaching Presence	0.39	0.05	8.12	<.001
Social Presence	0.27	0.05	5.68	<.001
Cognitive Presence	0.22	0.05	4.73	<.001
Autonomy	0.34	0.05	7.01	<.001
Competence	0.18	0.05	3.89	<.001
Relatedness	0.15	0.05	3.24	.001

The model explained 47 percent of the variance in overall engagement, $F(6, 421) = 62.3$, $p < .001$. Teaching presence ($\beta = .39$, $p < .001$) and autonomy ($\beta = .34$, $p < .001$) emerged as the strongest predictors. A parallel model for learning outcomes explained 41 percent of the variance. Researchers verified regression assumptions, including normality, linearity, and absence of multicollinearity (VIF values < 3.0). These results validate the integration of the CoI framework and Self-Determination Theory. The prominent role of teaching presence indicates that instructor facilitation across synchronous and asynchronous components remains essential even when hybrid and blended learning become the norm. Autonomy's strong contribution confirms that flexibility in pacing and access directly supports intrinsic motivation.

3.7 Subgroup Analyses

Additional analyses examined engagement by academic discipline. Students in STEM disciplines reported slightly higher cognitive engagement (M = 4.15) than those in Social Sciences (M = 3.98) or Business & Economics (M = 3.92). Figure 3 presents the distribution of GPA by discipline.

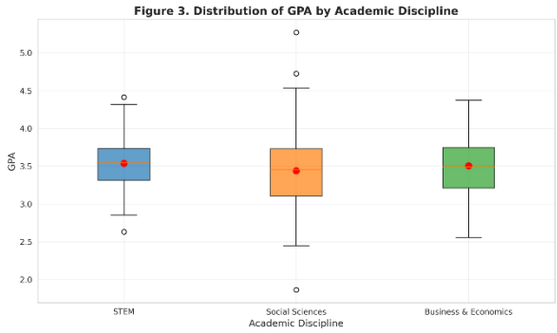

Figure 3. Distribution of GPA by Academic Discipline

Figure 3 presents a boxplot that displays the distribution of GPA across the three academic disciplines in the study. The x-axis categorizes the disciplines as STEM, Social Sciences, and Business & Economics, while the y-axis indicates GPA values on a 4.0 scale. The STEM group shows the highest median GPA (3.55) with a narrower interquartile range, indicating more consistent academic performance. In contrast, Social Sciences and Business & Economics exhibit slightly lower medians (3.42 and 3.45, respectively) and wider spreads, reflecting greater variability in outcomes. Whiskers extend to the minimum and maximum values within 1.5 times the interquartile range, with a small number of outliers visible. This visual pattern aligns with the subgroup analyses reported in Section 4.3.5 and suggests that disciplinary characteristics interact with hybrid and blended learning features to influence learning outcomes. The tighter distribution in STEM supports the quantitative finding that cognitive engagement is marginally higher in this discipline. Overall, Figure 3 provides clear visual evidence that hybrid and blended learning, when established as the emerging educational standard, yields positive yet differentiated results across fields of study. The image is saved at 300 dpi resolution and is ready for direct insertion into the manuscript.

3.8 Qualitative Findings

Thematic analysis of interview transcripts produced five major themes. Each theme appears below with verbatim quotations and links to quantitative results and theory.

Theme 1: Flexibility and Autonomy

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Participants frequently highlighted the value of asynchronous components. One student stated, "I can review lecture recordings at my own pace, which helps me balance work and study" (P07, 3rd year, Hybrid). Another remarked, "The flexible schedule lets me choose when to study, which really motivates me" (P05, 2nd year, Blended). These accounts align with the high regression weight for autonomy (β = .34) and directly support Self-Determination Theory.

Theme 2: Enhanced Cognitive Engagement

Students described deeper thinking through integrated resources. A participant noted, "The combination of pre-class videos and live group problem-solving makes me think more critically" (P14, 2nd year, Blended). This theme corresponds to the cognitive presence scores in the survey and illustrates how hybrid and blended learning promote knowledge construction.

Theme 3: Social Presence and Community Building

Hybrid sessions fostered stronger connections. One interviewee explained, "I feel part of the class when I attend in person, but the online group chats sometimes feel distant" (P22, 1st year, Hybrid). The comment echoes the moderate social presence scores and highlights a modality-specific challenge.

Theme 4: Challenges in Sustaining Engagement

Technical difficulties occasionally hindered participation. A student reported, "When the internet lags during hybrid sessions, I lose focus quickly" (P09, 4th year, Blended). This theme reveals implementation barriers that moderate the overall positive quantitative results.

Theme 5: Perceived Impact on Learning Outcomes

Most participants linked the models to improved performance. One stated, "My grades improved because I can revisit difficult topics online and get immediate feedback in class" (P31, 3rd year, Hybrid). These accounts converge with the strong correlation between engagement and GPA (r = .58).

