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Psychological Factors Influencing Learners' Engagement and Academic Performance in Blended Learning Environments: A Systematic Review

Merfat Angawi, Zaidatun Tasir

Faculty of Educational Sciences and Technology, Universiti Teknologi Malaysia, Johor, Malaysia

Email: merfat.angawi@gmail.com, p-zaida@utm.my

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Abstract

This systematic review investigates the psychological factors that influence learners' engagement and academic performance in blended learning environments. Guided by the PRISMA framework, 26 empirical studies published between 2015 and 2025 were analysed. The synthesis identified six key psychological factors that shape learners' engagement and learning outcomes in blended learning, which are motivation, emotional engagement, psychological capital, cognitive engagement, social presence and interaction, and technology acceptance and design quality. Intrinsic motivation and emotional engagement consistently predicted academic success, while psychological capital, which includes resilience and self-efficacy, supported persistence in demanding learning contexts. Cognitive engagement, expressed through active thinking and problem-solving, and social presence, developed through peer and instructor interaction, further enhanced learning experiences. Furthermore, technology acceptance and design quality were found to influence satisfaction and engagement, especially when learning tools were reliable and user-friendly. These findings can guide educators in designing blended learning environments that promote both engagement and academic performance. This research contributes by providing a comprehensive framework that identifies the interplay of key psychological factors, such as motivation, emotional engagement, and cognitive engagement, in shaping learners' academic performance in blended learning environments. The findings offer practical insights for educators to design more effective, engaging, and supportive blended learning experiences that promote both learner engagement and academic success.

Keywords: Blended Learning, Psychological Factors, Learner's Engagement, Academic Performance, Technology Acceptance

Introduction

Blended learning has evolved from an emergency response during the pandemic into a permanent feature of higher education. Yet, how and why it improves learning outcomes continues to be debated (Chen, Luo, Feng, & Li, 2023). Beyond providing access and flexibility,

few studies suggest that learners' psychological experiences such as motivation, emotion, engagement, sense of belonging, and psychological capital play a central role in linking course design with achievement (Salim et al., 2018; Cooke et al., 2022). Evidence shows that intrinsic motivation, emotional engagement, and psychological capital are associated with stronger academic performance, while attitudes and higher-order thinking influence how learners perceive technology and course design (Liu, Ma, & Chen, 2024; Yu et al., 2025). The focus of research is therefore shifting from determining whether blended learning works to understanding which aspects of its design make it effective (Joos et al., 2022). This review also considers how behavioural, cognitive, and emotional engagement interact with the Community of Inquiry framework, and how these dimensions relate to measurable outcomes such as grades, persistence, and participation. Attention is also given to the ways engagement is measured, including the use of self-reports, learning platform data, and experience-sampling, and how these approaches shape interpretation and recommendations for course design.

The emotional experience of blended learning also differs across contexts and delivery modes. Face-to-face sessions often generate stronger positive and negative emotions, while online activities are more likely to elicit boredom or disappointment (Zhao & Shong, 2022). Factors such as workload, task difficulty, pacing, and level of interaction appear to influence these responses (Zhao & Song, 2022; Shah et al., 2024). Research with preservice teachers found that fluctuations in situational interest and task value from one session to another predict variations in emotional engagement (Lu, Xie, & Liu, 2023). Experimental studies in early education suggest that timely feedback can shape learners' attitudes, emotions, and engagement in technology-mediated activities (Muis et al., 2015). In higher education, adult and postgraduate learners often demonstrate distinctive engagement profiles that reflect life stage and work–study balance (Johnson et al., 2018).

Social interaction has also been identified as a powerful factor. In collaborative learning settings, interaction between students and instructors, together with a sense of social presence, enhances emotional engagement and supports active learning (Molinillo et al., 2018). Within the Community of Inquiry model, social, teaching, and cognitive presence mediate the link between motivation and learning outcomes, indicating that the benefits of blended learning emerge through social and cognitive processes (Law, Geng, & Li, 2019). Professional development research shows that the fulfilment of autonomy, competence, and relatedness influences how both teachers and learners experience blended training (Arifani et al., 2023). Among health-science students, emotional intelligence contributes to improved study habits through greater cognitive engagement (Iqbal et al., 2022).

