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STUDENT MENTAL WELL-BEING DURING EMERGENCY REMOTE TEACHING: IMPLICATIONS FOR HUMAN-CENTRIC HYBRID LEARNING

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Abstract:The COVID-19 pandemic served as an unprecedented "stress test" for higher education, exposing the latent psycho-social vulnerabilities of digitally mediated learning. While institutions successfully maintained instructional continuity, retrospective analysis reveals a critical misalignment between technological resilience and student well-being. This study explores the lived experiences of 75 university students during the transition to Emergency Remote Teaching (ERT). Using inductive thematic analysis, we identify three compounding barriers to sustainable education: Pedagogical Disconnect (the loss of instructional fidelity), Digital Burnout (somatic and cognitive exhaustion), and Emotional Isolation (the erosion of relatedness). The findings argue that these challenges were not merely transient crisis symptoms but are inherent risks in digital education that threaten the realization of SDG 3 (Good Health and Well-being) and SDG 4 (Quality Education). Consequently, we propose a "Human-centric Hybrid Learning" framework. We conclude that future post-pandemic curriculum design must shift from techno-centric instrumentalism to integrating "psycho-pedagogical" support systems, ensuring that technological flexibility does not come at the cost of psychological stability. The study provides actionable recommendations for universities to integrate mental health scaffolding into post-pandemic hybrid curriculum design.

Keywords: Student Mental Well-being; Human-centric Hybrid Learning; Digital Burnout; Educational Resilience; SDG 4

INTRODUCTION

In retrospect, the global pandemic event serves as a critical vantage point for evaluating the resilience of higher education in relation to the United Nations Sustainable Development Goals (SDGs), particularly at the intersection of Good Health and Well-being (SDG 3) and Quality Education (SDG 4). Recent scholarship has increasingly framed educational resilience as a core dimension of sustainable higher education, emphasizing the need to balance instructional continuity with students' holistic well-being (UNESCO, 2021; OECD, 2020). Within this context, the COVID-19 pandemic triggered an abrupt migration to Emergency Remote Teaching (ERT), a temporary and crisis-driven mode of instruction distinct from deliberately designed online education (Hodges et al., 2020), posing a direct challenge to the realization of these sustainability goals.

While digital platforms enabled institutions to maintain instructional operations and mitigate immediate learning disruptions (Crawford et al., 2020; Bozkurt et al., 2020), they often failed to preserve the essential human connectivity that underpins effective and inclusive education. Empirical studies

documented a paradoxical condition in which students remained digitally connected yet experienced heightened emotional isolation, weakened peer interaction, and diminished sense of belonging (Elmer et al., 2020). Such relational disruptions highlight the limitations of technologically driven responses when social and emotional dimensions of learning are insufficiently addressed.

Current literature on pandemic-era higher education has largely prioritized technological implementation, institutional readiness, and quantitative academic outcomes such as performance and engagement metrics (Adedoyin & Soykan, 2023). However, scholars have cautioned that these indicators offer only a partial account of educational quality, as they tend to obscure students' lived experiences within digitally mediated learning environments. In particular, qualitative and student-centered studies have revealed significant psychological challenges, including cognitive overload, anxiety, emotional exhaustion, and academic disengagement, that remain underrepresented in outcome-focused analyses (Aristovnik et al., 2020; Son et al., 2020; Salmela-Aro et al., 2021).

