

## **Ghost Attendance in Digital Learning: The Phenomenon of Pseudo Attendance and Academic Participation Crisis**

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### **Abstrak**

Fenomena ghost attendance atau kehadiran semu dalam pembelajaran digital merupakan persoalan serius yang semakin meluas seiring dengan ekspansi pendidikan berbasis teknologi. Kehadiran semu terjadi ketika peserta didik secara teknis terdaftar dan "hadir" dalam sesi pembelajaran daring, namun tidak terlibat secara aktif, kognitif, maupun emosional dalam proses pembelajaran. Artikel ini mengkaji secara sistematis faktor-faktor pendorong ghost attendance, dampaknya terhadap kualitas pembelajaran, serta strategi intervensi yang efektif. Melalui tinjauan literatur sistematis terhadap 20 studi terpilih yang dipublikasikan antara 2021 hingga 2024, penelitian ini mengidentifikasi lima dimensi utama fenomena ghost attendance: disengagement digital, defisit literasi digital, distraksi lingkungan, ketidaksesuaian desain pembelajaran, dan krisis motivasi intrinsik. Temuan menunjukkan bahwa ghost attendance bukan sekadar persoalan teknis atau kedisiplinan, melainkan refleksi dari krisis pedagogis yang lebih mendalam dalam ekosistem pembelajaran digital. Implikasi penelitian ini mencakup rekomendasi kebijakan untuk redesain strategi pembelajaran digital yang berpusat pada keterlibatan aktif dan autentik peserta didik.

**Kata Kunci:** *ghost attendance; kehadiran semu; keterlibatan akademik; pembelajaran digital; partisipasi peserta didik*

### **Abstract**

*The phenomenon of ghost attendance, or pseudo-attendance, in digital learning is a serious and increasingly prevalent issue accompanying the expansion of technology-based education. Ghost attendance occurs when students are technically registered and "present" in online learning sessions but are not actively, cognitively, or emotionally engaged in the learning process. This article systematically examines the driving factors behind ghost attendance, its impact on learning quality, and effective intervention strategies. Through a systematic literature review of 20 selected studies published between 2021 and 2024, this study identifies five key dimensions of the ghost attendance phenomenon: digital disengagement, digital literacy deficits, environmental distractions, learning design mismatches, and intrinsic motivation crises. The findings reveal that ghost attendance is not merely a technical or disciplinary issue but rather a reflection of a deeper pedagogical crisis within the digital learning ecosystem. The implications of this research include policy recommendations for redesigning digital learning strategies centered on active and authentic student engagement..*

**Keywords:** *academic engagement; academic participation crisis; digital learning; ghost attendance; pseudo-attendance*

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### **Introduction**

The unprecedented global shift to digital learning environments, accelerated dramatically by the COVID-19 pandemic, has brought to light a previously underexamined phenomenon: ghost attendance.

Pokhrel and Chhetri (2021) documented how the abrupt transition from face-to-face to emergency remote learning fundamentally altered the dynamics of student participation, revealing structural vulnerabilities in how educational institutions conceptualize and measure student presence. In traditional classroom settings, physical attendance serves as a reasonable, though imperfect, proxy for educational engagement. In digital environments, however, the mere act of logging into a virtual classroom tells us remarkably little about the quality or authenticity of a student's educational experience.

Ghost attendance, a term gaining traction in educational research literature, describes the condition in which students are nominally "present" in digital learning spaces while remaining substantively absent in terms of cognitive engagement, emotional investment, and active participation. Khlaif et al. (2021) documented this phenomenon in their examination of student engagement during emergency remote learning, finding that a significant proportion of students who appeared online were not meaningfully participating in learning activities. This disconnect between formal attendance and authentic engagement represents one of the most pressing challenges for digital education management in the post-pandemic era.

The phenomenon is not simply a product of student disinterest or poor academic discipline. Rather, it emerges from a complex interplay of technological, pedagogical, psychological, and socioeconomic factors. Capone and Lepore (2021) employed fuzzy cognitive analysis to map the intricate relationships between engagement, motivation, and participation in digital learning contexts, revealing that these variables are deeply interconnected and mutually reinforcing. When any one element fails, the entire system of student engagement can collapse, producing the conditions that enable ghost attendance to flourish.

