

Digital Anxiety and Learning Focus Among Senior High School Students: A Mixed-Methods Study from Buddhist Psychology Perspective in Wonogiri, Indonesian

Indi Darma Oktavia*, Hesti Sadtyadi, Novianti

Sekolah Tinggi Agama Buddha Negeri Raden Wijaya Wonogiri, Kantil St., Wonogiri, Central Java, 57615, Indonesia

*Corresponding author, email: indidarmao@gmail.com

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Abstract

This study investigated digital anxiety and its relationship with learning focus among senior high school students in Wonogiri, Indonesia, employing an explanatory sequential mixed-methods design integrated with Buddhist psychological perspectives. The quantitative phase collected data from 40 students using a validated 48-item questionnaire measuring social media use, digital literacy, and digital anxiety, while the qualitative phase conducted in-depth interviews with six purposively selected participants. Quantitative analysis revealed that 95% of students experienced moderate-to-high levels of digital anxiety, with a strong positive correlation between social media use and digital anxiety. Qualitative thematic analysis identified four interconnected themes forming a cyclical pattern: digital distraction patterns, academic guilt and regret, concentration difficulties, and reflective awareness with coping efforts. The integration of quantitative and qualitative findings through joint display analysis demonstrated convergence between statistical relationships and lived experiences, with high social media users reporting more intense distraction patterns and guilt. Cross-tabulation analysis revealed no significant gender differences in anxiety levels, suggesting the phenomenon affects students regardless of gender. The cyclical pattern identified parallels the Buddhist psychological concept of restlessness-worry, providing a culturally relevant framework for understanding digital anxiety among Indonesian adolescents. These findings suggest that comprehensive interventions should address multiple points in the anxiety cycle, combining mindfulness-based approaches with digital literacy education.

1. Introduction

Digital transformation has significantly expanded educational opportunities by improving access to information, online resources, and technology-supported learning environments (Althubaiti et al., 2022). At the same time, however, it has introduced new psychological and cognitive challenges for students, particularly in the form of digital anxiety characterized by distraction, information overload, constant connectivity, and pressure to remain continually responsive online. For adolescents, these challenges may be particularly significant due to ongoing developmental processes related to self-regulation, attention control, and emotional management, making them more vulnerable to digital distraction and difficulties sustaining academic focus (Throuvala, 2021). Emerging research suggests that digital anxiety is not merely a technological issue, but also a psychological phenomenon involving patterns of restless attention, compulsive checking behaviors, and worry that may interfere with concentration and learning (Jacksona, 2020). In this regard, Buddhist psychology offers a useful conceptual lens, particularly through the concepts of restlessness and worry, which help explain how persistent mental agitation and concern can disrupt focused attention. Integrating these perspectives provides a broader foundation for understanding digital anxiety not only as a consequence of technology use, but as a cognitive-emotional challenge with implications for students' learning focus and wellbeing (Lampropoulos, 2024).

Indonesia provides a highly relevant context for examining digital anxiety stemming from the rapid growth of digital technology and the high level of adolescent engagement on social media, where online interactions increasingly overlap with academic responsibilities. The expansion of digital learning following the COVID-19 pandemic has further reinforced students' reliance on technology, which often blurs the line between educational use and recreational digital activities (Siste, Hanafi, Sen, Murtani, & Christian, 2021).

Buddhist psychology provides a relevant framework for understanding digital anxiety, particularly through the concepts of restlessness and worry as mental states that disturb concentration and emotional balance. These concepts closely reflect students' experiences of digital distraction, academic guilt, concern about missed updates, and worry over the academic consequences of excessive digital engagement (Wang, 2022). In this sense, Buddhist psychology offers not only conceptual tools for interpreting contemporary digital anxiety but also a culturally relevant perspective within the Indonesian context. Wonogiri, supported by its educational and cultural environment, provides an appropriate setting for integrating this perspective into educational research. Rather than treating digital anxiety solely as a technological or behavioral problem, this framework highlights its cognitive and emotional dimensions, especially how distraction and worry can form a recurring cycle that disrupts learning focus (Novianti, 2024). Thus, integrating Buddhist psychology contributes both local relevance and a broader cross-cultural perspective for understanding digital anxiety and informing potential interventions (Safaria, Nubli, Wahab, Suyono, & Hartanto, 2024).

Previous research has consistently shown that intensive social media use and constant digital connectivity can undermine students' attention, increase stress, and negatively affect academic performance. Studies in educational psychology have linked digital distraction with reduced concentration, multitasking overload, and difficulty sustaining deep learning focus (Ratu, 2026). Other research has examined technology-related anxiety, suggesting that excessive engagement with digital platforms may generate emotional strain, fear of missing out, and cognitive fatigue among adolescents. While these studies provide important insights, they often treat digital anxiety primarily as a behavioral or technological issue, with less attention to its subjective psychological dynamics. In addition, many studies rely predominantly on quantitative approaches, offering limited understanding of how students actually experience the cycle of distraction, guilt, and disrupted focus in daily learning contexts (Gadagnoto, Maria, Mendes, & Machado-kayzuka, 2024).

