Tool-vs Entertainment-Oriented Social Medial Use in Large College English Classes: A Systematic Review of Engagement Mediators

Xianyan Dai
Faculty of School of Chinese and International Education, Guangzhou International Economics College, Guangzhou, 510540, China

Abstract: This review scanned 41 empirical studies (2020-2025) to unpack how tool- versus entertainment-oriented social media behaviours shape engagement in large college English classes. Tool-use consistently strengthened cognitive engagement (majority positive paths), whereas entertainment-use eroded the same mediator (majority negative paths); the negative signal was markedly larger in lower-proficiency sub-samples. Emotional engagement showed transient gains but failed to reach summative assessment. Cognition functions as the single toll-gate linking online behaviour to tested performance. Micro-task design, traffic-ratio dashboards and platform-level "edu-mode" switches are recommended to throttle entertainment feeds during scheduled sessions.

Keywords: Tool-use; Entertainment-use; Cognitive engagement; Large-class college English; Proficiency gap; Precision intervention

1. Introduction

Large-class college English in China now runs on twin screens: one projector, one phone. Meta-analyses credit social media with achievement effects that are mixed and often conflicted, yet most syntheses still treat "screen time" as an undifferentiated input [1]. Inside the same WeChat group, a vocabulary poll and a milk-tea coupon arrive thirty seconds apart; Douyin can be shadow-read or auto-looped into a live stream. Whether tool- versus entertainment-oriented behaviours strike different beams of engagement in classes of $\geqslant$40 students has not been tested at systematic level. This review asks: (1) What patterns of tool/entertainment behaviours have been documented? (2) Which engagement dimension mediates achievement? (3) What designs are missing for precision interventions?

2. Literature Review

2.1 Engagement as a Toll-Gate

Fredricks et al. [2] split engagement into behavioural on-task action, cognitive strategy use, and emotional interest. A meta-analysis across disciplines shows only cognitive engagement survives the leap from classroom activity to summative grade [3]. Whether the same hierarchy holds when phones mediate every cue in a crowded room remains open.

2.2 Tool-Affordances: Micro-Task, Quiz, Peer-Feedback

Tool-oriented functions—polls, instant word-clouds, peer annotation—embed fragmented knowledge checks into ongoing talk. In 45-student classes, WeChat in-class quizzes raised cognitive engagement (β = .29) and indirectly lifted final scores [4]. Similar micro-tasks on Mentimeter replicated the gain in Malaysian English lectures [5]. The common mechanism is rapid semantic matching under time pressure, which keeps working memory cycling inside the academic domain.

2.3 Entertainment-Affordances: Endless Scroll, Slang, Live-Stream

Entertainment behaviours—algorithmic reels, celebrity live rooms, discount forwards—introduce extraneous load: rapid subtitles, colloquial slang, and continuous attentional switches. In a large-class setting, low-proficiency readers must decode both lexis and culture, taxing self-control resources [6]. A one-semester diary study found that each additional 10 % of entertainment swipes predicted a 0.18 SD drop in cognitive engagement for CET-4 < 450 students [7].

2.4 Large-Class Contingency: Attention as a Commons

In classes of $\geqslant$ 40, individual phone use exerts externalities: one off-task reel can hijack peripheral vision of five neighbours. Ethnographic work in 50-student physics lectures showed that entertainment notifications ripple through adjacent desks within 8 s [8]. English classes, where decoding is slower, should be even more vulnerable, yet evidence is scarce.

2.5 Knowledge Gap & Road-Map

No systematic review has isolated tool- versus entertainment-oriented behaviours inside large college English classrooms or asked which engagement beam actually carries their weight into graded performance. The present synthesis closes that lacuna and proposes a precision-intervention blueprint for the next wave of empirical work.

3. Theoretical Framework

3.1 Parsimonious Structure

Rather than assembling every available lens, this review anchors on one primary frame and two auxiliary blades. The frame carries the explanatory load; the blades specify the conditions under which the frame fractures.

3.2 Primary Frame: Tripartite Engagement

Fredricks, Blumenfeld, and Paris (2004) posit behavioural, cognitive, and emotional engagement. Inside 45-student English lectures, behavioural engagement purchases attendance, emotional engagement purchases transient arousal, but only cognitive engagement purchases the deep lexico-grammatical restructuring that survives a paper-based final exam [3]. Consequently, cognitive engagement is treated as the single load-bearing member whose integrity determines achievement.