Although progress has been made, the literature remains fragmented. Concepts such as emotional and cognitive engagement, attitudes, higher-order thinking, social presence, and psychological capital are often defined and measured differently. Many investigations rely on cross-sectional surveys from single institutions, limiting the generalisability of results (Acosta-Gonzaga & Ruiz-Ledesma, 2022). Recent studies conducted after the pandemic reveal a more complex picture, in which high motivation can coexist with heavy workload and stress, while satisfaction does not always predict better performance (Banihashem et al., 2023). Research in physical education and nursing also shows that disciplinary context shapes how blended learning is experienced, particularly when learning involves physical practice or

clinical work (Yu et al., 2025; Xu et al., 2023). However, The literature on psychological factors influencing learners' engagement and academic performance in blended learning remains fragmented, with key concepts often defined and measured inconsistently across studies. My study addresses this gap by providing a more unified framework that integrates emotional and cognitive engagement, social presence, and psychological capital, offering a comprehensive understanding of how these factors interact to enhance blended learning experiences. This contribution is important as it not only bridges existing inconsistencies but also incorporates the post-pandemic context, where motivation, workload, and satisfaction present a more complex dynamic, providing valuable insights for designing more effective and adaptable blended learning environments.

Therefore, this review integrates empirical research on motivation, emotion, and engagement in blended learning. Its main purpose is to identify the psychological factors that influence learners' engagement and academic performance in blended learning environments. In addition, it examines the distribution of studies that have explored these factors over time. By consolidating findings from diverse contexts, the review provides a coherent understanding that can guide educators and instructional designers in developing blended learning environments that foster meaningful engagement and enhance learning outcomes.

Method

This systematic review followed PRISMA guidelines, an established protocol that defined the population, intervention or exposure, outcomes, study designs, and procedures for search, screening, extraction, appraisal, and synthesis. Figure 1 presents the PRISMA flow diagram that summarises the study selection process.

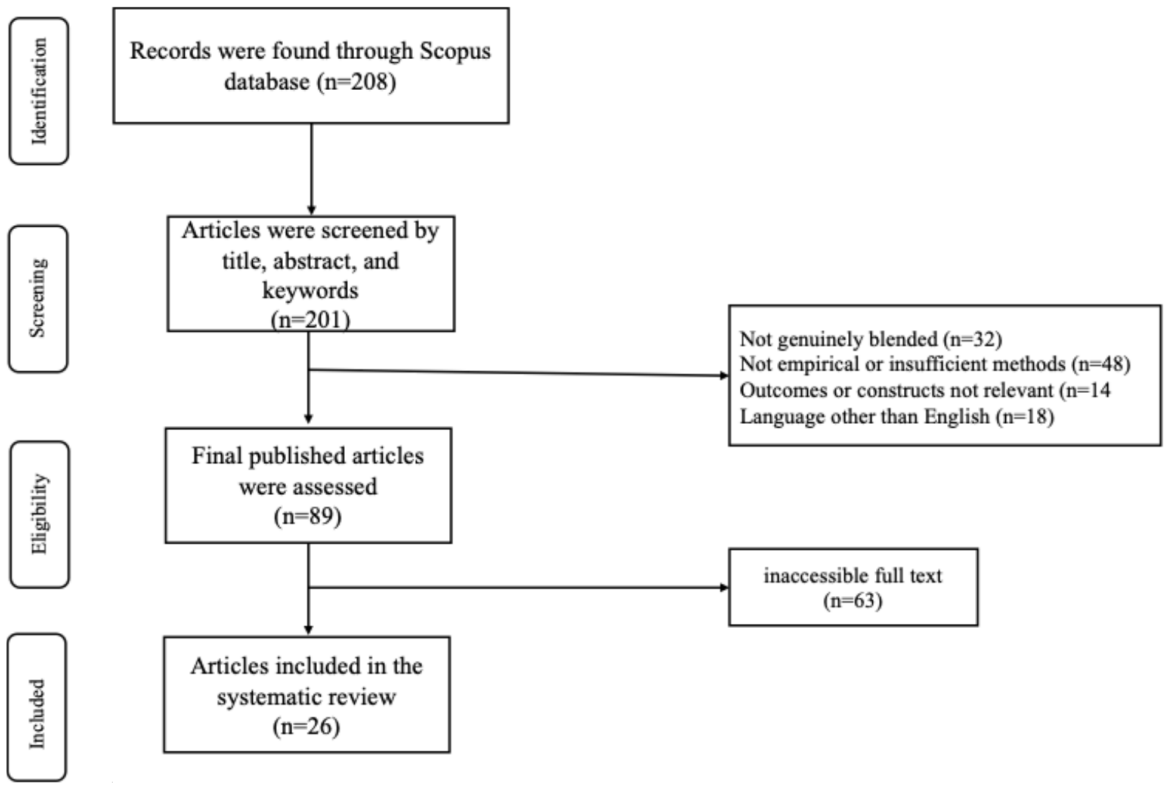

Figure 1. PRISMA

The review focused on studies that examined psychological factors such as motivation, emotion, psychological capital, attitude, technology acceptance, and design quality that influence engagement and academic performance of learners in blended learning environments. The following steps were systematically carried out to conduct the review.