However, the current body of literature contains notable gaps that this study seeks to address. First, most existing research employs purely quantitative approaches that fail to capture the lived experiences and subjective meanings students attach to their digital engagement patterns, missing the rich contextual understanding that qualitative inquiry can provide (Keles & McCrae, 2020). Second, few studies have examined digital anxiety through cross-cultural psychological frameworks, particularly perspectives from non-Western philosophical traditions that may offer alternative conceptualizations and intervention approaches (Wen, Yifan, & Gaohui, 2024). Third, the Indonesian context remains underexplored in international literature despite the country's status as one of the world's largest social media user populations and its unique cultural characteristics that may influence how digital anxiety manifests and can be addressed (Amalia, Amira, Nur, & Lubis, 2026). Fourth, the developmental context of senior high school students, who face unique pressures balancing academic demands with digital socialization needs during a critical period of identity formation, requires specialized attention that considers their particular vulnerabilities and resources (Orben, 2020).

This study addresses these gaps by employing a mixed-methods approach to investigate digital anxiety and learning focus among senior high school students in Wonogiri, Indonesia. The research objectives were formulated as follows: first, to measure the prevalence and intensity of digital anxiety among senior high school students in Wonogiri, establishing baseline data for this underexplored population; second, to examine statistical relationships between social media use patterns, digital literacy levels, and digital anxiety, testing hypotheses about their interconnections; third, to explore the lived experiences of digital distraction and its impact on learning focus through in-depth qualitative inquiry that captures the texture and meaning of students' experiences; and fourth, to integrate quantitative and qualitative findings within the Buddhist psychological framework to develop a comprehensive understanding of the phenomenon that bridges empirical measurement with phenomenological depth.

2. Method

2.1. Research Design

This study employed an explanatory sequential mixed-methods design, a rigorous approach that involves two distinct phases: an initial quantitative phase followed by a qualitative phase that helps explain and elaborate upon the quantitative findings (Aschbrenner, 2022). This design was selected for several compelling reasons based on the nature of the research questions and the phenomenon under investigation. First, the complexity of digital anxiety as a psychological phenomenon requires examination from multiple methodological perspectives to capture both its measurable dimensions and subjective experiences; neither approach alone would provide adequate understanding. Second, the integration of quantitative and qualitative findings allows for more robust conclusions through triangulation, where convergent findings strengthen confidence in results, and complementarity, where qualitative data adds depth to quantitative patterns. Third, the explanatory sequential design enables the qualitative phase to be informed by quantitative results, ensuring that interview questions address patterns identified in the statistical analysis and probe areas where quantitative findings require elaboration (Pfaffinger et al., 2021).

The quantitative phase employed a cross-sectional survey design to establish baseline measurements of digital anxiety prevalence, identify statistical relationships between variables, and select participants for the qualitative phase based on their anxiety profiles. Cross-sectional design was appropriate given the study's descriptive and correlational objectives and the practical constraints of the research timeline (Abduh, Alawiyah, Apriansyah, Abdullah, & Afgani, 2023). The qualitative phase utilized phenomenological interviews to explore the lived experiences of students demonstrating various levels of digital anxiety, providing rich contextual data to explain the mechanisms underlying quantitative relationships. Phenomenological approach was selected because it focuses on understanding the essence of experiences from the perspective of those who live them, which aligned with our goal of understanding how students subjectively experience digital anxiety in their daily academic lives (Nita & Putra, 2025).

2.2. Participants and Setting

The research was conducted in Wonogiri Regency, Central Java Province, Indonesia, during the period from February to April 2026. Wonogiri is a semi-rural regency with a population of approximately 900,000 residents, characterized by increasing digital infrastructure development while maintaining traditional Javanese cultural values. The regency has multiple senior high schools serving students from diverse socioeconomic backgrounds, ranging from families engaged in agriculture and small-scale trade to those employed in government and professional services. This diversity provided access to a range of student experiences with digital technology.

For the quantitative phase, participants were 40 senior high school students recruited through stratified random sampling from five schools across Wonogiri Regency. The sample size was determined through power analysis indicating that 40 participants would provide adequate power (0.80) to detect medium effect sizes in correlation analyses at alpha level 0.05. The sample comprised 25 females (62.5%) and 15 males (37.5%), reflecting the gender distribution typical of Indonesian senior high schools. Ages ranged from 15 to 19 years, with a mean age of 16.89 years and a standard deviation of 0.84, indicating a relatively homogeneous age distribution centered on the typical senior high school age range. Participants were distributed across grades 10, 11, and 12, ensuring representation of different academic levels and developmental stages within the senior high school context. The participating schools included both urban and semi-urban locations within Wonogiri Regency, providing some variation in local context while maintaining the overall semi-rural character of the region.

Inclusion criteria required participants to be currently enrolled in a senior high school in Wonogiri Regency, own a smartphone with internet access, use at least one social media platform regularly (defined as daily use), and provide informed consent with parental approval for those under 18 years of age. These criteria ensured that all participants had direct experience with the digital phenomena under investigation. Exclusion criteria included students with diagnosed anxiety disorders or other mental health conditions that might confound the assessment of digital-specific anxiety, and students unable to complete the questionnaire due to language or comprehension difficulties. These exclusions protected both the validity of the study findings and the welfare of potentially vulnerable individuals.