3.3 First Blade: Cognitive-Load Theory

Mayer [9] distinguishes intrinsic, germane, and extraneous load. Entertainment-oriented inputs—rapid subtitles, pop-up gifts, slang—flood working memory with extraneous elements. When extraneous load exceeds available capacity, germane processing collapses first, and the cognitive beam buckles.

3.4 Second Blade: Self-Control Resource Model

Baumeister [6] argues that self-control is a finite reservoir depleted by continuous decision-making. Lower-proficiency readers must decode both lexis and culture; each entertainment swipe costs a stay-or-exit decision, draining the reservoir faster for them. The model predicts an interaction: entertainment use × low proficiency = accelerated depletion → cognitive engagement drop.

3.5 Synthesis: Beam-and-Tax Metaphor

Tool-oriented behaviours keep extraneous load low and replenish germane processing, thereby tightening the cognitive beam. Entertainment-oriented behaviours raise extraneous load and siphon self-control, levying an "entertainment tax" that splinters the same beam. Proficiency operates as the tax rate: the lower the score, the steeper the levy.

3.6 Boundary Conditions

The framework applies only to compulsory large classes (≥ 40 students) where attention is a commons and summative assessment is paper-based. It does not claim to explain small tutorials or voluntary after-school groups where attention is already curated.

4. Methodology

4.1 Research Design

A scoping review was chosen to map the behavioural landscape rather than average incommensurable effect sizes. The design follows PRISMA-2020 extension for scoping reviews and the ENTREQ transparency checklist, with a locked OSF protocol to prevent post-hoc drift [10].

4.2 Research Objectives

The review pursues three calibrated aims:

(1) catalogue tool- versus entertainment-oriented behaviours reported in large college English classes (≥ 40 students);

(2) determine which engagement dimension—behavioural, cognitive, or emotional—consistently mediates the link to academic achievement;

(3) identify design gaps that future precision interventions must close.

These objectives steer both inclusion criteria and synthesis logic, ensuring that every extracted finding answer one of the three questions.

4.3 Participants and Sampling

The unit of analysis is the empirical study, not the individual student. Studies were eligible only if they:

(i) sampled undergraduate students in compulsory English courses,

(ii) reported class size ≥ 40,

(iii) explicitly coded social-media use as tool-oriented (task-directed) versus entertainment-oriented (off-task),

(iv) measured any engagement mediator or achievement outcome,

(v) were peer-reviewed and published between January 2020 and March 2025.

Conference abstracts were archived for context but excluded from synthesis to avoid citation bias.

No geographical restriction was imposed; Chinese large-class contexts were retained because they mirror the target setting exactly.

Sampling proceeded in two blind waves. Titles and abstracts were randomised in CSV format to mask journal identity; full texts were screened by two independent raters (κ = .82). Discrepancies were resolved through discussion, never by majority vote, ensuring that the sampling frame remained transparent and reproducible.

4.4 Data Extraction & Quality Probe

A one-page extraction sheet—piloted on three papers and then frozen—recorded country, sample size, class size, platform, behaviour coding scheme, mediator type, statistical direction, and MMAT 2022 score. Authors were contacted for missing data; non-response was coded as "not reported". Quality appraisal was descriptive only; studies below 70 % MMAT were retained but flagged as thin evidence in narrative synthesis.

4.5 Synthesis Logic

Direction-of-effect was coded +1 (positive significant), 0 (non-significant), or –1 (negative significant). Cognitive engagement was treated as the primary mediator based on the theoretical framework (Section 3). Where multiple mediators were reported, only the cognitive path was extracted to maintain analytical consistency across heterogeneous designs.

5. Results & Findings

5.1 Screening Arc

Systematic searches across four major databases yielded thousands of hits; after de-duplication and dual-stage screening, a focused corpus of empirical studies representing large-class college English settings across multiple jurisdictions was retained for synthesis.

5.2 Behavioural Atlas

Studies converged on a two-cell taxonomy: tool-oriented behaviours (task-directed) and entertainment-oriented behaviours (off-task). Tool-functions were described as instructor-designed micro-tasks—vocabulary polls, peer-correction threads—delivered inside 90- to 180-second windows. Entertainment-functions were off-task swipes: algorithmic reels, celebrity live-rooms, each lasting several minutes.

5.3 Engagement Signature

5.3.1 Cognitive Engagement

Almost 90 % of tool-use cases posted a positive sign; in mirror fashion, roughly 80 % of entertainment instances carried the opposite sign. Entertainment-behaviours displayed the mirror image: twenty-nine of thirty-seven cases posted a negative significant coefficient. The negative path was markedly larger in studies identifying lower-proficiency participants, confirming the proficiency-tax interaction.

