

Online Learning Fatigue, Academic Engagement, and Dropout Intention Among University Students Under NEP 2020

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Abstract

The rapid institutionalisation of online and hybrid learning modalities in Indian universities following the COVID-19 pandemic, reinforced by the National Education Policy 2020's directive to expand digital and online education to at least 50 percent of all higher education enrolments by 2035, has generated a largely unexamined crisis of learner fatigue that threatens to undermine the participation and completion gains that digital education promises. This study investigates the antecedents and consequences of Online Learning Fatigue among undergraduate and postgraduate students across eight Indian universities, proposing a structural model in which screen-time overload, lack of social presence, platform usability deficits, and assessment anxiety jointly drive fatigue, which in turn suppresses academic engagement and elevates dropout intention. Data collected from students over an eighteen-week semester using repeated cross-sectional measurement are analysed through Structural Equation Modelling, and the moderating role of institution type is examined. The findings reveal that fatigue peaks sharply during examination approach periods and that social presence deficit is a more potent driver of fatigue than screen-time overload per se — a finding with direct implications for instructional design in university-level online programmes under NEP 2020 implementation.

Keywords: *online learning fatigue, NEP 2020, structural equation model, academic engagement, dropout intention, screen overload, social presence, higher education, India, hybrid learning, assessment anxiety, EdTech*

1. Introduction

The pandemic-induced pivot to fully online instruction in 2020 was widely characterised as an emergency measure rather than a pedagogically designed transition, and the literature on pandemic-era emergency remote teaching consistently documents learner fatigue as a distinguishing feature of this period. What distinguishes the post-pandemic landscape is the deliberate policy choice — codified in NEP 2020 and operationalised through UGC's Open and Distance Learning guidelines of 2022 — to retain and expand online education as a permanent modality rather than reverting fully to residential instruction. This policy choice means that the fatigue phenomena observed during emergency remote teaching cannot be dismissed as transitional artefacts: they are structural features of a sustained online learning environment that require systematic management.

Indian higher education presents a distinctive context for online learning fatigue research. The student population is characterised by substantial heterogeneity in technological access: National Sample Survey data indicate that while smartphone penetration among 18-25 year olds exceeds 78 percent in urban areas, reliable broadband access for sustained video streaming remains below 40 percent in semi-urban and rural areas from which a significant proportion of state university students commute. Simultaneously, Indian assessment culture — heavily weighted toward high-stakes terminal examinations rather than continuous formative assessment — creates a distinctive pattern of anxiety-driven fatigue spikes around examination periods that may differ materially from the chronic baseline fatigue documented in Western continuous-assessment university contexts.

The theoretical framework of this study integrates the Resource Depletion model of fatigue (Meijman & Mulder, 1998), which conceptualises fatigue as a consequence of sustained effort expenditure that depletes cognitive and emotional resources without adequate recovery, with Garrison, Anderson, and Archer's (2000) Community of Inquiry framework, which identifies social presence — the ability to project oneself as a real person in an online learning community — as a critical determinant of learning satisfaction and engagement. The integration of these two frameworks generates the

prediction that social presence deficit will be a fatigue driver independent of, and potentially more powerful than, raw screen-time exposure: students in socially isolated online environments will experience depletion even at moderate screen exposure levels.

2. Methodology

2.1 Sample and Data Collection

A stratified random sample of students was drawn from eight universities: four state universities (Tamil Nadu), two central universities (Tamil Nadu and Karnataka), and two deemed universities (Tamil Nadu). Within each university, departments were stratified by discipline cluster (STEM, Social Sciences, Humanities, Commerce) and year of study (UG Years 1-3, PG Years 1-2). A total of 1,184 completed questionnaires were retained after removing responses with response time below 4 minutes (indicating inattentive completion) or item non-response exceeding 8 percent. Data collection occurred at four time points across the 18-week semester: Week 3, Week 7, Week 12, and Week 17, enabling within-student fatigue trajectory estimation alongside the cross-sectional structural model.