Viewed as a large-scale "stress test" for digital education, the pandemic exposed not only technological vulnerabilities but also deeper psychosocial tensions embedded in emergency forms of online learning. From a resilience-oriented and student-centered perspective, educational sustainability cannot be reduced to technological adaptability alone but must also encompass learners' psychological well-being, social connectedness, and meaning-making processes (Creswell & Poth, 2018; Braun & Clarke, 2021). Crucially, recent scholarship indicates that the psychological friction observed during the pandemic has not dissipated but rather mutated in the post-pandemic era. For instance, Firmante (2025) reports that students in hybrid learning environments continue to experience significant 'digital boredom' and emotional exhaustion, suggesting that technological flexibility often comes at the cost of psychological stability. Similarly, Salmela-Aro et al., (2022) warn that long-term academic burnout remains a critical barrier to sustainable education, necessitating a curriculum redesign that prioritizes well-being. This aligns with the latest UNESCO (2024) directives on SDG 3, which urge higher education institutions to institutionalize mental health support as a core pedagogical responsibility rather than a peripheral service. Therefore, the retrospective analysis of emergency remote teaching narratives offers vital 'stress test' data for addressing these enduring psycho-pedagogical challenges.Accordingly, by adopting a qualitative inquiry, this research amplifies student voices to address two research questions:

1.How did students perceive the pedagogical effectiveness of Emergency Remote Teaching in the absence of physical interaction?

2.What psychological challenges did students experience in digitally mediated learning environments during the pandemic?

LITERATURE REVIEW

The impact of the COVID-19 pandemic on higher education cannot be adequately understood without first delineating the specific pedagogical context of the crisis and the psychological mechanisms activated by prolonged digital confinement. Accordingly, this review synthesizes prior scholarship across three interrelated strands: the pedagogical characteristics of Emergency Remote Teaching, the cognitive and emotional strain associated with intensive digital interfaces, and the theoretical implications of social isolation for student well-being and learning engagement.

Emergency Remote Teaching versus Online Learning

Scholarly discourse consistently emphasizes a critical distinction between well-designed online learning and Emergency Remote Teaching. Planned online education is typically grounded in systematic instructional design, faculty training, and intentionally structured digital pedagogy aimed at fostering coherent and interactive learning ecosystems (Means et al., 2014). In contrast, ERT is defined as "a shift in instructional delivery to an alternate delivery mode due to crisis circumstances," implemented as a temporary response rather than a deliberate pedagogical choice (Hodges et al., 2020).

This distinction is theoretically and empirically significant. Research suggests that many of the frustrations reported by students during the pandemic were not inherent shortcomings of online learning itself, but rather consequences of the rapid and improvised transition that lacked sufficient pedagogical alignment, technological infrastructure, and institutional support (Aristovnik et al., 2020; Bond & Bedenlier, 2021). The emergency nature of ERT generated a high-pressure educational environment characterized by uncertainty, inconsistent instructional practices, and limited opportunities for interaction, fundamentally differing from the pedagogical intentionality and structured flexibility that define established distance education models (Bozkurt & Sharma, 2020).

Techno-Stress and Digital Burnout

The forced migration to exclusively digital learning environments intensified what has been conceptualized as "techno-stress," defined as the stress experienced by individuals who struggle to cope effectively with the demands of information and communication technologies (Tarafdar et al., 2007). Within ERT contexts, techno-stress manifested acutely as digital fatigue and emotional exhaustion, commonly

referred to as "Zoom fatigue." Bailenson (2021) argues that prolonged video-mediated interaction imposes an unusually high cognitive load, as individuals must consciously process non-verbal cues-such as eye contact, facial expressions, and gestures-that are typically interpreted automatically in face-to-face communication.

In higher education settings, this cognitive strain was further exacerbated by continuous synchronous classes, extended screen time, and the blurring of spatial and temporal boundaries between academic work and personal life. The collapse of physical distinctions between "home" as a space for rest and "campus" as a space for learning contributed to persistent cognitive overload and digital burnout, undermining students' capacity for sustained attention, emotional regulation, and academic engagement.

Social Isolation and the Loss of Relatedness

Beyond cognitive fatigue, the physical separation inherent in ERT profoundly disrupted the social foundations of learning. Self-Determination Theory (SDT) provides a valuable framework for understanding these disruptions, positing that human well-being and intrinsic motivation are sustained by the fulfillment of three basic psychological needs: autonomy, competence, and relatedness (Deci & Ryan, 2000). Among these, relatedness-the need to feel connected to, supported by, and valued within a social community-was particularly compromised during the suspension of on-campus learning.