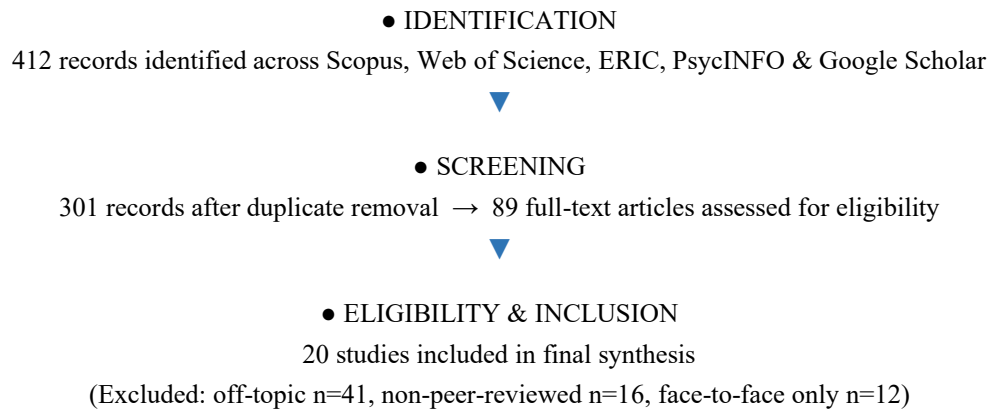
This article addresses several critical gaps in the existing literature on ghost attendance and digital learning participation. First, while studies have examined aspects of online student engagement in isolation, few have integrated these findings into a comprehensive theoretical framework specifically addressing ghost attendance as a distinct pedagogical phenomenon. Second, the existing literature tends to treat ghost attendance as a symptom of student deficit, rather than examining how institutional practices, learning design choices, and systemic inequities contribute to its emergence (Nkomo et al., 2021). Third, there is an urgent need for evidence-based intervention strategies that can be practically implemented by educational managers and practitioners. The primary objective of this article, therefore, is to synthesize existing evidence on ghost attendance in digital learning, develop a theoretical framework for understanding its causes and consequences, and propose actionable recommendations for educational policy and practice.

## **Methodology**

This study employs a systematic literature review (SLR) methodology to synthesize existing knowledge on ghost attendance and academic participation in digital learning environments. The SLR approach was selected for its capacity to provide a rigorous, transparent, and reproducible synthesis of dispersed evidence across multiple disciplinary fields. The review protocol was designed following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to ensure methodological rigor and reporting transparency.

Literature searches were conducted across five major academic databases: Scopus, Web of Science, ERIC, PsycINFO, and Google Scholar. Search strings combined terms related to the phenomenon of ghost attendance, digital learning participation, student engagement, and online disengagement. Temporal boundaries were set from January 2021 to December 2024, reflecting the post-pandemic period during which digital learning became normalized and its challenges more acutely felt. An initial pool of 412 records was identified. Following removal of duplicates and application of inclusion and exclusion criteria, 20 studies were retained for in-depth analysis and thematic synthesis.

Inclusion criteria required that studies: (1) directly addressed student engagement, participation, or disengagement in digital or blended learning contexts; (2) provided empirical data or comprehensive theoretical analysis relevant to ghost attendance or pseudo-participation; (3) were published in peer-reviewed outlets; and (4) were available in English. Studies focusing exclusively on face-to-face learning without comparative digital components were excluded. Thematic synthesis was used as the primary analytical approach, with themes identified through iterative coding of extracted data from the selected studies.



**Figure 1. PRISMA-Based Systematic Review Flow for Ghost Attendance in Digital Learning**

## Results and Discussion

This section presents the empirical findings and thematic analysis derived from the systematic review, critically examining how digital technologies intersect with cognitive processes. The compiled evidence highlights a profound transformation in student engagement, beginning with the underlying neurological pathways that govern modern learning behavior.

### A. *Understanding Ghost Attendance: Conceptual Dimensions*

The systematic review reveals that ghost attendance in digital learning is a multi-dimensional phenomenon that cannot be reduced to a single cause or manifestation. Drawing from the reviewed literature, this study identifies five primary conceptual dimensions that collectively constitute the ghost attendance phenomenon. These dimensions are not mutually exclusive; rather, they interact dynamically to produce the conditions under which students are formally present but substantively absent from the learning process.

The first dimension, digital disengagement, refers to students' failure to interact meaningfully with digital learning content, peers, or instructors during synchronous or asynchronous sessions. Nkomo et al. (2021) show that disengagement in online contexts is qualitatively different from disengagement in face-to-face classrooms: reduced social accountability, greater anonymity, and the ease of multitasking make it easier for learners to withdraw without immediate social consequences. These features mean that disengagement online often appears as passivity, fragmented attention, or "ghost" presence (logged in but not cognitively involved), and it requires different detection and re-engagement strategies than those used in physical classrooms.