For the qualitative phase, six participants were purposively selected based on their digital anxiety scores and willingness to share their experiences in depth. Purposive sampling was employed to ensure the qualitative sample included participants who could provide rich information about the phenomena of interest. The qualitative sample included four females and two males, aged 16 to 17 years, representing five different schools: Senior High School students in a semi-rural district in Central Java, Indonesia. Selection criteria for qualitative participants included demonstrating moderate to high digital anxiety scores in the quantitative phase, self-reported daily digital media use of six hours or more indicating substantial engagement with digital technology, and articulate communication skills enabling rich data generation during interviews. All selected participants agreed to participate in audio-recorded interviews and provided written informed consent.

2.3. Instruments

A 48-item questionnaire was developed following established instrument development procedures (Nunnally & Bernstein, 1994). The instrument consisted of three subscales: Social Media Use (16 items), Digital Literacy (16 items), and Digital Anxiety (16 items), rated on a 4-point Likert scale. Validation included expert review by three professors, pilot testing with 20 students, and statistical analysis. Content validity index was 0.89, and Cronbach's alpha coefficients were: overall 0.87, Social Media Use 0.82, Digital Literacy 0.79, and Digital Anxiety 0.84. The qualitative phase employed semi-structured interviews guided by a protocol containing ten primary questions addressing digital use habits, concentration perceptions, emotional experiences, and coping strategies.

2.4. Data Collection Procedures

Quantitative data collection occurred during February 2026 through classroom-administered questionnaires. Research assistants trained in standardized administration procedures visited each

participating school during regular class hours after obtaining permission from school administrators. They explained the study purpose and procedures in terms appropriate for adolescent participants, emphasized the voluntary nature of participation and confidentiality of responses, distributed informed consent forms for students to review and sign, and administered the questionnaire to consenting students. Students who chose not to participate were provided alternative activities during the questionnaire completion period to avoid any sense of coercion. Completion time averaged 25 to 30 minutes, with research assistants available to answer questions about item meaning if needed without providing guidance on how to respond. All questionnaires were completed anonymously to encourage honest responses, with only demographic information and a participant code recorded for potential qualitative follow-up.

Qualitative data collection took place during February to April 2026 through individual interviews conducted at times and locations convenient for participants, typically in quiet rooms at their respective schools during non-class hours. Each interview lasted between 45 and 60 minutes, was audio-recorded with participant permission using a digital recorder and was conducted entirely in Bahasa Indonesia to ensure comfortable self-expression. The interviewer, trained in qualitative research methods, used active listening techniques, minimal encouragers, and thoughtful probing to facilitate deep reflection while maintaining a non-judgmental stance that encouraged honest sharing of experiences including potentially embarrassing admissions about excessive digital use or academic difficulties. At the conclusion of each interview, participants were given the opportunity to add any information they felt was important but had not been addressed and were thanked for their contribution to the research.

2.5. Data Analysis

Quantitative data were analyzed using SPSS version 26 through a systematic process: checking data completeness, descriptive statistics, grouping digital anxiety levels (low, moderate, high), Pearson’s correlation test to examine relationships between variables, and an independent t-test to compare anxiety levels by gender, with effect size interpretation based on Cohen’s guidelines (Esteban, 2022). Qualitative data were analyzed using Braun and Clarke’s six-stage thematic analysis, encompassing data familiarization, initial coding, theme generation, theme review, theme naming, and final analysis. This process yielded over 160 initial codes, and inter-researcher discussions were conducted to enhance credibility through researcher triangulation (Braun & Clarke, 2020). The integration of quantitative and qualitative findings utilized a joint display approach via a matrix linking quantitative results and qualitative themes to identify convergence, divergence, and extensions of the findings. This integration yields meta-inferences regarding digital anxiety, its relationship to learning focus, and its alignment with Buddhist psychological concepts, thereby strengthening the validity and depth of the research interpretation (Peters & Fàbregues, 2024).

3. Results and Discussion

3.1. Results

3.1.1. Quantitative Findings

Analysis of the 48-item questionnaire yielded comprehensive descriptive statistics for the three main variables under investigation. The complete descriptive findings are presented in Table 1, which displays means, standard deviations, and ranges for each variable, providing a foundational understanding of the sample’s characteristics on the measured constructs.

Table 1. Descriptive Statistics for Research Variables (N=40)

Variable	Mean	SD	Min	Max
Social Media Use	2.96	0.44	1.56	3.94
Digital Literacy	3.19	0.32	2.75	4.00
Digital Anxiety	2.73	0.56	1.88	4.00

For Social Media Use, the mean score of 2.96 on the 4-point scale indicates that students on average reported moderate to high levels of social media engagement across the 16 items measuring this construct. This mean falls just below the scale midpoint of 2.5, suggesting that while students do not universally agree with statements about extensive social media use, there is substantial engagement overall. The standard deviation of 0.44 suggests relatively consistent patterns across the sample with moderate variability, though the full range of scores from 1.56 to 3.94 indicates that substantial individual differences exist in social media engagement patterns. Some students demonstrate minimal social media involvement while others approach the maximum possible score, highlighting the heterogeneity within this senior high school population.