Empirical evidence indicates that student social networks contracted significantly during periods of lockdown, with reduced peer interaction and weakened social support closely associated with increased depressive symptoms and emotional distress (Elmer et al., 2020). Within ERT environments, opportunities for spontaneous interaction, informal feedback, and relational affirmation were largely absent, intensifying feelings of isolation. As SDT suggests, when the need for relatedness is frustrated, both psychological well-being and intrinsic motivation are likely to deteriorate. Consequently, when meaningful human connection is diminished, learning risks becoming transactional and mechanistic rather than relational and developmental, highlighting the substantial psycho-pedagogical cost of pandemic-era education.

Despite growing recognition of these challenges, existing research has predominantly relied on large-scale surveys and outcome-oriented indicators, leaving students' subjective meaning-making processes and lived experiences during ERT insufficiently explored. This gap underscores the need for qualitative, student-centered inquiry to more fully capture the human dimensions of learning under crisis conditions.

METHOD

Research Design

This study employed a qualitative exploratory design to examine students' nuanced subjective experiences during a period of profound educational disruption caused by the COVID-19 pandemic. Given the unprecedented and rapidly evolving nature of the transition to ERT, a qualitative approach was deemed particularly appropriate for capturing context-specific meanings and psychological processes that are difficult to operationalize through variable-centered quantitative measures (Creswell & Poth, 2016).

Adopting an interpretivist stance, the study prioritized participants' meaning-making processes and subjective interpretations of digitally mediated learning environments. This design enabled an in-depth exploration of complex psychological phenomena-such as social isolation, cognitive overload, and digital burnout-that are often underrepresented in survey-based research relying on standardized response formats.

Participants

The study involved a total of 75 university students (n = 75) who experienced the abrupt transition to ERT during the COVID-19 pandemic. Participants were recruited through purposive sampling via digital social media platforms (e.g., WeChat). The inclusion criteria required participants to be currently enrolled in higher education institutions and to have undergone at least one month of fully remote instruction due to pandemic-related lockdowns.

As detailed in Table 1, the participant cohort represents a population deeply immersed in digital learning contexts. The majority of the students (approximately 70%) had experienced remote education for a duration ranging from six months to over one year, indicating a sustained exposure to the remote learning environment. In terms of learning infrastructure, while the primary devices used for instruction were computers and tablets, a notable portion of participants (approximately 30%) reported engaging in learning activities within "noisy" or distracted environments. Furthermore, while internet connectivity was generally reported as stable, technical disruptions and "lag" remained recurring themes in the qualitative feedback. The data also reveals a strong preference for individual study habits over group collaboration in the remote setting.

TABLE 1 Profile of Participants' Remote Learning Context (n = 75)

Characteristic	Category	Description / Prevalence
Duration of Online Learning	Short-term (< 6 months)	30%
	Medium-term (6 months - 1 year)	Approximately 50% (Majority)
	Long-term (> 1 year)	20%
Primary Learning Device	Computer / Laptop	Dominant usage
	Tablet (iPad)	Moderate usage
	Mobile Phone	Minority usage
Learning Environment	Quiet	70%
	Noisy / Distracted	30%
Internet Connectivity	Stable / Good	Majority
	Unstable / Poor	Frequently reported as a barrier
Study Preference	Individual Study	Majority (> 80%)
	Group Study	Minority (< 20%)

Data Collection Instrument

Data were collected using an online qualitative survey (Braun et al., 2021) designed to elicit detailed narrative responses regarding students' remote learning experiences. Unlike traditional quantitative surveys that limit responses to pre-determined categories, this instrument utilized open-ended questions to allow participants to express their "lived experiences" in their own words.