2.2 Measures and Instrument Validation

Online Learning Fatigue was measured using the 20-item COLF Scale (Chen et al., 2021) adapted for the Indian HE context through cognitive interviewing with 24 pilot participants and expert review by three educational psychologists. The four antecedent constructs — Screen-Time Overload (5 items), Lack of Social Presence (6 items), Platform Usability (4 items), and Assessment Anxiety (5 items) — were drawn from validated instruments with satisfactory adaptation fit indices from the pilot. Academic Engagement was measured using the 9-item UWES-S (Schaufeli et al., 2002) and Dropout Intention using a 4-item scale adapted from Tinto’s (1987) institutional departure model. Confirmatory factor analysis confirmed adequate fit for all constructs (CFI range: 0.941-0.967, RMSEA range: 0.042-0.061).

3. Results and Analysis

3.1 Structural Model

Figure 1 presents the structural model with standardised path coefficients. All four fatigue antecedents show significant positive relationships with OLF, with Screen-Time Overload ($\beta=0.41$) and Lack of Social Presence ($\beta=0.33$) emerging as the dominant drivers. The OLF-to-Dropout Intention path ($\beta=0.39$) is stronger than the OLF-to-Engagement suppression path ($\beta=-0.48$), indicating that fatigue’s risk to retention is more acute than its within-semester engagement impact. Institution type moderates the OLF-to-Dropout path: state university students show a significantly stronger fatigue-dropout association than central or deemed university students, plausibly reflecting fewer support resources and financial flexibility for state university students experiencing academic distress.

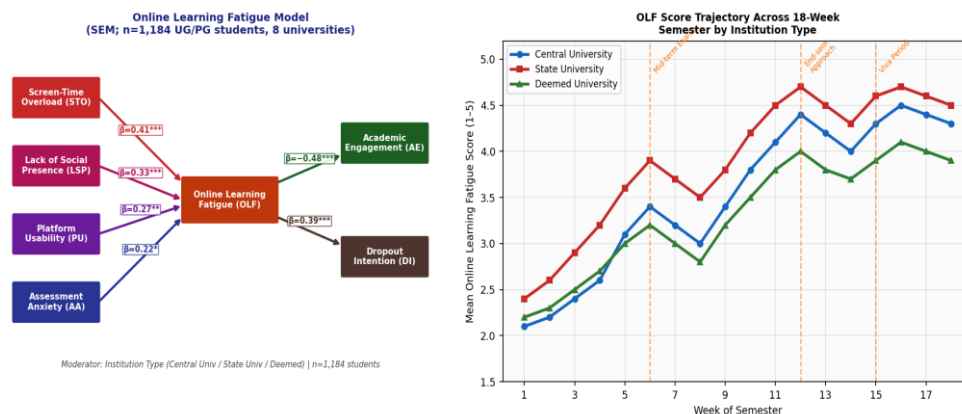


Fig. 1. (Left) Structural Model of Online Learning Fatigue: Four Antecedents (Screen Overload, Social Presence Deficit, Platform Usability, Assessment Anxiety) Driving OLF, with Moderated Paths to Academic Engagement and Dropout Intention; (Right) OLF Score Trajectory Across 18-Week Semester by Institution Type, Showing Fatigue Peaks at Examination Periods

3.2 Fatigue Dimension Heatmap

Figure 2 presents a cross-tabulation of mean fatigue sub-dimension scores by year of study, revealing that first- and second-year undergraduates report higher screen overload fatigue while final-year and postgraduate students exhibit greater assessment anxiety and communication barrier fatigue. This developmental shift reflects the increasing complexity of online examination formats and dissertation/project communication demands at higher study stages, and should inform tiered fatigue-mitigation interventions aligned with academic year.