The second dimension, digital literacy deficits, captures the insufficient technical and metacognitive skills that prevent some students from navigating platforms, tools, and digital workflows effectively. Yu (2022) finds that levels of digital competence strongly predict online participation, learners with low digital literacy are more likely to attend passively, miss interactive opportunities, or become frustrated and drop out. Together, these two dimensions interact: digital-literacy gaps can deepen disengagement, while persistent disengagement limits opportunities to build the very skills needed for effective digital learning, creating a self-reinforcing cycle that instructors and designers must address through scaffolded supports and targeted digital-skill interventions.

The third dimension, environmental distractions, encompasses the physical, social, and technological interruptions that fragment student attention during digital learning sessions. Pérez-Juárez et al. (2023) identified digital distractions as a primary threat to sustained engagement in higher education digital learning, with social media, messaging platforms, and entertainment content competing directly with educational content for student attention. The fourth dimension, learning design mismatch, refers to the failure of pedagogical approaches designed for face-to-face settings to translate effectively to digital contexts. Rapanta et al. (2021) argued that post-pandemic higher education faces the critical challenge of redesigning pedagogy, not merely digitizing existing practices, to sustain meaningful student engagement. The fifth and final dimension, intrinsic motivation crisis, describes the erosion of students'

internal drive to participate in learning, which is frequently exacerbated by the isolation, monotony, and reduced social connection characteristic of digital learning environments (Capone & Lepore, 2021).

**Table 1. Five Dimensions of Ghost Attendance in Digital Learning**

<b>Dimension</b>	<b>Key Characteristics</b>	<b>Contributing Factors</b>	<b>Representative Studies</b>
Digital Disengagement	Low interaction, passive consumption, camera-off behavior	Anonymity, reduced social accountability, platform fatigue	Nkomo et al. (2021); Khlaif et al. (2021)
Digital Literacy Deficit	Poor platform navigation, technical frustration, avoidance	Unequal access to training, socioeconomic disparity	Yu (2022); Heidari et al. (2021)
Environmental Distraction	Multi-tasking, social media use, home interruptions	Uncontrolled home environment, competing stimuli	Pérez-Juárez et al. (2023); Chiang et al. (2022)
Learning Design Mismatch	Lecture-heavy delivery, low interactivity, passive tasks	Digitized, not redesigned, pedagogy, large class sizes	Rapanta et al. (2021); Johnson et al. (2022)
Motivation Crisis	Low self-regulation, academic apathy, learned helplessness	Social isolation, reduced instructor presence, lack of feedback	Capone & Lepore (2021); Ratinho & Martins (2023)

### B. *The Scope and Impact of Ghost Attendance*

Ghost attendance exerts far-reaching consequences across multiple levels of the educational ecosystem, from individual student outcomes to institutional quality and systemic educational equity. At the individual level, ghost attendance is strongly associated with inferior learning outcomes, reduced academic achievement, and heightened dropout risk. Yagci (2022) demonstrated through educational data mining that patterns of passive or disengaged participation in online learning environments are among the strongest predictors of poor academic performance, underscoring the direct relationship between authentic participation and learning outcomes.

At the classroom and institutional level, widespread ghost attendance disrupts the social dynamics that are essential to productive learning communities. Hehir et al. (2021) found that developing student connectedness under remote learning conditions requires deliberate and sustained institutional effort, as digital environments do not naturally reproduce the informal social interactions that foster belonging and engagement in face-to-face settings. When ghost attendance becomes normalized, the social fabric of the learning community erodes, further reducing the incentive for individual students to engage authentically. Johnson et al. (2022) identified this normalization cycle as a critical concern in K-12 digital education, where peer social influence plays a particularly powerful role in shaping individual engagement patterns.

The phenomenon also raises significant questions of academic integrity. Chiang et al. (2022), in their systematic review of academic dishonesty in online learning environments, found that the conditions enabling ghost attendance, anonymity, reduced oversight, and inadequate monitoring systems, are the same conditions that facilitate broader forms of

academic misconduct. This co-occurrence suggests that ghost attendance is not an isolated behavioral phenomenon but rather a manifestation of deeper systemic vulnerabilities in digital learning governance. Furthermore, Chatzipanagiotou and Katsarou (2023) highlighted that post-pandemic school leadership faces the compounded challenge of managing these crises while simultaneously rebuilding institutional resilience.