This method was chosen for two strategic reasons. First, the anonymity of the written format encouraged participants to disclose sensitive psychological struggles (e.g., burnout, anxiety) that might be withheld in face-to-face interviews. Second, the asynchronous nature of the survey allowed students to reflect deeply before constructing their responses, resulting in rich, "thick descriptions" of their daily realities behind the screen.

Participants were asked to complete prompts such as: "Describe your primary challenges during online classes" and "How did the remote environment affect your mental state?" The collected textual data provided a robust corpus for thematic analysis.

The data collection was originally authorized by the Queen's University Belfast Ethics Committee. The subsequent analysis and manuscript preparation were conducted at Universiti Putra Malaysia, ensuring the study's findings are contextualized within the current post-pandemic educational landscape.

Data Analysis

The survey responses were analyzed using inductive thematic analysis, a flexible and theoretically accessible method for identifying, analyzing, and reporting patterns of meaning within qualitative data (Braun & Clarke, 2006). The analysis was data-driven rather than theory-imposed, allowing themes to emerge organically from participants' narratives without being constrained by a pre-existing coding framework.

The analytic process followed the six-phase procedure outlined by Braun and Clarke (2006). First, the researcher familiarized themselves with the data through repeated readings of the transcripts to gain an overall sense of the content. Second, initial codes were generated by systematically identifying salient features of the data (e.g., "eye strain," "feeling ignored," "loss of motivation"). Third, related codes were collated into potential themes, such as grouping physical and cognitive symptoms under the broader theme of "Digital Burnout." Fourth, candidate themes were reviewed and refined to ensure coherence within themes and distinction between themes across the entire dataset. Fifth, themes were clearly defined and named to capture their central organizing concepts. Finally, the report was produced by selecting vivid and representative extracts that directly addressed the research questions and were interpreted in relation to existing literature.

To enhance analytic rigor and trustworthiness, reflexive memo-writing was employed throughout the coding process, and an audit trail was maintained to document analytic decisions and theme development across stages of analysis.To ensure inter-coder reliability, the initial codes were reviewed by the second author.Data saturation was reached after approximately 60 responses, with no new codes emerging in the final 15 responses.

RESULTS

The qualitative analysis of the 75 survey narratives revealed a consistent pattern of psychological and pedagogical friction. Despite the diverse disciplinary backgrounds of the participants, their experiences of emergency remote teaching converged around three overarching themes: (1) The Pedagogical Disconnect, (2) Digital Burnout and Somatic Strain, and (3) Emotional Isolation and Anxiety.

Theme 1: The Pedagogical Disconnect

The first theme reflects a widespread frustration regarding the degradation of instructional quality and interaction. Across the 75 responses, a dominant sentiment was that the screen acted as a barrier, filtering out essential non-verbal cues and reducing teaching to a passive, one-way transmission of information.

Participants frequently cited technical limitations as a primary disruptor of the learning flow. The lack of synchronous fidelity created a fragmented environment where maintaining focus became a struggle. As Participant 1 noted, technical lag transformed the classroom into a disconnected "monologue":

"The internet speed is too slow, I keep getting disconnected... The teacher speaks too fast and there is no interaction, it's just a monologue." (Participant 1)

Beyond technical issues, the "black screen" phenomenon-where peers keep cameras off-was repeatedly mentioned as a source of awkwardness. This lack of visual presence severed the emotional connection between students and instructors. Participant 42 provided a representative description of this artificial interaction:

"Group discussions are very awkward. No one turns on the camera or microphone. We just type in the chat box, and it takes forever to get a response. It's not a real discussion." (Participant 42)

Consequently, a significant portion of the cohort perceived a decline in learning outcomes. Participant 11 bluntly stated, *"I feel like I learned nothing compared to offline classes"* (Participant 11). This sentiment highlights a critical gap between operational continuity (classes happening) and pedagogical effectiveness (learning happening).

