



Original Research Article

SUSTAINABLE ACADEMIC INTERNET ENGAGEMENT AND EMOTIONAL WELL-BEING AMONG FIRST-YEAR UNIVERSITY STUDENTS: A MIXED-METHODS STUDY IN THE CONTEXT OF DIGITAL TRANSFORMATION IN VIETNAM

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Abstract: Amid the accelerating digital transformation of higher education, Internet use has become deeply embedded in students' academic practices and everyday social interaction. While digital technologies facilitate access to learning resources and collaborative knowledge construction, growing concerns have emerged regarding patterns of excessive or poorly regulated online engagement and their potential implications for students' academic focus and psychological well-being. This study examines the patterns and consequences of Internet use among first-year students at Dong Thap University (DthU), Vietnam, with particular attention to the interplay between academic engagement, self-regulatory capacity, and emotional outcomes. A mixed-methods research design was employed involving 534 first-year students. Quantitative data were collected through standardized instruments measuring academic Internet use, self-regulation, and indicators of emotional well-being. Complementary qualitative data were obtained through focus group discussions to capture students' lived experiences and perceptions of digital engagement within their academic and social environments. The findings reveal that Internet use is nearly universal in academic activities, with 92.6% of respondents reporting daily reliance on online resources for coursework and learning tasks. At the same time, 38.4% of participants exhibit behavioral patterns consistent with problematic Internet use. Statistical analyses indicate that intensive engagement with social media platforms is significantly associated with elevated levels of anxiety and diminished academic concentration ($p < .01$). Importantly, self-regulation emerges as a significant mediating factor, moderating the relationship between the intensity of Internet use and adverse emotional outcomes. Drawing on Social Learning Theory, Self-Regulated Learning Theory, and the conceptual framework of Digital Literacy Education, this study advances a systemic intervention framework designed to promote healthier patterns of digital engagement in university contexts. The proposed framework integrates curriculum-based digital literacy development, structured training in self-regulatory competencies, institution-wide digital well-being policies, accessible psychological support mechanisms, and opportunities for balanced offline learning experiences within the campus environment. By situating individual digital behaviors within broader educational and institutional contexts, this research contributes to the growing body of scholarship on student digital practices in emerging higher education systems. The findings also provide empirically grounded insights for universities seeking to manage the challenges of digital transformation while safeguarding students' academic effectiveness and psychological well-being.

Keywords: Internet use; digital literacy; emotional well-being; self-regulation; university students; Vietnam.

INTRODUCTION

The rapid expansion of Internet access has fundamentally reconfigured the landscape of higher education worldwide. Digital connectivity now mediates how knowledge is accessed, constructed, and shared, reshaping students' academic practices and socio-emotional experiences. In Vietnam, Internet penetration has reached approximately 79% of the total population, with nearly universal usage (99%) among youth aged 15–24. Within this demographic, university students represent a digitally immersed cohort for whom the Internet functions not merely as a technological tool but as an integrated academic infrastructure, social environment, and emotional ecosystem.

The literature consistently underscores the dual-edged character of Internet engagement in higher education. On the one hand, academically oriented digital use facilitates access to open educational resources, collaborative learning, and the development of digital competence—capacities that are increasingly central to knowledge economies (UNESCO, 2018; World Bank, 2022). Structured and purposeful online engagement has been associated with enhanced academic performance, information literacy, and learner autonomy. On the other hand, excessive or dysregulated Internet use has been linked to adverse psychological and academic outcomes. Empirical studies identify significant associations between problematic online behaviors and increased anxiety, depressive symptoms, sleep disruption, and academic disengagement (Kuss & Griffiths, 2017; Young, 2004). These findings suggest that the impact of Internet use is contingent not merely on frequency but on patterns of regulation, purpose, and contextual support.