**Table 2. Multi-Level Impacts of Ghost Attendance on Educational Quality**

Impact Level	Primary Effects	Secondary Consequences	Key References
Individual / Student	Reduced learning outcomes, low academic achievement	Increased dropout risk, psychological disengagement	Yagci (2022); Heidari et al. (2021)
Classroom / Group	Disrupted social dynamics, reduced peer interaction quality	Normalization of disengagement, eroded learning community	Hehir et al. (2021); Johnson et al. (2022)
Institutional	Compromised academic integrity, inflated attendance data	Misleading performance metrics, governance failures	Chiang et al. (2022); Chatzipanagiotou & Katsarou (2023)
Systemic / Equity	Disproportionate impact on disadvantaged students	Amplified educational inequality, digital divide deepening	Yu (2022); Rapanta et al. (2021)

### C. *Technological Innovations as Responses to Ghost Attendance*

A sizeable portion of the literature investigates how emerging technologies can reduce “ghost attendance” by making digital learning environments more engaging, interactive, and immersive. Researchers highlight that passive presence, students who are logged into a session but not cognitively engaged, often reflects a mismatch between platform affordances and learners’ attentional needs. In response, studies argue that technologies which increase presence, interactivity, and immediate feedback can convert passive attendance into active participation by creating richer sensory and social cues that sustain focus.

Three technological approaches recur as particularly promising in this regard. Augmented reality (AR) overlays digital information onto the physical world, enabling contextualized, hands-on tasks that encourage embodied interaction and peer collaboration. Virtual reality (VR) immerses learners in simulated environments where attention is concentrated by narrative, task realism, and constrained interaction spaces, which together reduce multitasking temptations. Finally, AI-integrated educational tools, such as adaptive tutors, conversational agents, and real-time engagement detectors, personalize pacing, provide timely scaffolding, and proactively re-engage learners based on behavioral or physiological signals. Each approach operates through distinct cognitive mechanisms, and the most effective interventions are likely to combine immersive experiences with adaptive, interactive features that prompt purposeful cognitive work rather than passive consumption.

Koumpouros (2024) conducted a comprehensive analysis of AR's potential in education, finding that augmented reality technologies can significantly enhance student presence and engagement by creating interactive, context-rich learning experiences that bridge the gap between digital and physical realities. Similarly, Lin et al. (2024) demonstrated through a critical review of the literature that virtual reality environments significantly improve student engagement in classroom settings by creating immersive, three-dimensional learning experiences that demand active cognitive participation, directly counteracting the passive spectatorship that characterizes ghost attendance.

Artificial intelligence represents perhaps the most transformative technological response to ghost attendance. Lin and Chen (2024) found that AI-integrated educational applications positively influence college students' academic emotions and engagement, potentially reversing the motivational deficits that drive ghost attendance. Alzahrani (2024) provides a more cautionary perspective, cautioning that AI in education is often accompanied by unexamined risks and shadows, including surveillance concerns, bias in engagement detection algorithms, and the potential for AI monitoring to further alienate disengaged students rather than supporting their re-engagement. Zhang and Zhang (2024) emphasize that effective AI integration in educational contexts must be teacher-mediated and pedagogically purposeful, placing AI tools within a broader framework of inclusive learning and digital literacy development.

Gamification represents another technological-pedagogical approach with documented effectiveness in addressing motivation deficits. Ratinho and Martins (2023), in their systematic review of gamified learning strategies, found that game-based elements in educational design significantly enhance student motivation and participation, particularly in contexts where intrinsic motivation has been eroded by the perceived anonymity and disconnection of digital environments. The potential of gamification to create social accountability structures and visible engagement metrics makes it particularly relevant as a response to ghost attendance.