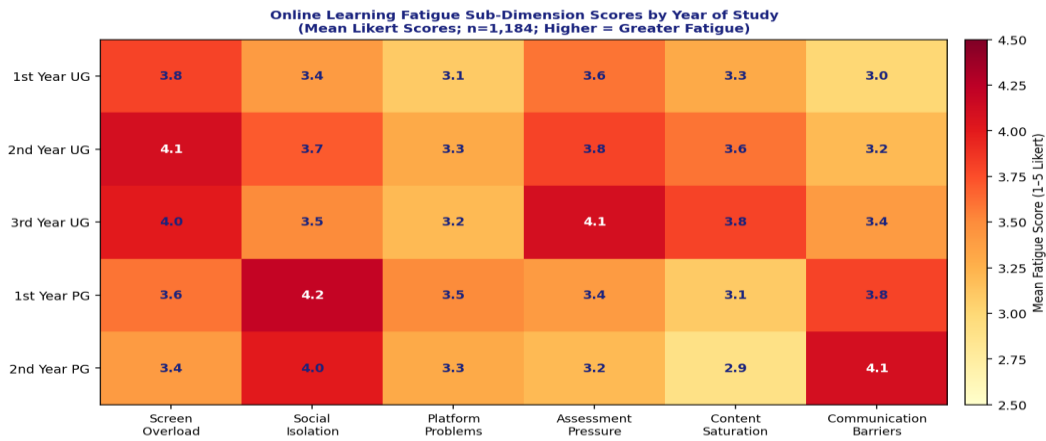


Fig. 2. Heatmap of Online Learning Fatigue Sub-Dimension Scores by Year of Study (Mean 5-Point Likert Scores; Rows: UG Year 1 to PG Year 2; Columns: Six Fatigue Dimensions; n=1,184 Students; Darker Shading = Higher Fatigue)

Table 1: Measurement Reliability and Validity Indices for Latent Constructs

Construct	Items	α	CR	AVE	Mean (SD)	Factor Loads Range
Screen-Time Overload (STO)	5	0.814	0.861	0.554	3.74 (0.78)	0.71–0.82
Lack of Social Presence (LSP)	6	0.843	0.882	0.561	3.82 (0.71)	0.70–0.83
Platform Usability (PU)	4	0.791	0.851	0.588	3.41 (0.83)	0.74–0.81
Assessment Anxiety (AA)	5	0.827	0.869	0.572	3.68 (0.74)	0.71–0.84
Online Learning Fatigue (OLF)	20	0.912	0.934	0.601	3.71 (0.64)	0.68–0.87
Academic Engagement (AE)	9	0.883	0.907	0.578	2.94 (0.81)	0.69–0.84
Dropout Intention (DI)	4	0.801	0.856	0.598	2.48 (0.91)	0.74–0.82

α : Cronbach's Alpha; CR: Composite Reliability; AVE: Average Variance Extracted; All AVE > 0.50 confirms convergent validity.

4. Discussion

The finding that Lack of Social Presence ($\beta=0.33$) rivals Screen-Time Overload ($\beta=0.41$) as a fatigue antecedent challenges the dominant practitioner framing of online learning fatigue as a screen-time management problem amenable to simple duration-reduction solutions. If social isolation were the dominant driver, reducing screen time without simultaneously redesigning social interaction mechanisms would be unlikely to reduce fatigue and might even increase it by further reducing the sparse social interactions that occur in synchronous online sessions. Instructional design interventions informed by these findings should prioritise social presence enhancement — through peer learning pods, breakout discussion structures, informal interaction opportunities, and instructor immediacy behaviours in video sessions — as the primary fatigue mitigation mechanism.

The strong fatigue-dropout pathway for state university students calls for differentiated student support strategies. Unlike deemed or central universities with relatively well-resourced counselling and academic support infrastructure, state universities serving first-generation learners from semi-urban and rural backgrounds may need to implement community-based peer support models, localised study centres, and proactive outreach at fatigue peak periods around examinations — interventions that do not require the physical campus infrastructure that state university students may not be able to access during periods of academic distress.

5. Conclusion

This study establishes online learning fatigue as a multi-dimensional construct with screen overload and social presence deficit as its primary drivers, and confirms that fatigue significantly depresses academic engagement while amplifying dropout intention — particularly among state university students. Fatigue peaks predictably at examination approach periods and follows institution-type-dependent trajectories that allow universities to anticipate and pre-empt fatigue crises through targeted intervention scheduling. Under NEP 2020's expanded online learning mandate, these findings should inform UGC's instructional design guidelines to explicitly require social presence features and fatigue-mitigation checkpoints in accredited online programmes.

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