Problematic Internet use (PIU) has been conceptualized as a loss of behavioral control over online engagement resulting in psychosocial impairment (WHO, 1992). Theoretical explanations emphasize self-regulatory deficits and socio-emotional vulnerabilities as key mediating mechanisms. Social learning theory (Bandura, 1977) posits that digital behaviors are reinforced through observational modeling and reward structures embedded within online platforms. Complementary Vietnamese research indicates that emotional instability, low self-regulation, and social isolation are predictive factors for maladaptive Internet use among adolescents and young adults (Ho Van Dung et al., 2020). Together, these perspectives frame Internet behavior as a socially conditioned and psychologically mediated phenomenon rather than a purely individual habit.

Despite the expansion of global scholarship on digital behavior and student well-being, empirical evidence from Vietnamese higher education—particularly from regional public universities—remains limited. Much of the existing literature concentrates on metropolitan institutions, overlooking contextual variations in digital infrastructure, student socio-economic background, and institutional support systems. First-year university students constitute a particularly vulnerable population. The transition from secondary education to higher education involves increased autonomy, academic pressure, social restructuring, and identity formation, all of which may amplify both the opportunities and risks associated with Internet use.

Against this backdrop, the present study seeks to address two central research questions: (1) How does Internet use relate to academic effectiveness and emotional well-being among first-year students at Dong Thap university? and (2) What systemic, evidence-informed solutions can enhance healthy and academically productive Internet engagement within university contexts? By integrating quantitative and qualitative evidence, this study aims to contribute to the theoretical understanding of digital behavior in transitional educational stages and to inform institutional strategies aligned with sustainable digital transformation in Vietnamese higher education.

2. MATERIAL AND METHODS

2.1 Research Design

This study adopted a convergent mixed-methods design, integrating quantitative survey analysis with qualitative focus group inquiry to obtain both statistical generalizability and contextual depth. The mixed-methods approach was selected to capture the multidimensional nature of Internet use, which encompasses behavioral frequency, regulatory capacity, and emotional experience. In accordance with methodological guidelines for mixed-methods research in educational psychology, quantitative and qualitative data were collected during the same phase of the study, analyzed independently, and subsequently integrated to enable triangulation and interpretative complementarity.

The quantitative component examined structural relationships between Internet use patterns, self-regulation, and emotional well-being. The qualitative component explored students' lived experiences of digital engagement, perceived academic benefits, emotional challenges, and institutional support gaps. This design strengthens internal validity and enhances ecological interpretability within the university

context.

2.2 Participants

The study sample comprised 534 first-year undergraduate students enrolled at Dong Thap University during the 2024–2025 academic year. Participants were recruited from five faculties representing both social sciences and natural sciences to ensure disciplinary diversity. The gender distribution was 62% female and 38% male, with a mean age of 18.7 years ($SD = 0.6$), reflecting the transitional cohort entering higher education directly from secondary schooling.

A stratified convenience sampling procedure was employed to ensure representation across faculties. Participation was voluntary, and informed consent was obtained prior to data collection. The study protocol was reviewed and approved by the university's academic ethics committee. Anonymity and confidentiality were strictly maintained, and students were informed of their right to withdraw at any stage without penalty.

2.3 Instruments

Data were collected using standardized and validated instruments widely employed in digital behavior and psychological research. All scales were translated into Vietnamese using forward–backward translation procedures to ensure linguistic equivalence.

The first is **Academic Internet Use Scale**. This scale assessed the frequency and purpose of Internet use for academic activities, including information retrieval, online collaboration, digital coursework, and research engagement. Items were rated on a five-point Likert scale (1 = Never to 5 = Very Frequently). Higher scores indicated more structured academic utilization.

The second is **Problematic Internet Use Short Form (PIU-SF)**. The PIU-SF measured behavioral dysregulation, compulsive engagement, and functional impairment associated with Internet overuse. The instrument demonstrated strong internal consistency in prior research and was used to classify moderate-to-high risk usage patterns.

The third is **Self-Regulated Learning Scale (SRL-S)**. This instrument evaluated students' goal-setting, time management, monitoring strategies, and behavioral control in digital learning contexts. Self-regulation was conceptualized as a mediating construct between Internet intensity and emotional outcomes.

