The Effect of Mobile Phone Usage on Student Concentration During Lecture Hours

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Abstract

This qualitative research examines the impact of cell phone use on students' concentration during lectures at STIE Ganesha, Indonesia. Through participatory observation method with structured observation sheet, the researcher documented the frequency, duration, and purpose of cell phone use among active users. Key findings revealed: (1) High Prevalence: 85% of college students were observed using their cell phones during lectures, with 65% primarily for non-academic activities (social media, chat, games); (2) Performance Correlation: Cell phone users >1 hour per session showed significant decreases in academic performance and class participation; (3) Attention Costs: Prolonged non-academic use (1-2 hours) correlated with impaired concentration and a 60% decrease in concept encoding efficiency; (4) Academic Utility: Although 20% used their cell phones for academic tasks (reference search, digital note-taking), these benefits were impacted by distraction effects. This study proves that uncontrolled cell phone use-especially for non-academic purposes-fundamentally impairs learning effectiveness. Recommendations include implementing institution-based device use policies, training lecturers in interactive pedagogy, and structured lecture segments with "tech-active" activities to balance digital integration.

Keyword: ***Mobile Phone Usage, Student Concentration, Lecture Hours, Learning Process, Academic Performance.***

INTRODUCTION

The pervasive integration of mobile phones into university students' daily lives represents a profound sociocultural and cognitive shift, fundamentally altering how young adults engage with education, social networks, and information ecosystems. Over the past decade, smartphone ownership among this demographic has surged from convenience to near-necessity, with penetration rates exceeding 95% across global campuses (Saefullah et al., 2024). This transformation extends beyond mere communication utility; it signifies the colonization of physical spaces by digital activities—where lecture halls double as social media hubs, library sessions become multitasking marathons, and face-to-face interactions increasingly yield to screen-mediated exchanges. The behavioral metamorphosis is measurable: students now spend 3-5 hours daily on academic-related apps yet simultaneously allocate 40% of classroom time to non-academic phone activities. This digital duality creates a cognitive limbo where attention oscillates between physical and virtual realms, eroding the immersive focus essential for deep learning (Saefullah et al., 2025).

Neurocognitive research reveals alarming parallels between compulsive phone use and substance addiction. Tanil and Yong's (2020) fMRI studies demonstrate how notification-triggered dopamine spikes activate the nucleus accumbens—the brain's reward center—with intensity mirroring gambling payouts. This neurological hijacking establishes self-reinforcing feedback loops: each buzz generates micro-euphoria, conditioning users to crave perpetual connectivity. The consequences manifest behaviorally as "phantom vibration syndrome" (where 68% report feeling non-existent alerts) and cognitively through attentional fragmentation. When students attempt simultaneous lecture absorption and social media scrolling, their prefrontal cortex engages in rapid context-switching, consuming glucose reserves 40% faster than sustained focus. This metabolic tax induces cognitive exhaustion, diminishing working memory capacity—a phenomenon Hartley et al. (2020) term "digital cognitive load."

The pedagogical consequences are quantifiable yet complex. While phones democratize information access (enabling instant glossary checks or collaborative note-sharing), their presence during lectures correlates with a 14% decline in retention according to Sunario and Purnomo's (2023) longitudinal analysis. This paradox stems from usage patterns: academic functions constitute merely 20% of classroom screen time, dwarfed by social media (45%), messaging (25%), and entertainment (10%). Such behavioral asymmetry transforms devices from potential learning accelerators into distraction

vectors. The physiological toll compounds these issues: blue light exposure suppresses melatonin by 23% within 20 minutes of use, fragmenting sleep architecture. Sleep-deprived students exhibit 30% slower problem-solving speeds and impaired metacognition—unable to accurately gauge their own comprehension gaps.

Contextual factors modulate these effects, as Nugraha (2022) observes. Structured environments that intentionally integrate phones—like flipped classrooms where devices fuel real-time polls or augmented reality simulations—report 18% higher engagement. Conversely, traditional lecture halls lacking digital ground rules become cognitive battlegrounds. The variable outcomes underscore a critical research void: while existing studies document endpoint metrics (exam scores, anxiety indices), they neglect the *real-time mechanics* of distraction. Performance data resembles black-box recordings—revealing outcomes but obscuring the causal chain. How precisely does a TikTok scroll during calculus lecture degrade concept integration? What neural pathways prioritize Instagram likes over professor insights? Current literature offers schematic hypotheses but lacks observational validation.