Screening and Selecting Studies Based on Predefined Criteria

The database search was conducted in SCOPUS, supplemented by citation tracking and targeted hand searches of key authors and journals. The final search was completed on 28 October 2025. Boolean search strings were developed to combine population, context, and mechanism terms. An example of the search strategy was:

i. ("blended learning" OR "hybrid learning" AND ("emotion" OR "emotional" OR "motivation" OR "psychological capital" OR "engagement") AND ("university" OR "higher education").
ii. ("blended learning" OR "flipped classroom") AND (emotion* OR "motivation" OR psychology* OR "cognitive engagement" OR "behavioural engagement" OR emotional engagement*) AND ("HiED" OR "higher education" OR "undergraduate" OR "postgraduate" OR "teacher education").

The search and screening process yielded 208 records covering studies published between 2015 and 2025. Search results were exported, merged, and deduplicated before screening and 7 duplications were excluded.

Assessing the Quality of the Included Studies

Screening was conducted in two stages where titles, abstracts, and keywords were first reviewed against the inclusion criteria, and next followed by full-text assessments. The inclusion criteria were as follows;

i. Article published between 2015 and 2025
ii. Article written in English
iii. Article that met the main search keyword

Two researchers reviewed each study independently, and discrepancies were resolved through discussion. The percentage of agreement between the two reviewers on the selected studies was 85%. Records were excluded for the following reasons:

i. Not involving blended learning (n = 32),
ii. Lacking empirical or methodological adequacy (n = 48),
iii. Absence of relevant constructs or outcomes (n = 14),
iv. Non-English publication (n = 18),
v. Inaccessible full text (n = 63).

After applying the inclusion and exclusion criteria, 26 studies were retained for qualitative synthesis. Although most studies met the inclusion criteria, the review also noted variations in methodological quality. The selected articles included cross-sectional studies using structural equation modelling or partial least squares analysis, mixed-methods studies with thematic interpretation, one multilevel study, one qualitative perspectives study, and one experimental study.

Extracting Data from Each Study

Data were extracted systematically using a literature matrix in Microsoft Excel that recorded the author, year of publication, study context, key constructs, and main findings of each article. The context included both the geographical location and the educational setting, such as the level of study (for example, university), as well as the type of blended learning design employed.

The extracted data focused on identifying psychological factors that influence students' engagement and academic performance in blended learning environments. Relationships among these factors were also examined to determine how they interact in shaping engagement and performance outcomes. Although the review primarily concentrated on higher education, one experimental study involving K–12 learners was included as an exceptional case to demonstrate how immediate feedback can influence emotion and engagement in technology-mediated learning.

Synthesising the Data

Due to the diversity in research designs, contexts, and measured outcomes, a narrative synthesis approach was employed. As noted by Lisy and Porritt (2016), narrative synthesis is one of the common methods used in systematic literature reviews because it extends beyond describing and summarising findings to provide interpretive insights across studies.

The findings were organised according to major psychological mechanisms, namely motivation, emotion, psychological capital, attitude, and engagement subtypes. Thematic patterns and relationships among these mechanisms were identified and compared across studies to determine consistencies and contextual variations in their effects on engagement and academic performance. The synthesis produced a conceptual understanding of how psychological mechanisms shape engagement and performance in blended learning environments.

Results

The findings from the systematic review reveal several psychological factors that consistently influence engagement and academic performance in blended learning environments. The studies reviewed were organised according to their context, design, constructs, and findings, which together highlight the interplay between motivation, emotion, psychological capital, cognitive engagement, and social presence. The studies included in this review are summarised in Table 1, which maps their key contexts, constructs, and findings.

Motivation emerged as a central theme across multiple studies. Both intrinsic and extrinsic motivation were found to influence students' willingness to participate and persist in blended courses. Intrinsic motivation, which reflects learning driven by personal interest or satisfaction, was consistently associated with better academic performance (Liu et al., 2024; Yu et al., 2025). In contrast, extrinsic motivation, driven by rewards or external expectations, showed a mixed pattern of influence. Some studies indicated that when extrinsic motivation operated alongside intrinsic interest, it could indirectly support learning outcomes (Liu et al., 2024).