Digital Literacy scores were highest among the three subscales, with a mean of 3.19 and the smallest standard deviation of 0.32, suggesting that students generally possess strong digital skills with relatively

consistent competency levels across the sample. The narrow range from 2.75 to 4.00 further confirms this homogeneity; no students scored in the low digital literacy range. This finding indicates that the students sampled have acquired substantial digital skills, which is unsurprising given their status as digital natives who have grown up with technology embedded in their educational and social environments. Their technical competence, however, does not necessarily translate to psychological resilience in digital environments, as will be evident in the anxiety findings.

Digital Anxiety showed a mean score of 2.73, falling within the moderate range on the measurement scale, with the largest standard deviation of 0.56, indicating greater variability in anxiety experiences among participants compared to the other two variables. The range extended from 1.88, indicating relatively low anxiety, to 4.00, the maximum possible score indicating agreement with all anxiety items. This variability suggests that while digital anxiety is common in this population, the intensity of the experience varies considerably among individuals, with some students experiencing minimal distress and others reporting substantial anxiety related to their digital engagement and its impacts on academic focus.

To better understand the distribution of digital anxiety experiences and identify the proportion of students experiencing clinically meaningful levels of distress, scores were categorized into three interpretive levels. Table 2 presents the frequency distribution across anxiety categories, providing a clearer picture of how many students fall into each severity range.

Table 2. Digital Anxiety Level Distribution (N=40)

Category	Score Range	n	Percentage
Low	< 2.00	2	5.0%
Moderate	2.00 – 2.99	24	60.0%
High	≥ 3.00	14	35.0%

The distribution reveals a striking pattern with important implications for educational practice. Only 2 students (5.0%) reported low digital anxiety, suggesting that freedom from digital-related distress is rare in this population. The majority of students, numbering 24 (60.0%), fell within the moderate anxiety range, indicating consistent experience of digital-related worry, restlessness, and concentration difficulties even if these do not reach the highest intensity. Perhaps most concerning, 14 students (35.0%) demonstrated high levels of digital anxiety, reporting agreement with most items describing digital-related distress. Combining the moderate and high categories reveals that fully 95% of the sample experienced at least moderate levels of digital anxiety, indicating the pervasive nature of this phenomenon among senior high school students in Wonogiri and suggesting a pressing need for intervention.

Pearson correlation analysis examined the bivariate relationships between the three main variables to test hypotheses about their interconnections. Table 3 presents the complete correlation matrix with significance levels and provides the foundation for understanding how these constructs relate to one another statistically.

Table 3. Pearson Correlation Matrix (N=40)

Variable	1	2	3
1. Social Media Use	1.00		
2. Digital Literacy	0.53***	1.00	
3. Digital Anxiety	0.60***	0.39*	1.00

Note. * $p < .05$, *** $p < .001$

The correlation between Social Media Use and Digital Anxiety was positive and statistically significant, with a correlation coefficient of 0.60 reaching significance at $p < .001$. According to Cohen's widely-used guidelines for interpreting effect sizes, this represents a large effect, indicating that students who report higher levels of social media use tend to experience substantially higher levels of digital anxiety. This relationship accounts for approximately 36% of the variance in digital anxiety, a substantial portion that underscores the importance of social media use as a factor in understanding digital-related distress. The relationship aligns with theoretical predictions and existing literature suggesting that more extensive engagement with social media creates more opportunities for negative experiences including social comparison, fear of missing out, and time displacement from academic activities.

The correlation between Digital Literacy and Digital Anxiety was also positive and statistically significant at $r = 0.39$ with $p = .013$, representing a medium effect size according to Cohen's guidelines. This finding is particularly noteworthy because it contradicts the intuitive assumption that greater digital literacy would protect against digital anxiety through better understanding and control of digital environments. Instead, students who demonstrate higher digital literacy also tend to report higher levels of digital anxiety. This unexpected positive relationship suggests that digital literacy and digital anxiety may share common

antecedents, such as overall engagement with digital technology, or that increased awareness of digital risks that accompanies higher literacy may paradoxically increase anxiety.

The correlation between Social Media Use and Digital Literacy was positive and strong at $r = 0.53$ with $p < .001$, accounting for approximately 28% of shared variance. This relationship suggests that students who engage more extensively with social media also tend to develop stronger digital literacy skills, which makes intuitive sense as greater use provides more opportunities to develop technical competencies. However, it also means that interventions targeting social media use may inadvertently affect digital literacy development, a consideration that should inform intervention design.

To examine potential gender differences in digital anxiety, independent samples t-tests were conducted comparing female and male participants across all three variables. Table 4 presents the gender comparison results for digital anxiety, the primary dependent variable.