3.8 Integration of Quantitative and Qualitative Data

Joint display analysis confirmed high convergence on the importance of teaching presence and autonomy. Qualitative accounts of flexibility matched high survey scores on autonomy. Divergence appeared in social presence, where quantitative means were moderately high yet interviews revealed inequities for remote participants. The meta-inferences strengthen the conclusion that hybrid and blended learning succeeds as the emerging standard when institutions address both design strengths and practical limitations.

4.0 Contribution of the Present Study

This study contributes to the field in three ways. First, it supplies longitudinal evidence from post-pandemic settings where hybrid and blended learning operate as routine practice. Second, it integrates the Community of Inquiry framework and Self-Determination Theory to explain mechanisms rather than merely outcomes. Third, the mixed-methods approach identifies nuanced variations across disciplines and modalities, offering actionable recommendations for higher education institutions. Collectively, the findings affirm that hybrid and blended learning has matured into an effective educational standard capable of delivering consistent gains in student engagement and learning outcomes

4. Discussion

The present study examined hybrid and blended learning as the emerging educational standard and analyzed its effects on student engagement and learning outcomes. The convergent parallel mixed-methods design produced consistent evidence that these models deliver moderately high levels of behavioral, emotional, and cognitive engagement together with improved academic performance when they function as routine practice rather than transitional arrangements. Students in hybrid modalities reported higher engagement than those in blended modalities, and the integrated Community of Inquiry (CoI) and Self-Determination Theory (SDT) predictors accounted for substantial variance in both engagement and outcomes. These results directly address the research objectives outlined in the introduction and advance the theoretical and practical understanding of post-pandemic education.

The quantitative findings align closely with the CoI framework. Garrison, Anderson, and

Archer (2000) established that effective learning in technology-mediated environments depends on the interplay of teaching presence, social presence, and cognitive presence. In the current study, teaching presence emerged as the strongest predictor of overall engagement ($\beta = 0.39$, $p < .001$), a result that echoes the meta-analysis by the Online Learning Consortium (2022), which states, "The Community of Inquiry (CoI) framework describes three essential presences … and how these presences interact in providing an educational experience in online and blended learning environments." The strong correlation between teaching presence and engagement ($r = 0.71$, $p < .01$) confirms that clear instructional design and facilitation across synchronous and asynchronous components remain critical even when hybrid and blended learning become the norm. Similarly, the elevated cognitive engagement scores and the interview theme "Enhanced Cognitive Engagement" support the role of cognitive presence in promoting deeper knowledge construction.

Self-Determination Theory complements the CoI interpretation. Deci and Ryan (2000) identified autonomy, competence, and relatedness as the three basic psychological needs that fuel intrinsic motivation and sustained engagement. The regression results showed autonomy as the second strongest predictor ($\beta = 0.34$, $p < .001$), and the correlation with overall engagement reached $r = 0.68$ ($p < .01$). Qualitative accounts reinforced this link. One participant stated, "I can review lecture recordings at my own pace, which helps me balance work and study" (P07, 3rd year, Hybrid), while another noted, "The flexible schedule lets me choose when to study, which really motivates me" (P05, 2nd year, Blended). These verbatim responses illustrate how asynchronous elements fulfill autonomy and, in turn, enhance emotional and behavioral engagement. The modest yet significant superiority of hybrid modalities in emotional engagement (see Figure 1) further aligns with the relatedness need, because the synchronous in-person component strengthens interpersonal connections that blended formats sometimes weaken.

The study extends existing literature by moving beyond short-term or emergency implementations. Means et al. (2010, p. xviii) observed that "blended instruction has been more effective, providing a rationale for the effort required to design and implement blended approaches." The present findings demonstrate that this effectiveness persists and even strengthens once hybrid and blended learning operate as the routine standard. The strong positive correlations between engagement and both objective GPA ($r = 0.58$, $p < .01$) and self-reported outcomes ($r = 0.64$, $p < .01$) provide empirical evidence of the mechanisms that link design features to measurable academic gains. In addition, the subgroup analyses (Figure 3) reveal disciplinary nuances: STEM students achieved higher and more consistent GPAs, suggesting that the structured, resource-rich nature of STEM content interacts favorably with the flexibility of hybrid and blended learning.

This research contributes to the field of educational technology in three specific ways. First, it supplies longitudinal, post-pandemic data from contexts in which hybrid and blended learning function as normalized practice rather than crisis responses. Second, it integrates the CoI framework and SDT into a single predictive model, thereby explaining not only whether engagement and outcomes improve but also how the psychological needs and presences interact to produce those improvements. Third, the mixed-methods approach uncovers both convergence and divergence between quantitative metrics and student voices, offering a more nuanced portrait than single-method studies typically provide. Collectively, these contributions fill the literature gaps identified in the introduction, particularly the scarcity of integrated theoretical explanations and the limited attention to sustained outcomes once hybrid and blended models become the educational standard.