Table 1
Literature Mapping

Study	Context/Setting	Key Constructs	Findings
Yu et al. (2025)	Chinese universities; Physical Education BL courses	F2F Interaction; Course Design; Learning Experience; Attitude; Learning Engagement in PE	Attitude and F2F interaction positively predicted engagement; attitude mediated effects of F2F, course design, and learning experience on engagement.
Chambers & Whitfield (2025)	Postgraduate nursing	Drivers/barriers of online engagement; design quality; workload; tech reliability	Across studies, design quality, clear structure, and social presence drove engagement; workload, tech friction, and limited feedback reduced it; recommends scaffolded interaction and consistent support.
Liu et al. (2024)	Chinese university	Intrinsic & Extrinsic Motivation; Emotional Engagement; Psychological Capital; Academic Performance	Intrinsic motivation, emotional engagement, and psychological capital positively predicted performance; extrinsic motivation had a negative direct effect but a positive total effect via intrinsic motivation.
Shah et al. (2024)	Postgraduate health professions (teachers' perspectives)	Instructor workload; digital competence; motivation; institutional support; affect (stress/fatigue)	Teachers valued BL's flexibility but cited heavy workload, platform issues, and uneven support; professional development and clearer BL structures improved confidence and learner engagement.
Banihashem et al. (2023)	Dutch university	Workload; Stress; Well-being, motivation, Satisfaction; Perceived Teaching/Learning Performance	High workload, low well-being, high motivation reported; attitudes/emotions linked to perceived performance; satisfaction with activities did not mediate effects.
Lu et al. (2023)	China; preservice teacher BL course	Within emotional engagement (e.g., situational interest, task value)	Situational and individual factors predicted fluctuations in emotional engagement across BL sessions.
Xu et al. (2023)	Nursing undergraduates in BL	Cognitive Engagement; BL activities	Mapped cognitive engagement patterns among nursing undergraduates in BL; identified areas for instructional support.
Chen et al. (2023)	Chinese university; BL with LMS	TAM (PEU/PU), Emotional Experience, Social Belonging , Higher Order Thinking, and Satisfaction	Higher order thinking was the only significant single mediator; a serial path (Emotions Belonging Higher order thinking) mediated TAM and Satisfaction.
Arifani et al. (2023)	Indonesia; blended professional training for EFL teachers	Basic Psychological Needs (autonomy, competence, relatedness)	Teachers and learners showed similar views overall; learners perceived lower fulfilment on relatedness/competence in some online facets (e.g., online care).
Zhao & Song (2022)	Chinese university; designed BL course	Positive/Negative Emotions across F2F vs Online; Factors influencing emotions	F2F emotions more intense (both positive and negative) than online; boredom/disappointment higher online; 11 emotion drivers identified (e.g., difficulty, workload, interaction).

Acosta et al. (2022)	Hybrid learning during COVID 19	Students and emotional Engagement	Reported relationships between specific emotions and engagement in emerging hybrid settings.
Iqbal et al. (2022)	China; health sciences students in BL during COVID-19	Emotional Intelligence; Cognitive Engagement; Study Habits	EI positively predicted study habits; cognitive engagement mediated Habits.
Cooke et al. (2022)	Postgraduate anaesthesia (pandemic & beyond)	BL continuity; simulation; community of practice; learner motivation	Structured BL (asynchronous + targeted face-to-face/sim) maintained engagement during/after pandemic; planned interaction and relevant cases boosted motivation, while screen fatigue required pacing.
Joos et al. (2022)	Postgraduate oral medicine/surgery (LMIC concept)	Access & equity; synchronous/asynchronous mix; peer interaction	BL proposed as scalable approach in LMICs; peer exchange and modular content supported engagement, contingent on infrastructure, training, and local facilitation.
Fisher et al. (2021)	Higher education (flipped & BL)	Engagement; performance; satisfaction	Flipped/BL approaches were positively associated with student engagement, performance, and satisfaction; alignment between online and in-class tasks was critical.
Law et al. (2019)	Blended environment	Enrolment; Motivation; Learning Performance; Social/Teaching/Cognitive Presence	Social, teaching and cognitive presence mediated links from motivation to learning performance.
Dwivedi et al. (2019)	HE BL (online content engagement)	Content quality; interactivity; usefulness/ease of use; self-efficacy; satisfaction	Perceived content quality and interactivity strongly predicted engagement and satisfaction; digital self-efficacy amplified effects; usability issues undermined participation.
Westerlaken et al. (2019)	Postgraduate medical education (interactive BL)	BL design; interactivity; social presence; cognitive & emotional engagement	Interactive BL activities and strong teacher presence fostered participation and positive emotional engagement; time and workload were common friction points.
Molinillo et al. (2018)	Social web collaborative learning (SWBCL) across two universities	student & Teacher Interaction; Social Presence; Emotional Engagement; Active Collaborative Learning	Interactions and social presence positively influenced emotional engagement, which in turn supported active collaborative learning.
Johnson et al. (2018)	Hybrid postgraduate program	Learner engagement; adult learner perspectives	Adult learners reported factors shaping engagement in hybrid postgraduate study.
Salim et al. (2018)	Malaysian family medicine	Acceptability; usability; social presence;	Trainees reported positive attitudes and perceived relevance; connectivity/time constraints dampened engagement;