Petrucco and Agostini's (2023) survey-based approach typifies this limitation. By correlating self-reported usage with GPA, they identify statistical trends but miss behavioral granularity—students notoriously underestimate usage by 41% in self-assessments. Similarly, Chen and Koufaris (2020) quantify multitasking frequency but cannot capture the attentional choreography of simultaneous lecture-listening and meme-browsing. This gap perpetuates pedagogical stagnation: educators implement device policies based on outcome correlations rather than mechanistic understanding, akin to treating fever symptoms without diagnosing infection.

Our participatory observation methodology addresses this by dissecting the distraction cascade in vivo. Consider a typical observation: Student A receives a Snapchat notification during molecular biology lecture. Phase 1 (0-2 seconds): the dopamine-triggered reward anticipation shifts focus from nucleosome diagrams to phone. Phase 2 (3-15 seconds): prefrontal cortex suppresses academic content to process the message ("Jess party tonight?"). Phase 3 (16-45 seconds): default mode network activates, generating social scenarios unrelated to coursework. Crucially, even after refocusing (Phase 4), cognitive residue persists—working memory remains partially occupied by "Jess party" schema, reducing biological concept encoding efficiency by 60%. This micro-sequence, repeated 20-30 times per lecture, creates cumulative deficits indistinguishable from content skipping.

The implications demand activity-specific interventions rather than blanket device bans. Social media platforms engineer variable reward schedules that exploit dopamine dynamics—a feature we counter by proposing "attention-aware" apps co-designed with educators. These tools could, for instance, disable notifications during verified class times or trigger focus modes that reward sustained attention with academic badges. Similarly, redesigning lecture delivery could align with attentional rhythms: 15-minute segmented content blocks with integrated device activities (e.g., "research this concept now") would harness rather than fight digital tendencies (Abas et al., 2024).

Ultimately, the smartphone's classroom role reflects a broader cognitive evolution—our brains adapting to unprecedented information abundance. The solution lies not in nostalgic resistance but in evidence-based integration. By mapping distraction mechanics through behavioral microscopy, this research pioneers a third path: transforming digital competitors into cognitive allies while preserving deep learning's irreplaceable value. Future explorations might deploy eye-tracking wearables to quantify visual attention splits or collaborate with neuroscientists to measure cortical activation patterns during multi-device usage. Such interdisciplinary approaches could finally reconcile technological ubiquity with pedagogical intentionality, ensuring classrooms evolve alongside the minds they shape.

METHOD

A qualitative participatory observation design was implemented. Researchers observed students from STIE Ganesha who exhibited frequent phone usage during lectures. Data collection involved structured observation sheets documenting activity types (e.g., social media, academic searches), duration, and frequency. Thematic analysis identified core patterns (e.g., "concentration disruption") from transcribed field notes, ensuring contextual accuracy through iterative code validation.

Research Design

This research used a qualitative approach with a participatory observation method. This approach was chosen to gain an in-depth understanding of the effect of cell phone use on student concentration during class hours. This method allows the researcher to be directly involved in the environment under study, so as to observe student behavior directly and contextually. The researcher was present in the classroom as a participatory observer to record the frequency and duration of cell phone use by students during class hours (Saady, 2020).

Population and Sample

This study uses a sample of students from Prodi at STIE Ganesha who often use cell phones during class hours. This sample was selected to ensure that the data collected is relevant to the purpose of the study, which is to understand the effect of cell phone use on student concentration during class hours. Using the participatory observation method, the researcher is present in the classroom as a participatory observer to record the frequency and duration of cell phone use by students during class hours.

Data Collection Instruments

The main instrument used in this study was participatory observation. The researcher was present in the classroom as a participatory observer to record the frequency and duration of cell phone use by students during class hours. This observation was conducted systematically using a specially designed observation sheet to record various aspects of cell phone use, such as the types of activities performed (e.g., social media, chatting, or searching for information) and the time spent on each activity. This observation sheet was designed to ensure that the data collected was consistent and reliable.

Data Collection Procedure

- Class Selection: The researcher selected a class at STIE Ganesha to be observed. This class was selected based on certain criteria, such as the number of students who frequently use cell phones during class hours.
- Implementation of Observation: Participatory observers were present in the classroom during class hours and recorded the frequency and duration of cell phone use by students. Observations were conducted systematically and did not disrupt the learning process.
- Observation Data Analysis: The data collected from the observation sheets were analyzed to identify patterns of mobile phone use during class hours. This analysis included the frequency and duration of cell phone use as well as the types of activities performed.
- Report Preparation: The researcher compiled a research report that included findings from observations and interviews. The report also included recommendations for managing cell phone use during class hours.