Theme 2: Digital Burnout and Somatic Strain

The second theme highlights the physical and cognitive toll of prolonged screen time. Unlike the flexibility often promised by online learning, the narratives from this cohort depicted a state of exhaustion where the boundaries between rest, sleep, and study were completely eroded.

Reports of somatic symptoms were widespread among the 75 participants. Many reported eye strain, back pain, and severe fatigue. Participant 13 described the experience as physically "suffocating":

"It's too suffocating. Looking at the computer every morning makes me exhausted before the class even starts. I have severe back pain from sitting in the same chair all day." (Participant 13)

This physical strain often led to a sense of "zombie-like" existence, a metaphor used to describe the repetitive, disembodied nature of their daily lives. Participant 27 captured this profound lethargy:

"I feel like a zombie. I wake up, turn on the laptop, listen, eat, and sleep. There is no movement. My physical health has declined significantly." (Participant 27)

Furthermore, the spatial collapse of the learning environment was a recurring stressor. For students living in dormitories or shared spaces, the inability to physically separate "classroom" from "bedroom" led to psychological intrusion. Participant 61 articulated this loss of sanctuary:

"The boundary between rest and study is blurred. My bedroom is my classroom now. When I lie on my bed, I feel guilty that I should be studying. I can never truly relax." (Participant 61)

Theme 3: Emotional Isolation and Anxiety

The final theme delves into the pervasive sense of loneliness and anxiety. While some participants initially appreciated the solitude, the long-term data reveals a deep loss of "relatedness"-the feeling of belonging to a community.

The isolation was described not merely as being alone, but as a loss of social support systems. Participant 1 described the experience as a solitary struggle:

"I feel very lonely, locked in my room all day with no one to talk to. It feels like I am fighting a war alone." (Participant 1)

This isolation was particularly damaging to students' social skills and peer networks. Participant 57 noted that digital communication methods (like texting) could not replace the empathy and encouragement of face-to-face interaction: "We used to encourage each other, but now everyone is silent" (Participant 57).

Even students who identified as introverts reported that the extended duration of isolation eventually became detrimental. Participant 12 offered a critical nuance found in the broader dataset:

"For introverted people, it reduces face-to-face communication pressure, which is good in a way. But after a few months, even I started to crave human contact. The isolation is too long." (Participant 12)

Ultimately, this isolation amplified academic anxieties to clinical levels for some respondents. Participant 3 reported insomnia driven by uncertainty about the future: *"I can't sleep at night... The uncertainty of the exams and the thesis defense is killing me" (Participant 3).*

DISCUSSION

This study aimed to examine the nuanced student experiences "behind the screen" during the crisis-induced shift to remote learning. The findings reveal a complex interplay between pedagogical friction and psychological distress, suggesting that the effectiveness of digital education is contingent not merely on technical infrastructure, but on the preservation of human connection and mental well-being.

Integrating Pedagogy and Psychology

The results demonstrate a reciprocal relationship between "The Pedagogical Disconnect" (Theme 1) and "Emotional Isolation" (Theme 3). Our data indicates that psychological distress was not merely a byproduct of the crisis but a direct impediment to cognitive engagement. This aligns with Cognitive Load Theory, which posits that high levels of extraneous load-in this case, anxiety and isolation-deplete the working memory resources required for learning (Skulmowski & Xu, 2022; Sweller, 1988).

Students in this study reported that feelings of loneliness (Theme 3) exacerbated their inability to concentrate (Theme 1), a phenomenon supported by Kecojevic et al. (2020), who found a significant negative correlation between pandemic-related anxiety and academic performance. Furthermore, the lack of "Relatedness"-a core psychological need defined in Self-Determination Theory-undermined intrinsic motivation (Deci & Ryan, 2000). When students felt disconnected from their peers and instructors, their academic drive diminished, confirming that emotional detachment in remote settings leads to pedagogical disengagement (Rotas & Cahapay, 2020). Therefore, compromised mental well-being acts as a critical bottleneck for learning efficacy.