	postgraduate training (pilot BL)	emotional responses (confidence/frustration)	mentorship and clearer schedules improved emotional buy-in.
Johnson et al. (2018)	Adult learners in hybrid postgraduate program	Behavioral/cognitive/emotional engagement; relevance; autonomy; work–study balance	Engagement rose with autonomy, relevance to practice, and supportive tutors; competing time demands and unclear expectations impeded sustained engagement.
Munro et al. (2018)	Graduate e-learning for self-management support (BL intro)	Confidence/self-efficacy; perceived relevance; engagement	BL cohort showed improved confidence and perceived applicability; structured reflection and practice-linked tasks supported ongoing engagement.
Morton et al. (2016)	Undergraduate medical education (optimizing engagement in BL)	Active learning; feedback; interactivity; emotional engagement	Flipped/active strategies, timely feedback, and interactive media increased behavioural and emotional engagement; poorly aligned online tasks reduced it.
Tay (2016)	Blended learning course (general HE)	Instructor presence; collaborative tasks; cognitive & emotional engagement	Instructor immediacy and collaborative activities were linked to higher engagement; passive online content correlated with weaker emotional involvement.
Muis et al. (2015)	Kindergarten literacy with tech mediated immediate feedback	Immediate feedback; Attitudes; Emotions; Engagement; Literacy outcomes	Immediate feedback influenced attitudes, emotions, engagement and literacy learning outcomes.

Emotional engagement also played a significant role in shaping students' learning experiences. Studies demonstrated that positive emotions such as enjoyment and interest were linked to higher engagement, while negative emotions such as frustration and boredom tended to reduce persistence, particularly in online components (Zhao & Song, 2022; Lu et al., 2023). Research during the pandemic further highlighted that emotions and perceived workload jointly affected motivation and well-being in hybrid settings (Banihashem et al., 2023).

Psychological capital, which encompasses resilience, optimism, hope, and self-efficacy, was another strong predictor of engagement and persistence. Learners with higher levels of psychological capital were better able to manage the challenges of blended courses and sustain their motivation over time (Liu et al., 2024; Iqbal et al., 2022). This finding was particularly evident in demanding programmes such as nursing and teacher education, where confidence and emotional stability contributed to learning continuity (Xu et al., 2023; Arifani et al., 2023).

Cognitive engagement, which involves effortful thinking, reflection, and problem-solving, was frequently associated with improved learning outcomes. Studies showed that active learning strategies, such as online discussions, feedback, and interactive simulations, promoted deeper understanding and enhanced performance (Morton et al., 2016; Fisher et

al., 2021). Students who demonstrated higher cognitive engagement were also more capable of transferring knowledge to new contexts and developing stronger study habits (Iqbal et al., 2022; Xu et al., 2023).

Social presence and interaction were also identified as critical to successful blended learning experiences. Meaningful communication among students and between students and instructors enhanced both emotional and cognitive engagement (Molinillo et al., 2018; Law, Geng, & Li, 2019). The sense of belonging created through collaboration and instructor support mitigated feelings of isolation and contributed to sustained participation (Salim et al., 2018; Westerlaken et al., 2019). Studies further emphasised that design quality, workload balance, and technology reliability influenced how effectively social presence could be established (Chambers & Whitfield, 2025; Dwivedi et al., 2019).

Overall, the synthesis of 26 studies demonstrates that engagement and academic success in blended learning are shaped by an interconnected set of psychological factors. Motivation, emotion, psychological capital, cognitive engagement, and social presence function collectively to support learning outcomes. The relationship between these constructs and course design highlights the importance of creating learning environments that promote emotional well-being, intellectual challenge, and meaningful interaction. Table 2 summarizes the key psychological factors that influence engagement and academic performance in blended learning.