Table 4. Gender Comparison of Digital Anxiety

Gender	n	Mean	SD	t	p
Female	25	2.74	0.65		
Male	15	2.73	0.38	0.07	.947

The analysis revealed no statistically significant difference in digital anxiety between female students ($M = 2.74$, $SD = 0.65$) and male students ($M = 2.73$, $SD = 0.38$), with $t(38) = 0.07$ and $p = .947$. The means are virtually identical, differing by only 0.01 points on the 4-point scale. This finding suggests that digital anxiety affects students similarly regardless of gender in this Indonesian sample, which has important implications for intervention design. However, it is notable that the standard deviation among females (0.65) is substantially larger than among males (0.38), indicating greater variability in anxiety experiences among female students. Some females report very low anxiety while others report very high anxiety, whereas male responses cluster more closely around the mean.

Cross-tabulation analysis further examined the distribution of anxiety levels by gender to provide additional detail about this relationship. Among female students, 1 demonstrated low anxiety (4%), 15 showed moderate anxiety (60%), and 9 exhibited high anxiety (36%). Among male students, 1 demonstrated low anxiety (7%), 9 showed moderate anxiety (60%), and 5 exhibited high anxiety (33%). The proportions across categories are remarkably similar between genders, and Chi-square analysis confirmed no significant association between gender and anxiety category. This pattern of similar means but different variances suggests that while the average level of digital anxiety does not differ by gender, the factors influencing individual variation may operate differently for males and females.

3.1.2. Qualitative Findings

Thematic analysis of the six in-depth interviews yielded 162 meaning units that were systematically coded and organized into four interrelated themes. Each theme captures a distinct dimension of the digital anxiety experience while also connecting to the others in a coherent pattern. The qualitative findings provide rich contextual understanding of the mechanisms underlying the quantitative relationships and give voice to students' lived experiences in ways that numbers alone cannot convey.

3.1.2.1. Digital Distraction Patterns

This theme captured 47 meaning units describing how digital media intrudes upon academic activities in persistent and often unwanted ways. All six participants described pervasive patterns of digital interference with their study routines, suggesting this is a near-universal experience rather than a problem affecting only some students. Participant P5, a 17-year-old female who reports 8 hours of daily digital use, articulated a common experience: when attempting to study, she described feeling an urge to check her phone constantly, noting that even with strong intentions to focus for an extended period, her hand automatically reaches for the device within minutes, leading to extended scrolling through TikTok or Instagram. The automatic, almost involuntary nature of this reaching behavior was echoed by other participants and suggests that phone checking has become a deeply ingrained habit that operates below conscious intention. Participant P1 provided valuable temporal context, contrasting her pre-pandemic academic performance when phone use was minimal with her current situation, explaining that before COVID-19 her grades were strong and she understood lessons well, but the increased phone use necessitated by online learning during and after the pandemic severely diminished her focus in ways that persist even after returning to in-person instruction.

3.1.2.2. Academic Guilt and Regret

This theme encompassed 38 meaning units describing the negative emotions that follow excessive digital engagement, particularly when such engagement displaces academic activities. Participants consistently

reported experiencing guilt, regret, and self-criticism regarding time diverted from academic activities, and these emotions appeared to be both painful and motivationally significant. Participant P5 described a recurring pattern of intending brief rest but spending two hours scrolling, followed by feeling terrible and losing motivation to complete assignments. The guilt appeared to have complex effects: while it created discomfort, it did not necessarily lead to behavior change and sometimes actually reinforced the problematic pattern by making students seek emotional relief through further digital distraction. Participant P4 reported experiencing this pattern almost daily, describing mixed feelings of pleasure from entertainment alongside guilt from accumulating unfinished tasks. The temporal quality of this guilt was notable across participants: they described it as both immediate following digital use episodes and cumulative as academic deadlines approached, creating an escalating sense of pressure and self-blame.

3.1.2.3. Concentration Difficulties

This theme contained 42 meaning units addressing impaired attention during academic activities, representing the core mechanism by which digital anxiety affects learning focus. Participants described persistent difficulty maintaining concentration even when physically separated from their devices, suggesting that the impact of digital technology extends beyond active use to create ongoing cognitive preoccupation. Participant P2 explained that even while sitting in class, her mind wanders to her phone in her bag, wondering about new notifications, making it impossible to fully concentrate on the teacher's explanation. She elaborated that this divided attention means she often fails to comprehend instruction, requiring her to search for information online afterward ironically using the very technology that caused the comprehension problem to compensate for its effects. Participant P6 described a similar experience of mental preoccupation, noting that even when his phone is physically in another room, his mind continues wandering to what might be happening online, preventing full concentration on anything. This phantom phone experience, where the psychological presence of digital technology persists even in its physical absence, represents a particularly concerning manifestation of digital anxiety that challenges simple solutions like removing devices from study spaces.

3.1.2.4. Reflective Awareness and Coping Efforts

This theme captured 35 meaning units demonstrating metacognitive awareness of the problem and attempts at self-regulation, providing some hope that students are not passive victims of digital distraction but active agents attempting to address it. Despite the challenges described in previous themes, participants demonstrated varying levels of insight into their digital habits and genuine efforts to change them, even when these efforts met with limited success. Participant P4 described attempting strategies such as disabling notifications and placing her phone outside her room during study time, noting initial success but eventual return to previous patterns as the novelty of the strategy wore off and old habits reasserted themselves. Participant P3 described developing a more mindful approach, explaining that before studying he tries to take deep breaths, calm himself, and then begin reading, finding this breathing practice helpful for establishing initial focus even if maintaining it remains challenging. Participant P6 recognized the need for external support, suggesting that designated study times without phones would help but acknowledging difficulty maintaining such practices without reminders from others, highlighting the potential role of parents, teachers, and peers in supporting students' digital wellness efforts.