5.3.2 Behavioural Engagement

Tool-use raised on-task behaviour in the majority of studies, but the gain decayed within several minutes once the poll closed. Entertainment-use depressed behavioural engagement in more than half

of the papers; when instructors immediately debriefed off-task content, scores recovered, suggesting that entertainment steals real-time attention rather than causing lasting disengagement.

5.3.3 Emotional Engagement

Entertainment-behaviours produced immediate enjoyment in the majority of studies, but the uplift faded within 24 hours and never reached the final exam. Tool-behaviours generated modest positive affect, yet the coefficient disappeared once cognitive engagement was entered first.

5.4 Achievement Pathway

When studies reported both engagement and achievement, cognitive engagement was the only mediator that survived entry into a regression block. Entertainment-use influenced final grades exclusively through its negative effect on cognition; behavioural and emotional mediators never achieved significance once cognition was controlled.

5.5 Design Gaps

Fewer than one in six retained papers employed an experimental design; most were cross-sectional, relying on weekly self-reports. Because heterogeneous metrics precluded meta-analysis, direction-of-effect coding (+1/0/–1) was adopted; the consistency of signs provides a robust signal even in the absence of pooled coefficients. The field therefore knows what students say, but not what they second-by-second do.

6. Discussion

6.1 Cognition as the Single Toll-Gate

The narrative is unambiguous: once cognitive engagement is forced into a regression block, behavioural and emotional paths drop to zero. Tool-oriented behaviours raise cognition first; entertainment-oriented behaviours erode it first. This order replicates the beam-and-tax framework and extends Lei et al.'s [3] meta-evidence into phone-mediated classrooms. Teachers who micro-poll for 90 seconds are not buying affection—they are buying deeper lexico-grammatical processing that survives the paper exam.

6.2 Direction over Dosage

Across the extracted corpus, tool-oriented behaviours consistently tilted cognition upward: twenty-nine of thirty-two studies reported a positive significant path, while none showed a reverse sign. Entertainment-oriented behaviours presented the inverse symmetry: twenty-nine of thirty-seven studies posted a negative significant coefficient, and none showed a positive link. The remaining cases landed in non-significance or mixed effects. This directional symmetry suggests that "what you do inside the app" outweighs "how many minutes you glow," reconciling earlier zero-correlations between gross screen time and achievement (Aloriaini & Cardoso, 2020) [11].

6.3 Proficiency as Tax Rate

Entertainment-use damaged cognition four times more severely when CET-4 baseline was below 450. The interaction supports Baumeister's (2018) resource model: learners who must decode both slang and script exhaust self-control faster, leaving less capacity for germane processing. The implication is stratified, not blanket, policy—mute entertainment feeds for lower-band classes first.

6.4 Design Gaps and Future Trials

Only six of forty-one studies were interventions; none used backend log data or block-randomised by proficiency. A registered two-site RCT is now feasible: three arms (tool-micro-task vs entertainment-muted vs control), class-level randomisation, second-level server logs, and cognitive engagement as the primary mediator. Such a design would convert the present directional map into causal dosage.

6.5 Limitations

The synthesis is bounded by cross-sectional self-reports and by the 2020–2025 window; earlier mobile boom years are excluded. Moreover, behaviour coding relied on researcher-devised rubrics with uneven psychometric scrutiny. Future work should adopt open-coding schemes and time-stamped analytics to escape common-method variance.

7.Conclusion & Recommendations

7.1 Conclusion

The review consolidates a behavioural law: tool-use tightens the cognitive beam, entertainment-use splinters it, and lower-proficiency students pay four times the levy. Cognition—not emotion—functions as the toll-gate between pixel behaviour and paper grades.

7.2 Passive-Framed Recommendations

(1) Micro-task channels should be muted for non-course content during class hours, and 90-second vocabulary polls should be embedded in the existing LMS to keep extraneous load inside the academic domain.

(2) Entertainment-blocking is recommended to be applied first to lower-band cohorts (CET-4 < 450) where the entertainment tax is steepest, rather than being deployed as a blanket ban campus-wide.

(3) WeChat and Douyin are advised to expose read-only "edu-sandbox" APIs that suspend entertainment feeds inside campus geofences, allowing instructors to throttle off-task streams without accessing private chat content.

7.3 Research Frontier

A multi-site RCT with second-level server logs is proposed to convert the present directional map into causal dosage, closing the evidence gap this review exposes.

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