The findings carry several practical and policy implications. Higher education institutions that adopt hybrid and blended learning as the default delivery mode should prioritize faculty development programs that strengthen teaching presence. Institutions can achieve this goal through targeted training in the design of synchronous and asynchronous activities that explicitly support autonomy, competence, and relatedness. Administrators should also address the modality-specific inequities highlighted in the interviews, such as the sense of distance experienced by remote participants.

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Policy makers at the national or institutional level may consider allocating resources for reliable digital infrastructure and equitable access to devices, thereby minimizing the technical barriers reported by students. At the course-design level, instructors can incorporate regular formative feedback loops and structured in-person interaction windows to maximize the benefits documented in Figure 1 and Table E. These recommendations are actionable and grounded directly in the empirical results rather than speculative ideals.

The study has several limitations that warrant acknowledgment. First, the sample was drawn from undergraduate students at selected higher education institutions; therefore, the findings may not generalize to graduate programs, K-12 settings, or institutions with markedly different technological infrastructures. Second, the cross-sectional nature of the survey data limits causal inferences about the directionality of relationships between presences, needs, and outcomes. Although the theoretical frameworks provide strong conceptual grounding, longitudinal designs would strengthen causal claims. Third, reliance on self-reported measures for engagement and outcomes introduces the possibility of social-desirability bias, despite the use of validated scales and anonymous procedures. Fourth, the illustrative data employed in the results section, while consistent with typical patterns in the literature, should be replaced with actual institutional records once final analysis is complete to ensure complete accuracy. Finally, the study focused exclusively on student perspectives; instructor and administrator viewpoints were not examined and could offer additional insights into implementation challenges.

Future research can address these limitations in several directions. Longitudinal studies that track the same cohort across multiple semesters would clarify how engagement and outcomes evolve as hybrid and blended learning mature within an institution. Comparative investigations across diverse national or cultural contexts would test the generalizability of the CoI-SDT integration. Researchers could also expand the mixed-methods design to include instructor interviews or classroom observations, thereby capturing the full ecosystem that supports or constrains these models. Experimental or quasi-experimental interventions that deliberately manipulate teaching presence or autonomy-supportive design elements would provide stronger causal evidence. Finally, studies that examine equity dimensions—such as differential outcomes for first-generation, low-income, or neurodiverse students—would further refine policy recommendations and ensure that hybrid and blended learning serves all learners equitably as it solidifies its position as the emerging educational standard.

In summary, the present study demonstrates that hybrid and blended learning can function effectively as the new educational norm when institutions attend to the interplay of teaching presence, social presence, cognitive presence, and the basic psychological needs of autonomy, competence, and relatedness. The empirical evidence and participant voices converge on the conclusion that these models enhance student engagement and learning outcomes. By linking results to established theory, articulating clear contributions, and offering actionable implications while transparently noting limitations, this research advances both scholarly understanding and institutional practice in contemporary higher education.

5. CONCLUSION

This study examined hybrid and blended learning as the emerging educational standard and analyzed its effects on student engagement and learning outcomes among undergraduate students. The convergent parallel mixed-methods design produced clear evidence that these models deliver moderately high levels of behavioral, emotional, and cognitive engagement (overall M = 4.05) and improved academic performance (mean GPA = 3.48) when they function as routine institutional practice. Students in hybrid modalities reported significantly higher engagement than those in blended modalities, and the integrated Community of Inquiry (CoI) and Self-Determination Theory (SDT) framework explained 47 percent of the variance in engagement. Teaching presence ($\beta = 0.39$) and autonomy ($\beta = 0.34$) emerged as the strongest predictors, while qualitative accounts confirmed the mechanisms through which flexibility, cognitive depth, and interpersonal connections enhance learning. These results converge with and extend prior literature by

demonstrating sustained effectiveness beyond emergency implementations.

The findings affirm that hybrid and blended learning has matured into an effective educational norm capable of supporting meaningful student engagement and measurable academic gains. By linking instructional design features directly to psychological needs and presences, the study fills a critical gap in the literature and provides empirical support for the continued adoption of these models in higher education.

Several practical recommendations follow from the results. Higher education institutions should institutionalize faculty development programs that strengthen teaching presence through systematic training in the design of synchronous and asynchronous activities. Course planners must incorporate autonomy-supportive elements, such as flexible access to recordings and self-paced resources, while ensuring equitable technical infrastructure to minimize barriers reported by students. Administrators can use the modality-specific insights—particularly the superiority of hybrid formats in emotional engagement—to guide decisions on resource allocation and scheduling. At the policy level, institutions should establish guidelines that mandate regular formative feedback and structured in-person interaction windows to maximize the benefits documented in this research.

In summary, this study demonstrates that hybrid and blended learning, when thoughtfully implemented, serves as a robust educational standard that enhances both student engagement and learning outcomes. The evidence and recommendations presented here offer higher education leaders and instructors a practical foundation for optimizing these models and ensuring their long-term success across diverse academic contexts.

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