3.1.3. Integration of Quantitative and Qualitative Findings

The mixed-methods design enabled systematic integration of quantitative and qualitative findings through joint display analysis, a rigorous approach to synthesizing data from different methodological traditions. This integration revealed three key patterns of convergence and complementarity that strengthen overall understanding of digital anxiety among the studied population and generate insights that neither quantitative nor qualitative data could provide alone.

First, the strong positive correlation between social media use and digital anxiety ($r = 0.60$) was consistently elaborated and explained through qualitative accounts that revealed the mechanisms underlying this statistical relationship. Participants with higher daily usage times (8-10 hours) provided more detailed, more emotionally intense, and more numerous descriptions of distraction patterns and guilt compared to those with lower usage (6 hours). For example, P5 who reported 8 hours of daily use described automatic reaching for her phone within minutes of attempting to study, while P3 with 6 hours of use described more manageable challenges with concentration. The quantitative relationship was thus given causal texture through qualitative explanations: high social media use creates more opportunities for academic interference as each engagement episode represents a potential distraction, generates more instances of guilt-inducing time loss as extended use periods displace more academic activity, and establishes stronger habitual patterns that resist change efforts through deeper behavioral conditioning.

Second, the unexpected positive correlation between digital literacy and digital anxiety ($r = 0.39$) was illuminated through participant narratives that revealed a paradox of awareness. Several interviewees demonstrated sophisticated awareness of how social media platforms are designed to capture and maintain attention through variable reinforcement schedules and algorithmic personalization, yet this understanding did

not protect them from the effects. Participant P2 articulated this paradox clearly, describing her understanding that apps are designed to be addictive with engagement-maximizing features, but feeling unable to resist despite this knowledge. This pattern suggests that higher digital literacy may paradoxically increase awareness of one's vulnerability to digital manipulation, potentially amplifying anxiety rather than providing protection, and that cognitive understanding alone is insufficient without the development of practical self-regulation skills.

Third, the finding of no significant gender difference in mean anxiety levels was reflected in qualitative data showing similar themes across male and female participants, suggesting that digital anxiety represents a generational phenomenon rather than one shaped primarily by gender. Both genders described comparable patterns of distraction, guilt, and concentration difficulty with similar language and emotional intensity. However, consistent with the quantitative finding of greater variance among females, female participants provided more diverse descriptions ranging from mild inconvenience to severe academic impairment with life-altering consequences, while male descriptions clustered more in the moderate range with fewer extreme cases. This pattern suggests that while the central tendency of digital anxiety does not differ by gender, the factors that push individuals toward very high or relatively low anxiety may operate differently for males and females.

3.2. Discussion

This study makes three major contributions to the field of digital anxiety research in an educational context. First, it provides empirical evidence that digital anxiety is a significant phenomenon among high school students in semi-rural areas of Indonesia, thereby broadening the scope of research that has traditionally focused more on urban contexts or Western countries. This finding reinforces previous research indicating that psychological stress related to digital technology use is increasingly widespread among adolescents across social and cultural backgrounds (Keles & McCrae, 2020). Second, the results of this study indicate that digital anxiety cannot be simply understood as a direct consequence of social media exposure, but rather as a cyclical process involving attention disruption, the emergence of academic guilt, and a decline in study focus. This pattern aligns with previous research findings emphasizing that repeated digital engagement has the potential to disrupt students' cognitive regulation and emotional stability (Gong & Guo, 2025). Third, theoretically, this study suggests that concepts from Buddhist psychology, particularly restlessness and worry, can serve as a relevant interpretive framework for understanding students' subjective experiences regarding digital anxiety, especially within a cultural context that remains closely aligned with these values (Wang, 2022).

Beyond confirming previous findings on digital distraction, this study extends existing literature by integrating mixed-methods evidence and providing a culturally grounded interpretation of digital anxiety. The combination of quantitative relationships and qualitative themes offers a more comprehensive understanding of how digital anxiety operates in students' learning lives, not merely as a matter of excessive technology use, but as a dynamic process involving distraction, emotional tension, and disrupted academic focus. By bringing together statistical evidence and students' lived experiences, this study contributes a deeper account of how digital anxiety is experienced, interpreted, and sustained within everyday educational contexts. In addition, the incorporation of Buddhist psychological concepts broadens existing discussions of digital wellbeing by introducing an alternative interpretive framework that complements dominant psychological approaches. These contributions not only extend theoretical understanding of digital anxiety, but also suggest practical implications for digital wellbeing interventions, mindfulness-based educational strategies, and contextually responsive support for students in increasingly digital learning environments (Samanta et al., 2024).