The "Human Element" in Digital Education

The prevalence of "Digital Burnout" (Theme 2) underscores the limitations of technology in replacing human interaction. While digital platforms maintained operational continuity (Hodges et al., 2020), they failed to replicate the empathetic nuances of the physical classroom. Bailenson (2021) argues that the cognitive demand of interpreting non-verbal cues over video conferencing causes "Zoom Fatigue," which our participants described as physical and mental exhaustion.

The findings suggest that technology is a poor substitute for the "human element" of teaching-the spontaneous, empathetic interactions that foster a sense of belonging (Elmer et al., 2020). As Ferri et al. (2020) note, digital transformation is incomplete if it ignores the "social-emotional" dimension of learning. Without deliberate efforts to humanize the digital space through "social presence" (Bozkurt & Sharma, 2020), remote education risks becoming a mechanistic transmission of information rather than a holistic educational experience.

Implications for the Hybrid

Future Looking forward, as higher education increasingly adopts hybrid and HyFlex models, the lessons from this "stress test" remain vital. The psychological vulnerabilities exposed during the pandemic-such as isolation and technostress-are not unique to the crisis but are inherent risks of digital mediation. If institutions merely digitize curricula without integrating "psycho-pedagogical" support systems, they risk reproducing these issues in future hybrid environments (Lockee, 2021). Future frameworks must prioritize "Well-being Centric" design (Rapanta et al., 2020), ensuring that technological flexibility does not come at the cost of student mental health. Failing to address the psychological dimensions of online learning may lead to long-term academic burnout and attrition, necessitating a paradigm shift from "Technological Resilience" to "Human-Centric Resilience" (Aristovnik et al., 2020; Son et al., 2020).This echoes recent findings by Firmante (2025), who argues that without targeted mental health interventions, the 'hybrid' model risks becoming a source of cognitive overload rather than flexibility.

IMPLICATIONS AND CONCLUISION

The findings underscore that institutional resilience relies not only on technological capacity but also on psychological scaffolding. Consequently, this study proposes the establishment of integrated "Psycho-Pedagogical Support Systems," where mental health resources are embedded directly into the academic curriculum rather than existing as peripheral services. Practically, instructors in digital environments are encouraged to humanize the virtual classroom by incorporating informal "emotional check-ins" and non-academic interaction sessions. These interventions can help reconstruct the "sense of belonging" that is often eroded by the digital screen.

Limitations

Several limitations of this study warrant mention. First, regarding the sample, while the cohort of 75 participants provided sufficient depth for qualitative saturation, the purposive sampling strategy limits the generalizability of the results to dissimilar cultural or institutional contexts. Second, the study relies on self-reported textual narratives, which, while offering rich subjective insights, preclude the objective clinical verification of participants' psychological states. Finally, the data capture perceptions during

the “acute phase” of the pandemic; thus, the findings reflect a specific crisis response that may not fully align with the dynamics of long-term, structured hybrid learning models.

CONCLUSION

In conclusion, this investigation illuminates a critical paradox: while the digital infrastructure of higher education proved resilient, the human infrastructure remained fragile. The findings reveal that the true friction of remote education resides “behind the screen,” where invisible psychological attrition constitutes a systemic barrier to the mental health imperatives of SDG 3 (Good Health and Well-being). This study argues that the observed “pedagogical disconnect” and “digital burnout” are not merely transient crisis symptoms, but indicators of a deeper misalignment between technological capacity and human adaptability.Therefore, fulfilling SDG 4 necessitates a strategic shift from “techno-centric” instrumentalism to a “Student Well-being Centric” ecosystem. Post-pandemic digitalization must transcend platform efficiency and institutionalize psycho-pedagogical support directly within curricula. Policymakers are urged to design “Human-centric Hybrid Learning” models where emotional scaffolding matches academic rigor, ensuring sustainable transformation

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