The fourth is **Depression–Anxiety–Stress Scale (DASS-21)**. The DASS-21 assessed emotional distress across three domains: depression, anxiety, and stress. It has demonstrated robust psychometric properties

across cross-cultural student populations and provided standardized indicators of emotional well-being.

2.4 Data Analysis

Data analysis proceeded in two complementary phases consistent with the convergent mixed-methods design.

First, quantitative data were analyzed using SPSS. Preliminary screening included examination of missing data, normality (skewness and kurtosis indices), multicollinearity (VIF and tolerance values), and homoscedasticity. All assumptions for parametric testing were met. Internal consistency reliability was verified using Cronbach's alpha coefficients ($\alpha > .70$ for all scales).

Descriptive statistics summarized patterns of Internet use, self-regulation, and emotional well-being. Pearson correlation analysis examined bivariate associations among academic Internet use, problematic Internet use, self-regulated learning, and emotional distress indicators.

Hierarchical multiple regression analyses were conducted to assess predictive relationships while controlling for demographic variables. To test the mediating role of self-regulation in the relationship between Internet use intensity and emotional distress, bootstrapped mediation analysis (5,000 resamples) was performed using the PROCESS macro (Model 4). Indirect effects were considered significant when 95% confidence intervals excluded zero. This analytic strategy enabled examination of both direct and indirect pathways, strengthening explanatory inference.

Second, qualitative data from focus group discussions were analyzed using thematic analysis. An inductive–deductive coding approach identified recurrent behavioral patterns, emotional experiences, and perceived institutional limitations. Codes were subsequently organized into higher-order themes aligned with theoretical constructs such as self-regulatory control, digital reinforcement mechanisms, and psychosocial vulnerability. Inter-coder reliability exceeded 85%, enhancing analytical credibility.

In short, integration occurred at the interpretative stage through triangulation. Quantitative findings regarding predictive relationships were contextualized with qualitative narratives explaining underlying behavioral and emotional mechanisms. This integrative procedure enhanced construct validity, ecological relevance, and theoretical coherence, consistent with methodological standards in high-impact higher education research.

3. Results

3.1 Patterns of Internet Use

Descriptive analyses reveal that Internet use is deeply embedded in the academic routines of first-year students. A substantial majority (92.6%) reported daily Internet use for academic purposes, including accessing learning management systems, searching for academic materials, and participating in online group discussions. The mean daily online duration was 5.8 hours (SD = 1.9), with 27.3% of participants reporting more than 7 hours of daily use.

Despite high levels of academic engagement, problematic use patterns were also evident. Based on the established cut-off criteria of the Problematic Internet Use Short Form, 38.4% of students met the threshold for moderate-to-high problematic Internet use (PIU). Among this subgroup, 61% reported difficulty controlling online time, and 44% indicated sleep disruption associated with late-night browsing. Correlation analysis showed that total daily online time was positively associated with PIU scores ($r = .49$, $p < .001$), suggesting behavioral dysregulation increases with prolonged exposure.

These findings indicate a dual-use pattern: while Internet access supports academic engagement, a significant proportion of students exhibit maladaptive regulatory patterns.

3.2 Emotional Correlates of Internet Use

Hierarchical regression analysis demonstrated that excessive social media use significantly predicted higher levels of anxiety ($\beta = .41$, $p < .01$) after controlling for gender and faculty affiliation. Additionally, social media intensity was negatively associated with academic concentration ($\beta = -.37$, $p < .01$), indicating that higher engagement in non-academic online activities corresponded with diminished attentional control during study tasks.

Mediation analysis revealed that self-regulation significantly mediated the relationship between Internet use intensity and emotional distress. The indirect effect accounted for 52% of the total effect, with bootstrapped confidence intervals (95% CI) excluding zero. Students with higher self-regulated learning scores demonstrated reduced vulnerability to anxiety and stress even at comparable levels of Internet exposure.