The high prevalence of digital anxiety suggests that digital distraction has become embedded in students' learning experiences rather than representing isolated difficulties. This prevalence far exceeds what might be considered a clinical or specialized concern and instead suggests a near-universal experience that characterizes the current generation of Indonesian adolescents' relationship with digital technology (Asahri et al., 2025). The finding is consistent with global trends showing increased technology-related psychological distress among adolescents, though the specific rate exceeds many Western samples, potentially reflecting the particularly high social media engagement rates in Indonesian youth populations combined with the relative novelty of widespread smartphone access in semi-rural regions like Wonogiri where traditional norms about technology use may be less established.

The strong positive relationship between social media use and digital anxiety supports prior research suggesting that persistent digital engagement may undermine concentration and contribute to psychological strain (Masri-zada et al., 2025). Extending previous studies, the present findings show that this relationship is also evident among Indonesian adolescents and appears to involve more than simple time displacement from learning. Qualitative findings suggest that attention fragmentation, habitual checking behaviors, and emotional dysregulation may create reinforcing patterns through which social media use and digital anxiety interact to disrupt learning focus (Song, Xia, Zhang, & Liu, 2024).

A particularly noteworthy finding is the positive correlation between digital literacy and digital anxiety, challenging assumptions that greater digital competence automatically protects students from digital-related stress (Feng & Liu, 2024). One possible interpretation is that increased digital literacy may heighten awareness

of persuasive platform features and students' vulnerability to distraction without necessarily improving self-regulation (Troche, Boumadan, & Gómez, 2025). Qualitative findings support this view, showing that awareness of manipulative digital design did not consistently translate into behavioral change. These findings suggest that digital literacy education should extend beyond technical skills to include emotional regulation and behavioral self-management as part of digital wellbeing education (Fatima et al., 2025).

The absence of significant gender differences suggests that digital anxiety may function as a broadly shared adolescent experience in this context rather than a strongly gendered phenomenon. Although some prior studies have reported greater social media-related distress among females, the present finding aligns with research showing smaller gender differences in some cultural settings (Merino et al., 2024). This finding implies that digital wellbeing interventions may be broadly applicable across students, while future research may further examine whether gender shapes specific forms or intensities of digital anxiety (Febrieta & Gina, 2024).

A central contribution of this study is the identification of a self-reinforcing cycle of digital anxiety in which distraction, concentration difficulties, academic guilt, and coping efforts interact dynamically rather than functioning as isolated experiences. The integration of quantitative and qualitative findings suggests that digital anxiety operates as a recurring psychological process in which attempts to manage distress may at times paradoxically reinforce digital dependence. This pattern parallels Buddhist concepts of restlessness and worry as mutually reinforcing mental processes that disrupt focused attention and emotional stability (Zhou, Jin, & Hu, 2026). Interpreting the findings through this framework extends existing research beyond behavioral explanations and highlights the value of Buddhist psychology as a culturally grounded and cross-cultural perspective for understanding contemporary digital anxiety (Kheminda, 2019).

The finding that mere smartphone presence disrupts concentration, even when the device is not being actively used, supports and extends contemporary research demonstrating that the cognitive costs of digital devices extend beyond active use to create persistent psychological presence (Christodoulou & Roussos, 2025). Studies have shown that having a smartphone visible on a desk during cognitive testing reduces available working memory capacity compared to having the phone in another room, even when participants are not using or thinking about the phone. The present qualitative findings elaborate this phenomenon through participants' descriptions of their minds wandering to potential notifications and imagined online activity while physically separated from their phones (Tanil, Hooi, & Id, 2020). This experience, cannot be adequately addressed simply by putting the phone away, because the main issue is not just the physical presence of the phone, but students' mental and emotional attachment to the device (Bargiela, Estévez, & Bonilla-del-río, 2025).

3.3. Implications

These findings carry several important implications for educational practice, policy development, and psychological intervention that deserve serious consideration by educators, parents, and policymakers concerned with adolescent wellbeing in the digital age. First, the extraordinarily high prevalence of digital anxiety (95% at moderate-to-high levels) indicates the need for systematic attention to students' digital wellbeing within school curricula rather than treating this as an individual problem affecting only some students. When virtually all students are affected, individual intervention approaches are insufficient and systemic, universal prevention approaches become necessary. Digital wellness education should be integrated into existing health or guidance programs, addressing not only technical skills that are clearly already well-developed in this population, but also psychological dimensions of digital engagement including attention management, emotional regulation, and healthy technology relationship formation.

Second, the identified cyclical pattern suggests that interventions must target multiple points in the cycle simultaneously to be effective, as addressing only one component will likely fail to break the self-perpetuating pattern. Approaches addressing only behavioral aspects such as time limits, app blockers, or device removal may prove insufficient without simultaneously addressing the emotional components including guilt and anxiety that can drive compensatory digital use, and cognitive components including concentration training and metacognitive awareness that enable students to notice and redirect distracted attention. Mindfulness-based interventions grounded in contemplative principles offer promise precisely because they address multiple components: training attention through focused meditation practices, developing emotional regulation through equanimity cultivation, and building metacognitive awareness through observation of mental processes.