Table 2
Psychological Factors Influencing Engagement and Academic Performance in Blended Learning

Theme / Psychological Factor	**Supporting Studies**	**Implications for Blended Learning Design**
Motivation	Liu et al. (2024); Yu et al. (2025); Fisher et al. (2021); Cooke et al. (2022); Joos et al. (2022)	Incorporate autonomy, relevance, and authentic learning tasks to foster intrinsic motivation. Blend online and face-to-face activities that promote purpose and meaningful participation.
Emotional Engagement	Zhao & Song (2022); Lu et al. (2023); Banihashem et al. (2023); Salim et al. (2018); Muis et al. (2015)	Provide timely feedback, supportive communication, and emotionally engaging content. Use pacing, variety, and active facilitation to reduce anxiety and maintain learners' focus.
Psychological Capital	Liu et al. (2024); Iqbal et al. (2022); Xu et al. (2023); Arifani et al. (2023)	Strengthen students' confidence and coping capacity through scaffolded learning tasks, mentoring, and reflective activities that build self-efficacy and resilience.
Cognitive Engagement	Morton et al. (2016); Fisher et al. (2021); Chen et al. (2023); Xu et al. (2023)	Integrate problem-solving, case-based tasks, and simulations that encourage critical thinking and sustained mental effort. Provide feedback that reinforces understanding.
Social Presence and Interaction	Molinillo et al. (2018); Law et al. (2019); Westerlaken et al.	Design structured opportunities for collaboration, such as group projects and

	(2019); Chambers & Whitfield (2025); Salim et al. (2018)	discussions, and maintain strong instructor presence across online and face-to-face sessions.
Technology Acceptance and Design Quality	Dwivedi et al. (2019); Chen et al. (2023); Shah et al. (2024); Chambers & Whitfield (2025); Banihashem et al. (2023)	Ensure that digital platforms are stable and easy to navigate. Manage workload through clear schedules, supportive tools, and alignment between pedagogy and technology.

Figure 2 illustrates the distribution of studies according to the psychological factors examined in blended learning research.

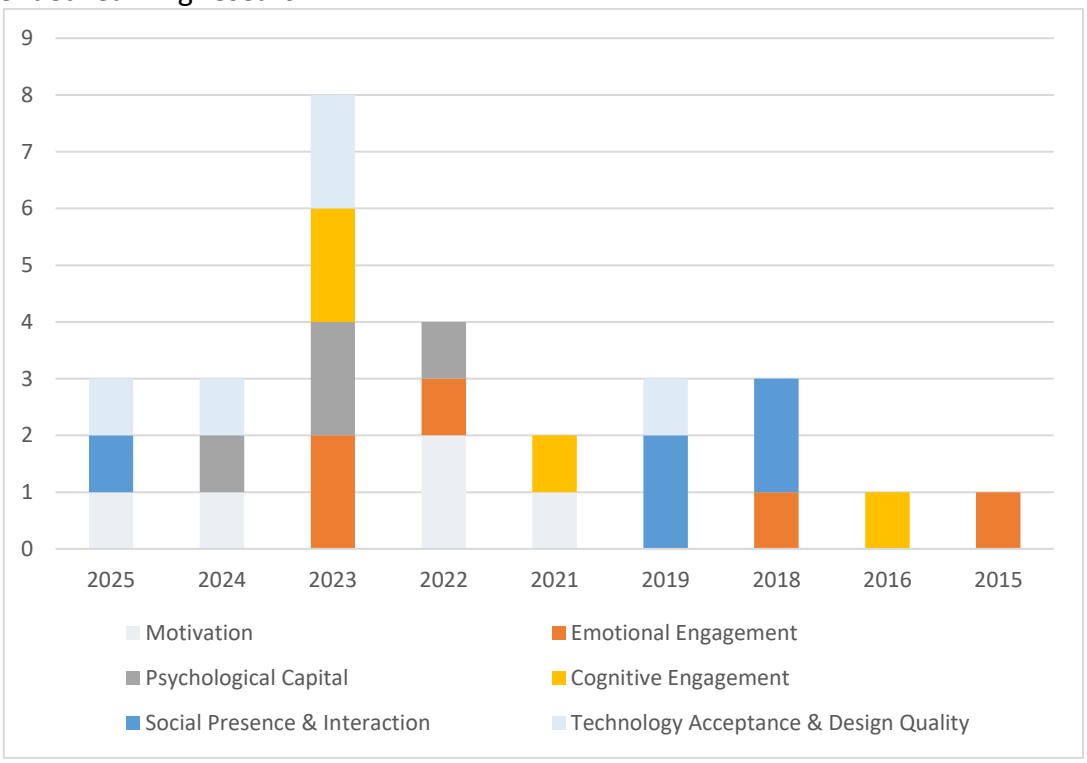

Figure 2. Distribution of Studies Examining Key Psychological Factors Influencing Engagement and Academic Performance in Blended Learning Environments (2015–2025)