These results suggest that Internet intensity alone does not determine emotional outcomes; rather, regulatory capacity functions as a critical protective mechanism.

3.3 Qualitative Findings

Thematic analysis of focus group discussions provided contextual depth to the quantitative findings. Three

dominant themes emerged.

First, students described persistent difficulty balancing academic and entertainment use. Many reported beginning online sessions for coursework but subsequently shifting to social media or short-form video platforms due to distraction and algorithmic recommendations.

Second, emotional dependency on social validation emerged as a salient pattern. Participants reported anxiety associated with online feedback metrics (e.g., likes, comments), social comparison, and fear of missing out. Several students linked mood fluctuations to digital interactions.

Third, participants highlighted limited institutional guidance regarding digital well-being. While technological infrastructure was available, structured training on time management, digital self-regulation, and emotional coping in online environments was perceived as insufficient.

In fact, the results collectively indicate that Internet use among first-year students at Dong Thap university is characterized by high academic reliance coupled with substantial risk of dysregulated engagement. Emotional outcomes are significantly influenced by self-regulatory capacity, and institutional support mechanisms appear underdeveloped. These findings provide an empirical foundation for the development of systemic, prevention-oriented intervention strategies within the university context.

4. Discussion

The present findings substantiate a dual-impact model of Internet engagement among first-year university students, wherein academic empowerment and emotional vulnerability coexist within the same digital ecology. On one hand, high levels of daily academic Internet use (92.6%) reflect the normalization of digital platforms as essential infrastructures for learning. On the other hand, the substantial proportion of students meeting criteria for moderate-to-high problematic Internet use (38.4%) underscores the psychosocial risks associated with dysregulated engagement. This coexistence aligns with international evidence suggesting that digital technologies function simultaneously as cognitive enhancers and behavioral stressors, depending on patterns of use and regulatory capacity.

The predictive relationship between excessive social media engagement and anxiety, as well as diminished academic concentration, reinforces theoretical explanations grounded in Social Learning Theory (Bandura, 1977). Digital behaviors are shaped and reinforced through observational modeling, peer norms, and algorithmically mediated reward

mechanisms. Features such as instant feedback, social comparison metrics, and variable reinforcement schedules contribute to habitual checking behaviors and emotional reactivity. Within such digitally saturated environments, behavioral reinforcement is continuous and socially amplified, increasing susceptibility to attentional fragmentation and mood fluctuations.

Crucially, self-regulation emerged as a significant mediating variable, accounting for 52% of the relationship between Internet intensity and emotional distress. This finding is theoretically consistent with self-regulated learning frameworks, which conceptualize goal-setting, monitoring, and impulse control as core determinants of adaptive academic functioning. Students demonstrating stronger regulatory competencies were less vulnerable to anxiety and attentional decline despite comparable levels of digital exposure. Thus, the detrimental impact of Internet use is not inherent to technology itself but is contingent upon the learner's regulatory capacity and contextual scaffolding.

Importantly, the qualitative findings extend the quantitative results by situating Internet behavior within broader ecological systems. Students described difficulty distinguishing academic from entertainment use due to seamless platform integration and algorithm-driven content transitions. Emotional dependency on online validation further reflects the social embedding of digital interaction within peer cultures. These dynamics indicate that Internet engagement is not merely an individual behavioral choice but a socially conditioned practice embedded in institutional routines and digital infrastructures.

Accordingly, the Vietnamese university context requires systemic rather than exclusively individual-level interventions. An ecological perspective suggests that digital behavior is shaped by interacting layers: peer culture (normative expectations and social comparison), institutional norms (curricular integration and digital governance), and technological architecture (platform design and accessibility). Without coordinated institutional guidance, students navigate complex digital environments largely independently, increasing vulnerability during transitional academic stages.