Third, the counterintuitive relationship between digital literacy and anxiety suggests that technical skill training alone is insufficient for digital wellness and may even backfire if not accompanied by psychological resilience building. Students in this sample already demonstrate high digital literacy yet remain highly anxious, indicating that knowing how to use technology effectively does not automatically translate to using it in psychologically healthy ways. Digital literacy curricula should be supplemented with explicit instruction in emotional regulation skills for managing the feelings that arise during and after digital engagement, critical media psychology education that helps students understand their own psychological vulnerabilities without

increasing anxiety, and practical self-regulation strategies for managing digital engagement patterns with concrete techniques that have demonstrated effectiveness.

Fourth, the absence of significant gender differences in mean anxiety levels suggests that digital anxiety interventions should be developed for universal application across both genders rather than requiring gender-targeted approaches that might be appropriate if the genders differed substantially in their experiences. Both male and female students in this sample report similar average levels of anxiety and describe similar qualitative experiences with digital distraction, guilt, and concentration difficulty, indicating that the same interventions should be relevant and helpful for both genders. However, the greater variance among females suggests that screening procedures should be implemented to identify students at both extremes, with additional support provided for those experiencing very high levels of distress regardless of gender.

3.4. Limitations

Several limitations should be acknowledged in interpreting these findings and planning future research. First, the sample was drawn from a single regency in Central Java, a semi-rural area with specific cultural characteristics including traditional Javanese values, relatively recent digital infrastructure development, and a small but active Buddhist community. These findings may not generalize directly to other Indonesian regions with different cultural contexts such as urban Jakarta or predominantly Muslim regions in Sumatra, or to international contexts with different digital infrastructure and cultural characteristics that shape technology use and psychological responses. Replication studies in diverse settings would strengthen confidence in the generalizability of these findings.

Second, while the Buddhist psychological framework provided valuable interpretive depth and cultural relevance, it may have limited applicability in contexts where Buddhist concepts are unfamiliar or culturally irrelevant. The resonance between Buddhist descriptions of restlessness-worry and participants' digital anxiety experiences may be enhanced by the Buddhist educational context of this study, conducted by researchers affiliated with a Buddhist higher education institution and sampling students in a region with Buddhist community presence. Application of this framework in contexts without such cultural foundation may require adaptation or alternative theoretical frameworks that resonate with local cultural resources.

Third, self-reported data may be subject to social desirability bias, particularly regarding admission of excessive digital use or academic difficulties that students may perceive as socially undesirable or contrary to expectations from parents and teachers. While anonymity of the questionnaire and the non-judgmental stance of interviewers were designed to minimize this bias, some underreporting of problematic behaviors is likely. Future research might incorporate objective measures of digital use such as screen time logs and academic performance data to triangulate with self-report findings.

Fourth, the cross-sectional design does not allow for causal inferences about the relationships between variables; longitudinal research would be needed to establish directionality and examine how digital anxiety develops and changes over time. While the correlation between social media use and digital anxiety is substantial, we cannot determine from this design whether high social media use causes anxiety, whether anxious students turn to social media for relief or distraction, or whether both variables share common causes such as personality characteristics or environmental factors. Longitudinal studies tracking students over time as their digital habits and anxiety levels evolve would address this limitation.

Fifth, the qualitative sample size of six participants, while appropriate for phenomenological analysis aimed at understanding the essence of experiences, limits the variation of experiences captured and may not represent all manifestations of digital anxiety in this population. Students with low anxiety were not included in the qualitative sample due to the purposive selection criteria, meaning their experiences of successfully managing digital engagement remain unexplored. Future research might specifically examine resilient students who maintain low anxiety despite substantial digital engagement to identify protective factors and successful coping strategies that could inform intervention development.

4. Conclusion

This study concludes that digital anxiety is a prevalent challenge affecting senior high school students' learning focus and is significantly associated with patterns of social media engagement, distraction, and recurring experiences of academic worry. The findings indicate that digital anxiety is not merely related to excessive technology use, but emerges through cyclical psychological processes involving concentration difficulties, guilt, and attempts at self-regulation. In addition, the positive relationship between digital literacy and digital anxiety suggests that technical competence alone does not necessarily protect students from digital-related stress, highlighting the complexity of adolescents' interactions with digital environments. By integrating quantitative and qualitative findings, this study contributes a culturally grounded perspective to digital wellbeing research by showing that Buddhist psychological concepts of restlessness and worry provide a meaningful framework for understanding contemporary digital anxiety. The study extends existing literature

by combining behavioral, psychological, and cross-cultural perspectives to explain how digital anxiety affects students' learning focus. These findings imply that educational responses should promote digital literacy alone toward supporting attention regulation, emotional self-management, and broader digital wellbeing interventions in educational settings.

Author Contributions

Indi Darma Oktavia: Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Writing - Original draft. Hesti Sadyadi and Novianti: Supervision, Validation, Writing - Review and Editing.

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The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declaration on AI Use

Artificial intelligence tools were used solely for language editing and readability enhancement under strict human oversight. No scientific content, analysis, conclusions, or recommendations were generated by AI.

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