**Table 3. Technological Responses to Ghost Attendance: Mechanisms and Evidence**

Technology	Engagement Mechanism	Effectiveness for Ghost Attendance	Key Study
Augmented Reality (AR)	Interactive, context-rich overlays on physical environment	High — increases embodied participation and presence	Koumpouros (2024)
Virtual Reality (VR)	Immersive 3-D environments requiring active navigation	High — demands cognitive and physical engagement	Lin et al. (2024)
AI-Integrated Tools	Personalized feedback, adaptive content, emotion recognition	Moderate–High — depends on pedagogical framing	Lin & Chen (2024); Zhang & Zhang (2024)
Gamification	Points, badges, leaderboards, narrative quests	Moderate — effective for motivation but requires sustained design	Ratinho & Martins (2023)
Learning Analytics	Real-time tracking, early warning alerts, behavioral patterns	Moderate — enables early detection but not independent intervention	Yagci (2022); Heidari et al. (2021)

#### ***D. Pedagogical Strategies and Institutional Responses***

Beyond technological solutions, the literature consistently emphasizes that addressing ghost attendance requires fundamental pedagogical redesign and proactive institutional intervention. Rapanta et al. (2021) argue that the post-pandemic educational landscape demands a genuine rethinking of pedagogy, one that moves beyond the mere digitization of traditional instructional practices to the creation of genuinely interactive, socially connected, and cognitively stimulating digital learning experiences. This pedagogical transformation must be underpinned by a deep understanding of how students engage (or disengage) in digital contexts.

Hehir et al. (2021) identify student connectedness as a foundational precondition for meaningful engagement in digital learning. Their systematic review demonstrates that institutions which invest in deliberate community-building activities, including structured peer interaction opportunities, regular instructor-student communication, and digital social spaces, successfully reduce patterns of ghost attendance. These findings align with Khlaif et al.'s (2021) identification of instructor immediacy and social presence as critical moderators of student engagement in emergency remote learning contexts.

For professional and vocational education contexts, domain-specific strategies are equally important. Gause et al. (2022) identified in their integrative review that technology integration in nursing education requires not merely the adoption of digital platforms, but the deliberate design of learning experiences that maintain clinical authenticity and professional relevance, factors that are essential for sustaining student engagement in practice-oriented fields. Heidari et al. (2021) further demonstrated that students' engagement in digital informal learning activities, including professional communities of practice and social learning networks, significantly predicts their formal academic engagement, suggesting that blurring the boundaries between formal and informal digital learning may be a productive strategy for combating ghost attendance.

Institutional crisis management also plays a role in shaping the conditions under which ghost attendance emerges or is mitigated. Chatzipanagiotou and Katsarou (2023), in their systematic review of school leadership in disruptive times, found that institutions with strong crisis-responsive leadership were better positioned to maintain student engagement and participation quality during periods of educational disruption. This suggests that ghost attendance is not only a pedagogical problem but also a governance challenge, requiring proactive institutional leadership and coordinated systemic response.

#### ***E. The Engage Framework: An Integrated Policy Response***

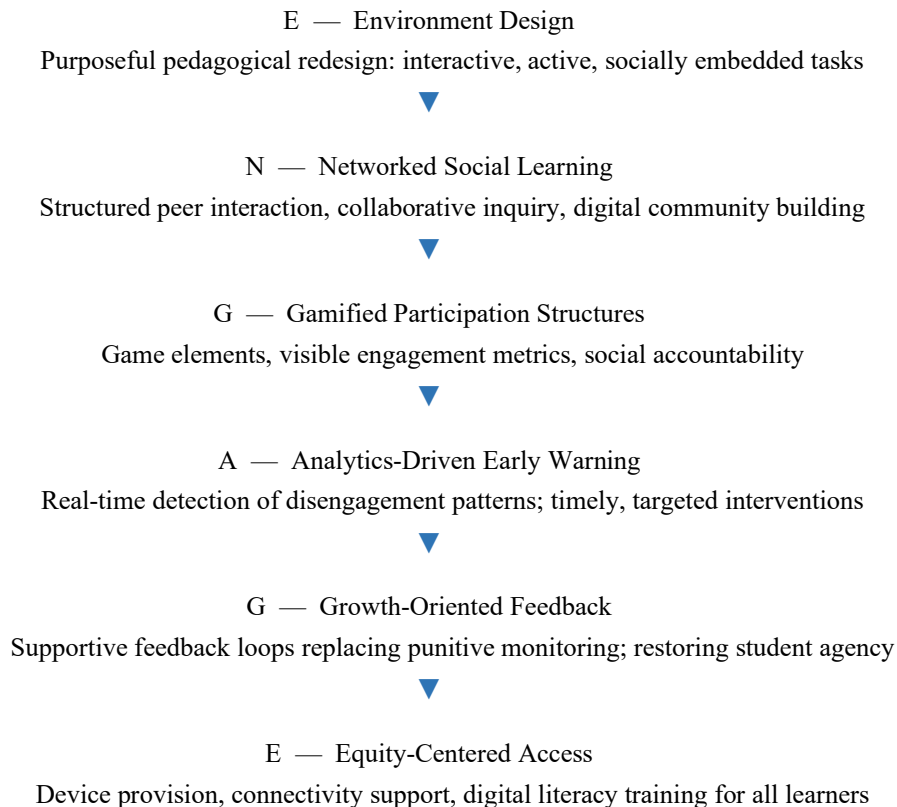
Drawing on a systematic synthesis of the reviewed literature, this study proposes the ENGAGE Framework as an integrated policy-and-practice model to reduce ghost attendance and promote meaningful participation in digital learning. The framework synthesizes empirical insights about attention, engagement, and technology-mediated learning into a coherent architecture that addresses both design and governance. Rather than treating ghost attendance as a simply technical problem of monitoring, ENGAGE positions it as a multifaceted phenomenon driven by platform design, social dynamics, motivational structures, data practices, feedback systems, and access inequalities, each of which requires targeted interventions.