Therefore, enhancing effective and emotionally healthy Internet use necessitates multilevel strategies that combine digital literacy education, structured self-regulation training, institutional digital well-being policies, and accessible psychological support systems. Such systemic alignment transforms digital engagement from a risk-laden behavior into a developmentally supportive academic tool. In this regard, the findings contribute not only to theoretical

understanding of Internet use in transitional educational contexts but also to policy-oriented discourse on sustainable digital transformation in Vietnamese higher education.

5. A Systemic and Evidence-Driven Model for Designing Effective Interventions

Building on the empirical findings and grounded in ecological systems theory (Bronfenbrenner, 1979), social learning theory (Bandura, 1977), and digital competence frameworks (UNESCO, 2018), this study proposes a five-component systemic intervention model to enhance academically effective and emotionally healthy Internet use among first-year students at Dong Thap university. These solutions operate at curricular, psychological, institutional, and socio-developmental levels, ensuring multilevel coherence rather than fragmented intervention.

5.1 Curriculum-Integrated Digital Literacy

Digital literacy must be institutionalized as a core academic competency rather than treated as an auxiliary technical skill. Contemporary frameworks conceptualize digital competence as encompassing critical information evaluation, ethical online conduct, privacy awareness, and metacognitive regulation of screen time (UNESCO, 2018). The findings of this study indicate that although students demonstrate high academic Internet engagement, many lack structured guidance in discerning credible sources, managing algorithm-driven distractions, and maintaining cognitive focus.

Accordingly, compulsory first-year modules should embed digital ethics, academic source verification, time-management strategies, and reflective digital practices into the formal curriculum. These modules should incorporate applied assessments—such as digital research portfolios and misinformation detection tasks—to operationalize competence rather than merely transmit knowledge. Evidence from higher education research demonstrates that structured digital literacy integration enhances autonomous learning, reduces susceptibility to misinformation, and improves academic performance. By aligning curriculum with digital competence standards, universities can transform Internet use from passive consumption into disciplined academic engagement.

5.2 Structured Self-Regulation Training

The present findings identify self-regulation as a significant mediating variable between Internet intensity and emotional distress, accounting for over half of the observed effect. This underscores the centrality of regulatory capacity in mitigating anxiety and attentional fragmentation. Self-regulated learning theory posits that goal setting, monitoring, strategic adjustment, and impulse control are foundational for

adaptive academic functioning (Zimmerman, 2008).

Universities should therefore implement structured training programs focusing on digital self-regulation. These programs should include goal-setting workshops, distraction management strategies, cognitive reframing techniques, and digital detox planning. Emotional monitoring and mindfulness practices can further strengthen students' awareness of the affective consequences of prolonged online engagement. Importantly, these interventions should be interactive and practice-oriented, incorporating self-monitoring logs and behavioral feedback rather than purely theoretical instruction. Empirical research consistently demonstrates that self-regulation training reduces anxiety and improves academic persistence, making it a critical preventive mechanism within digitally intensive learning environments.

5.3 Institutional Digital Well-Being Policy

Internet behavior is shaped not only by individual traits but also by institutional norms and technological architecture. An ecological perspective suggests that sustainable behavioral change requires environmental scaffolding. Without explicit governance, students navigate algorithmically optimized digital ecosystems independently, increasing vulnerability to distraction and emotional overload.

A comprehensive university digital well-being policy should therefore articulate clear expectations regarding balanced technology use. This may include structured digital-free periods during lectures, notification management protocols within learning platforms, and campus-wide awareness campaigns addressing screen time and cognitive health. Importantly, policy development should involve student participation to ensure cultural legitimacy and compliance. Research indicates that environmental regulation combined with normative reinforcement enhances attentional control and reduces problematic engagement. By formalizing digital well-being as part of institutional governance, universities can reshape campus digital culture toward intentional and health-promoting practices.

5.4 Early Psychological Screening and Tiered Support

Given that 38.4% of students in this study met criteria

for moderate-to-high problematic Internet use, early detection is essential. Multi-tiered support models in higher education emphasize proactive screening as a cornerstone of preventive mental health care. Screening during first-semester orientation using validated instruments (e.g., PIU measures and emotional distress scales) enables early identification of vulnerable students before maladaptive patterns consolidate.