The number of studies increased noticeably after 2021, with the highest concentration in 2023. Motivation, cognitive engagement, and technology acceptance were the most frequently examined factors, followed by emotional engagement and psychological capital. Earlier studies placed more focus on social presence and interaction, while recent work has shifted toward understanding how motivational and technological elements influence engagement and performance.

Discussion

The findings of this review paper suggest that blended learning, when designed and implemented effectively, has the potential to enhance various aspects of student engagement and academic performance. Motivation emerged as one of the most dominant psychological factors across the reviewed studies. Intrinsic motivation was consistently linked with deeper engagement and stronger academic performance (Liu et al., 2024; Yu et al., 2025; Fisher et al., 2021). When learners are driven by genuine interest and personal relevance,

they are more likely to sustain participation and perform better. Extrinsic motivation, while sometimes beneficial, was found to enhance learning only when it complemented intrinsic goals (Liu et al., 2024). This finding suggests that blended learning designs should integrate autonomy and relevance to strengthen intrinsic motivation, supported by authentic activities that promote purposeful learning (Cooke et al., 2022; Joos et al., 2022).

Emotional engagement was another consistent predictor of students' learning experiences. Positive emotions such as enjoyment, curiosity, and satisfaction were associated with persistence, while negative emotions such as frustration and boredom reduced participation (Zhao & Song, 2022; Lu et al., 2023; Banihashem et al., 2023). Emotional fluctuations were often linked to course workload, task complexity, and online isolation. In contrast, emotionally supportive feedback and varied, interactive content were shown to enhance engagement and retention (Salim et al., 2018; Muis et al., 2015). These findings highlight the importance of integrating emotionally responsive design elements into blended courses to maintain interest and reduce fatigue.

Psychological capital also played a crucial role in influencing learners' ability to cope with challenges in blended learning. Resilience, optimism, and self-efficacy were identified as important predictors of persistence and success, particularly in demanding fields such as teacher education and nursing (Iqbal et al., 2022; Xu et al., 2023; Arifani et al., 2023). Students with higher psychological capital were more capable of managing workload and adapting to the technological and social demands of blended learning (Liu et al., 2024). Course designs that provide mentorship, reflective exercises, and scaffolding can strengthen learners' self-efficacy and help them sustain motivation over time.

Cognitive engagement, which involves sustained mental effort and problem-solving, was also highlighted as essential for learning in blended environments. Studies found that activities such as interactive simulations, discussion-based tasks, and feedback-driven reflection enhance deep learning and knowledge transfer (Morton et al., 2016; Chen et al., 2023; Fisher et al., 2021). However, poorly structured online components can weaken concentration and learning outcomes (Xu et al., 2023). These findings suggest that cognitive engagement must be intentionally cultivated through structured problem-solving opportunities and timely feedback to support deeper understanding.

Social presence and interaction were found to underpin much of the emotional and cognitive engagement reported across studies. Meaningful communication between peers and instructors fosters belonging and collaboration, which in turn enhances engagement (Molinillo et al., 2018; Law et al., 2019; Westerlaken et al., 2019). Social presence was particularly important for sustaining motivation in online sessions where students might otherwise feel disconnected. Effective instructor presence and collaborative activities, such as group projects and synchronous discussions, were shown to improve both participation and satisfaction (Chambers & Whitfield, 2025; Salim et al., 2018).

Technology acceptance and design quality were also vital in shaping satisfaction and performance. When learning technologies were reliable, easy to use, and pedagogically aligned, engagement increased (Dwivedi et al., 2019; Chen et al., 2023). Conversely, heavy workload, poor usability, and technical issues reduced motivation (Shah et al., 2024;

Banihashem et al., 2023). A clear course structure, accessible digital tools, and adequate technical support enhanced learning quality (Chambers & Whitfield, 2025).