Engage organizes interventions across six interrelated dimensions, each mapped to a specific driver of ghost attendance identified in the literature: Environment Design (optimizing interface simplicity, cognitive-load management, and micro-chunking to support sustained focus); Networked Social Learning (building social accountability and collaborative tasks to counter online anonymity); Gamified Participation Structures (using challenge, rewards, and meaningful goals to increase intrinsic motivation); Analytics-Driven Early Warning (deploying predictive models and real-time engagement detectors to identify and re-engage at-risk learners); Growth-Oriented Feedback (providing timely, personalized, mastery-focused feedback and metacognitive prompts to convert interaction into durable learning); and Equity-Centered Access (ensuring device access, digital-literacy supports, and culturally responsive content so that engagement gains are inclusive). Together, these dimensions provide a practical roadmap for educators and policymakers to design, deliver, and govern digital learning experiences that transform passive presence into active learning while attending to ethical, equity, and scalability concerns.

Environment Design addresses the learning design mismatch dimension by calling for purposeful pedagogical redesign that privileges active, interactive, and socially embedded learning activities over passive content consumption. Networked Social Learning targets digital disengagement and motivation crises by creating structured opportunities for peer interaction, collaborative inquiry, and community building within digital learning spaces, drawing on Hehir et al.'s (2021) evidence base. Gamified Participation Structures respond to the motivation crisis

dimension by integrating game-based elements that create visible engagement metrics, social accountability, and intrinsic reward structures, as supported by Ratinho and Martins (2023).

Analytics-Driven Early Warning leverages learning analytics and AI tools to detect patterns of ghost attendance early, enabling timely and targeted intervention before disengagement becomes entrenched. Growth-Oriented Feedback addresses the motivation crisis by replacing punitive attendance monitoring with supportive, growth-focused feedback loops that reconnect students' sense of agency and competence. Finally, Equity-Centered Access recognizes that ghost attendance is disproportionately prevalent among students from disadvantaged backgrounds, requiring institutional investment in digital access, device provision, connectivity support, and digital literacy training, particularly for students whose socioeconomic circumstances create additional barriers to authentic digital participation (Yu, 2022).



**Figure 2. The Engage Framework for Addressing Ghost Attendance in Digital Learning**

## Conclusion

This systematic review has established that ghost attendance in digital learning is a complex, multi-dimensional phenomenon driven by the intersection of digital disengagement, digital literacy deficits, environmental distractions, learning design mismatches, and intrinsic motivation crises. Far from being a peripheral or superficial issue, ghost attendance represents a fundamental challenge to the quality, equity, and legitimacy of digital education. The evidence synthesized in this review demonstrates that ghost attendance is not simply a problem of individual student discipline or motivation, but rather a systemic symptom of the tensions between inherited pedagogical traditions and the demands of genuinely effective digital learning design.

The proposed Engage Framework offers educational institutions a practical, evidence-based model for addressing ghost attendance through coordinated interventions across six key dimensions. The framework emphasizes that effective responses must simultaneously address pedagogical redesign, social connectedness, motivational architecture, data-driven monitoring, supportive feedback, and equitable access. Institutions that implement these principles in a coherent and sustained manner are best positioned to transform ghost attendance from a pervasive phenomenon into a manageable

exception. Future research should focus on empirical testing of the ENGAGE Framework in diverse educational contexts, longitudinal studies tracking the long-term effects of ghost attendance on student trajectories, and the development of culturally sensitive participation metrics that more accurately capture the quality of student engagement in digital learning environments.

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