Following screening, universities should provide accessible counseling services, digital behavior consultations, and peer-support networks. Tiered intervention pathways—ranging from universal psychoeducation to individualized counseling—ensure proportional response to varying levels of need. International evidence demonstrates that early mental health screening and structured referral systems significantly reduce anxiety and academic attrition. Embedding digital well-being within broader student mental health frameworks enhances both efficiency and sustainability.

5.5 Experiential and Offline Engagement

The qualitative findings highlight students' emotional dependency on online validation and difficulty balancing academic and entertainment use. Positive youth development research emphasizes that meaningful offline engagement—through sports, arts, service-learning, and peer-led initiatives—strengthens psychosocial resilience and reduces reliance on virtual reinforcement mechanisms.

Universities should therefore promote structured experiential programs that foster real-world collaboration and social connectedness. Service-learning projects linking academic coursework with community impact can cultivate purpose-driven engagement, thereby counterbalancing algorithm-driven digital stimulation. Participation in campus clubs and physical activities has been empirically associated with lower levels of problematic Internet use and improved emotional well-being. By expanding offline developmental opportunities, institutions provide students with embodied alternatives that support holistic growth.



Figure 1. The model of 5 effective solutions for healthy internet engagement

Synthesis

Collectively, these five solutions constitute an ecologically coherent intervention framework addressing Internet behavior at cognitive, emotional, institutional, and social levels. Rather than framing Internet overuse as an individual deficit, this model situates digital engagement within interacting systems—curricular structures, regulatory skills, institutional governance, mental health infrastructure, and experiential balance.

By integrating digital literacy, self-regulation development, policy alignment, psychological support, and offline engagement, universities can transform Internet use from a source of emotional vulnerability into a structured and developmentally supportive academic resource. This systemic orientation aligns with international best practices and offers a scalable model adaptable to Vietnamese higher education contexts undergoing rapid digital transformation.

CONCLUSION

This study demonstrates that Internet engagement among first-year students at Dong Thap University reflects a complex dual-function dynamic. On one hand, digital connectivity has become an indispensable academic resource that supports information access, collaborative learning, and coursework completion. On the other hand, patterns of intensive and poorly regulated use are associated with identifiable psychosocial vulnerabilities. The quantitative findings reveal a high level of daily reliance on the Internet for academic purposes, accompanied by a notable prevalence of problematic use behaviors. Within this relationship, self-regulation appears to function as a pivotal mediating mechanism shaping students' emotional well-being and adaptive digital habits. Complementary qualitative evidence further indicates that online behavior is not merely an individual choice but is embedded within broader socio-digital structures, including peer interaction norms, algorithm-driven reinforcement systems, and the relative absence of institutional guidance regarding responsible digital engagement.

Taken together, these findings suggest that Internet-related challenges in higher education should not be treated as isolated behavioral issues or addressed solely through reactive interventions. Rather, they call for a coordinated institutional response grounded in systemic thinking and preventive governance. In this context, the study proposes an integrated digital well-being framework that combines curriculum-based digital literacy education, structured development of self-regulation capacities, institutional policies supporting healthy digital practices, early

psychological screening mechanisms, and opportunities for meaningful offline engagement. By situating student behavior within a broader ecological and institutional context, this model provides a sustainable pathway for strengthening both academic functioning and students' emotional resilience in increasingly digitized learning environments.

Future research should extend this work through longitudinal and quasi-experimental designs capable of examining causal pathways and long-term outcomes. In particular, empirical evaluation of the proposed framework could clarify its effects on academic performance trajectories, psychological well-being, and the durability of healthy digital habits among university students. Such evidence would contribute not only to the refinement of institutional digital well-being strategies but also to the broader discourse on responsible digital governance in Vietnamese higher education.

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