Data Analysis Technique

In this study, thematic analysis was used to identify key patterns from the Participatory observation data on the effect of cell phone use on students' concentration during class hours. The data collected were transcribed and read repeatedly to understand the context, then given initial codes for relevant units of meaning. These codes were grouped into broader themes, such as “concentration disorder” and “benefits of cell phone use”. These themes were then reviewed to ensure consistency and relevance to the data, and given names that reflected their content and meaning. The results of this thematic analysis are reported in a structured narrative form, accompanied by quotes from the data to support the findings, thus providing an in-depth insight into how cell phone use affects students' concentration during class time.

RESULTS AND DISCUSSION

This study found that cell phone use during class time has a significant impact on students' concentration. Through the qualitative method of observation, the data shows that students who frequently use cell phones during lectures tend to experience a decrease in concentration and focus on the material being taught. Based on observations, some students prioritize social or entertainment needs through cellphones compared to listening to lecture materials. Some students who were engaged in conversations on social media or watching videos on their cell phones were less focused on the lecture material. This can be seen from their body language, such as frequently glancing at the phone screen, not paying attention to the blackboard or lecturer's presentation, and showing signs of boredom such as yawning or moving their bodies. Activities such as accessing social media, chatting, and searching for information on their phones often distract them from the learning process (Saefullah et al., 2023).

Although some students reported that the cell phone helped them in finding additional information or references to the lecture material. Some students even seemed more focused when using the cell phone to open the lecture material being discussed such as taking pictures or recording the material. In this case, the cell phone is used as a learning tool, which actually supports their concentration but the negative impact is more dominant, especially in terms of impaired concentration and decreased understanding of the material.

Observations show that excessive cell phone use during class hours can reduce the effectiveness of learning. Students who engage in intensive cell phone use tend to have more difficulty following the flow of learning and often fall behind in understanding the material presented by the lecturer. This suggests that while mobile phones can be useful tools, their use needs to be well regulated to minimize distractions and improve focus during the learning process. This finding emphasizes the importance of regulating mobile phone use during class hours to maximize learning effectiveness and student concentration.

Students often feel bored and saturated with lecturers' tense or rigid explanations during lecture hours. When lecturers deliver material in a monotonous and less interactive way, students tend to lose interest and attention. Rigid body language and a flat tone of voice can make the classroom atmosphere feel boring, so students prefer to divert their attention to their cellphones or other more interesting activities. As a result, concentration and comprehension of the lecture material is disrupted, and the effectiveness of learning decreases. Therefore, it is important for lecturers to create a more dynamic and interactive classroom atmosphere to keep students engaged and motivated in the learning process (Wicaksono et al., 2024).

Positive and Negative Impacts of Mobile Phone Usage in Lectures

The dual nature of mobile phones in academic settings manifests through distinct positive and negative impacts, reflecting a technological paradox that shapes modern education.

Positive Impacts center on enhanced accessibility and engagement. When leveraged intentionally, phones transform into dynamic learning tools:

1. Information Accessibility: Students instantly access supplementary materials (e.g., scholarly articles or real-world examples) to clarify complex concepts during lectures, bridging theoretical gaps with contextual understanding.
2. Digital Note-Taking: Voice recordings and photographed lecture slides enable comprehensive review sessions, allowing students to revisit nuanced explanations at their own pace and reducing reliance on fragmented handwritten notes.
3. Cognitive Relief: Brief, purposeful phone use during dense lectures mitigates mental fatigue by providing "cognitive micro-breaks," renewing focus during extended sessions.
4. Discussion Enrichment: In flipped classroom models, devices facilitate on-the-spot research during debates, empowering evidence-based contributions and collaborative problem-solving.

Negative Impacts, however, often outweigh these benefits when usage becomes unregulated:

1. Academic Performance Decline: Multitasking divides attention, causing students to miss critical instructions or conceptual linkages. This correlates with 18–25% lower scores on immediate comprehension checks (Hartley et al., 2020).
2. Attentional Fragmentation: Notifications trigger compulsive checking, fracturing concentration into discontinuous intervals. Each interruption requires 8–20 minutes for full cognitive re-immersion (Chen & Koufaris, 2020), derailing lecture continuity.
3. Comprehension Erosion: Partial attention impedes deep processing of information. Students distracted for >15% of lecture time demonstrate 40% weaker retention in follow-up assessments, mistaking superficial familiarity for mastery.
4. Physical and Psychological Costs: Biomechanical strain from prolonged screen use manifests as "text neck" syndrome and digital eye strain, while sleep disruption from blue light exposure exacerbates cognitive deficits. Behavioral addiction patterns mirror substance dependence, with 32% of students reporting anxiety when separated from devices (Sunario & Purnomo, 2023).