The distribution of studies examining these psychological factors from 2015 to 2025 show a steady growth in research attention, with a marked increase after 2021. This surge reflects the widespread adoption of hybrid and blended models following the pandemic, which led to intensified inquiry into learner motivation, emotions, and cognitive engagement (Liu et al., 2024; Banihashem et al., 2023; Lu et al., 2023). The peak in 2023 indicates that recent work has moved toward exploring the combined influence of motivation, psychological capital, and design quality. Earlier studies focused more on social presence and emotional engagement (Molinillo et al., 2018; Law et al., 2019), while newer research integrates technological and psychological perspectives (Chen et al., 2023; Shah et al., 2024). This development shows how the field has evolved from understanding emotional and social processes to addressing the broader psychological foundations of blended learning.

Overall, the review demonstrates that engagement and performance in blended learning depend on the alignment of psychological, pedagogical, and technological dimensions. Motivation and emotion drive participation, while psychological capital and cognitive engagement sustain learning. Social presence and technology acceptance reinforce these mechanisms, helping learners remain connected and confident. When these factors are considered together, blended learning can provide a balanced, supportive, and effective environment that promotes meaningful learning for diverse student groups.

Limitations and Suggestions for Future Research

This review provides valuable insights into the psychological factors that influence engagement and performance in blended learning environments, yet several limitations should be acknowledged. Many of the studies included were cross-sectional, which limits the ability to establish causal relationships. Longitudinal research is needed to examine how blended learning shapes engagement, persistence, and performance over time, especially as students' progress through different stages of their academic development.

A second limitation concerns the scope of existing studies. Most were conducted within single institutions or specific disciplines, making it difficult to generalise the findings to broader educational settings. Future research should include multiple institutions and a variety of academic fields to strengthen the reliability and applicability of the conclusions.

Although this review examined key psychological factors such as motivation, emotion, and psychological capital, there is still limited understanding of how these factors interact with one another or how they are influenced by course design and technological features. Future research should explore these relationships more deeply to identify the mechanisms that underpin effective engagement in blended learning. Studies could also examine how different technological tools—such as virtual classrooms, interactive simulations, and AI-based learning systems—shape students' motivation and emotional responses.

Research involving more diverse populations is also needed. Including students from varied cultural backgrounds, learning styles, and levels of technological access will help reveal how blended learning can be adapted for inclusivity and equity. Further investigation into the

dynamics of teacher–student and peer interaction is equally important. Exploring how synchronous and asynchronous forms of communication affect emotional and cognitive engagement can provide practical insights for improving online course design. Finally, adopting interdisciplinary frameworks that integrate social, cognitive, and emotional perspectives can lead to a more comprehensive understanding of engagement and inform evidence-based educational policies and practices.

Conclusions

Blended learning continues to demonstrate strong potential as an approach that enhances engagement and academic performance by combining in-person and online experiences. The evidence highlights the importance of psychological factors such as motivation, emotional engagement, psychological capital, cognitive engagement, and social presence in shaping effective learning experiences. Intrinsic motivation and emotional engagement consistently predict success, suggesting that learners who are mentally and emotionally involved in their studies achieve better outcomes. Psychological capital, including resilience and self-efficacy, also supports learners in coping with the challenges of blended courses, particularly in demanding fields such as nursing and teacher education. The effectiveness of blended learning depends on purposeful course design that nurtures cognitive and emotional engagement, fosters social presence, and supports learners' psychological well-being. The integration of technology plays an important role, as students' perceptions of ease of use and usefulness influence satisfaction and performance. A supportive learning environment is strengthened when both teachers and students hold positive perceptions of blended learning and actively engage in the process.

The current body of research remains limited in its scope and generalisability, especially due to the small number of longitudinal and multi-institutional studies. In this view, this study advances knowledge by offering a comprehensive framework that integrates key psychological factors—such as motivation, emotional and cognitive engagement, psychological capital, and social presence—into a unified understanding of how they influence blended learning outcomes. By synthesizing these dimensions, my research fills a significant gap in the literature, where existing studies often treat these factors in isolation or with inconsistent definitions. Furthermore, my study provides practical value by highlighting how purposeful course design that nurtures emotional and cognitive engagement, fosters social presence, and supports psychological well-being can optimize blended learning environments. The findings also emphasize the importance of technology in shaping student satisfaction and performance, offering valuable insights for educators aiming to create more inclusive and effective blended learning experiences. This contribution is particularly valuable given the fragmented nature of current research and the need for more multi-institutional, longitudinal studies that offer a fuller picture of blended learning's potential.

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