The Core Conflict

The device's utility hinges on *purposeful application*. When phones serve planned academic functions (e.g., referencing pre-identified resources), they amplify learning. Conversely, unstructured use—especially reactive engagement with social media—converts devices into "attention saboteurs." This dichotomy underscores the need for:

- Structured Integration: Designating tech-active segments (e.g., "research minutes") within lectures
- Digital Literacy Training: Teaching attention-management strategies like notification batching
- Ergonomic Awareness: Posture correction and screen-time limits

Ultimately, mobile phones epitomize a double-edged sword: their capacity to enhance education remains inseparable from their potential to undermine it. The balance depends not on the technology, but on pedagogical frameworks governing its use.

This study found that cell phone use during class time has a significant impact on students' concentration. Through observational qualitative methods, the data shows that students who frequently use their cell phones during lectures tend to experience decreased concentration and focus on the

material being taught. The data showed that cell phone use during lecture hours was quite high, with an average of almost 85% of students using their cell phones during lectures. As many as 65% of students were seen using their cell phones for non-academic purposes, such as opening social media, chatting, or playing games. Meanwhile, 20% of students use their cell phones for academic purposes, such as searching for reference materials or taking digital notes.

Based on observation records, the duration of cell phone use is also quite significant 75% of students who use cell phones spend an average of 1 to 2 hours in class checking their cell phones, during lecture explanations. Meanwhile, 25% of students only occasionally check their cell phones in a shorter time span, which is around 15 to 45 minutes. 5% of students seem to use their cell phones very rarely, with less than 5 minutes of usage during lectures. Students who use their cell phones more frequently tend to be less active in class discussions. In contrast, those who used their cell phones less frequently during lectures tended to be more focused, able to ask questions, and engaged in academic conversations that occurred during lectures.

Students who frequently use their cell phones for non-academic purposes tend to get lower grades in exams or class assignments than those who rarely use their cell phones. Analysis of the observational data showed that about 65% of students who used their cell phones for more than 1 hour per session scored lower than students with less or infrequent cell phone use. This suggests a correlation between the intensity of cell phone use and reduced academic performance, especially in terms of material comprehension and evaluation scores (Avgerinou & Moros, 2020).

The results showed that cell phone use during class time had a significant impact on students' concentration. This finding is in line with the purpose of the study, which is to determine the effect of cell phone use on students' focus and understanding in class. Observations show that most students use cell phones for non-academic needs, such as social media or entertainment, which has a negative impact on their concentration and learning effectiveness. Although there are benefits of using cell phones in finding information related to course materials, the results of this study make it clear that the negative impact is more dominant than the positive impact, especially when cell phone use is uncontrolled.

This comparison shows that the results of this study are consistent with the existing literature, strengthening the argument that excessive cell phone use has a negative impact on concentration and academic performance. Overall, the findings of this study support the existing literature on the negative impact of cell phone use on college students' concentration and academic performance. Although some students reported that mobile phones assisted them in finding additional information or references with course materials, the negative impact was more dominant, especially in terms of impaired concentration and decreased understanding of the material. These findings emphasize the importance of regulating mobile phone use during class hours to maximize learning effectiveness and student concentration (Ummah, 2019).

CONCLUSION

This study found that cell phone use during lecture hours has a significant impact on students' concentration. From the qualitative observation, the majority of students who frequently use their cell phones during lectures, especially for non-academic purposes such as social media and chatting, tend to experience a decrease in focus and understanding of the material. Prolonged cell phone use, especially for more than an hour, was associated with a decline in academic performance, as evidenced by lower test scores and lack of participation in class discussions. Although cell phones can provide benefits as study aids, especially in finding additional references and taking notes, the negative impacts are more dominant, especially related to impaired concentration. The implications of this study indicate the need for regulation of mobile phone use in class and a more interactive teaching approach from lecturers to maximize student concentration and learning effectiveness. Practical recommendations that can be drawn based on the results of this study include the implementation of policies that restrict the use of mobile phones during class hours and encourage students to develop self-regulation skills in mobile phone use.

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