

The Impact of Using Electronic Products on College Students' Learning Habits and Grades

Zijie Chen^{1,a,*}

¹*School of Foreign Languages, Wuhan College, Wuhan, Hubei, 430200, China*
a. A02497292@lawsonstate.edu

**corresponding author*

Abstract: In the digital era, the reliance of college students on electronic devices for their learning activities has grown significantly. The growing reliance on this has raised worries regarding its impact on students' learning preferences and academic achievements. As a result, the current study seeks to investigate how the utilization of electronic devices affects college students' studying patterns and academic outcomes. To achieve this objective, a comprehensive investigation will be conducted using a combination of quantitative and qualitative methods to gather data from college students representing diverse disciplines and academic backgrounds. Furthermore, this study will analyze the potential merits and drawbacks of employing electronic devices in an academic setting. Additionally, the investigation will delve into diverse elements linked to how the utilization of electronic devices impacts academic performance, such as usage duration, types of applications utilized, and individual differences among students. The anticipated results of this research hold the potential to significantly enrich the knowledge about the impact of electronic devices on students' study habits and academic performance. The study findings indicate a notable association between excessive use of electronic devices and academic performance decline among contemporary college students. Moreover, the widespread prevalence and integration of electronic products have, to some extent, altered the learning approach and lifestyle of college students.

Keywords: digital age, electronic products, academic performance

1. Introduction

This study primarily centers on investigating the influence of electronic device usage on college students' study routines and academic achievements. To attain this goal, surveys and interviews will be employed to examine the correlation between the use of electronic products and academic outcomes. Using a mixed-methods approach will provide a comprehensive understanding of how electronic products influence students' learning behaviors.

The quantitative data collected from surveys will encompass information on students' electronic device usage patterns, study routines, and learning preferences. To complement this quantitative analysis, qualitative interviews will delve deeper into students' experiences, attitudes, and perceptions regarding electronic devices and their impact on learning.

This study is expected to have two significant effects. Firstly, it will contribute valuable knowledge by shedding light on the connection between electronic product usage and college students' learning

habits. Secondly, the findings will offer crucial insights for educators and policymakers, enabling them to make informed decisions and develop strategies for optimizing technology integration in educational settings. Identifying the potential benefits and drawbacks of electronic devices will aid in creating guidelines and promoting digital literacy skills among college students.

In essence, this study aims to assess how college students' learning habits and academic performance are affected by the use of electronic products, utilizing surveys and interviews. Anticipated results encompass valuable insights and recommendations to improve educational approaches in the digital era.

2. Literature Review

2.1. The Impact of Prolonged Use of Electronic Products

Currently, the widespread presence of electronic products in people's lives has made them indispensable and seamlessly integrated into daily routines. When traveling, individuals often find it sufficient to carry just a mobile phone. Research indicates that a significant number of young people today spend excessive time with electronics. This excessive indulgence in these activities may have evident consequences on the physical and mental well-being of young individuals. Women and young people have been found to experience higher severity of PSU (Problematic Social Media Use) [1]. Numerous studies consistently show that women tend to experience higher levels of psychological stress compared to men, leading to a higher prevalence of Problematic Social Media Use (PSU) among females. Concerns about increasing exposure have resulted in a steady growth in electronic media research, where excessive Internet use is considered a form of behavioral addiction [2]. In recent years, models of Internet and video gaming addiction have been developed based on knowledge of impulse control disorders, pathological gambling, and substance dependence disorders [3]. Different views on Internet overuse exist; some are associated with low self-esteem, negative functioning, and impaired interpersonal relations, while others suggest that time spent online does not disrupt children's daily activities or well-being and, in fact, improves visuospatial skills and provides social and intellectual stimulation [4]. Although Internet addiction is not yet recognized as a clinical diagnosis, there is no doubt that American youths spend much more time plugged into "live" activities during the day than experts consider healthy for normal development [5]. Furthermore, social networks are commonly used by young people, referred to as the network generation. Considering the intensive use of social networks for establishing intimate relationships with peers and the opposite sex, conducting research on social media addiction among young people is deemed essential [6].

2.2. The Impact of Electronic Product Usage on Learning Habits and Academic Performance

The pervasive integration of electronic products, including smartphones, tablets, and laptops, has exerted a profound influence on college students' learning habits and academic performance. This section provides a comprehensive review of the existing literature that investigates the ramifications of using electronic products on these crucial aspects.

2.3. Learning Habits and Behaviors

Many studies delve into the link between students' use of electronic products and their study habits. Of particular interest are the consequences of multitasking, where students simultaneously send text messages, browse social networks, or play games while studying. Behavioral addiction, such as social media addiction, is a growing phenomenon that may escalate over time [7]. A study conducted by Junco and Cotton revealed that students who spent more time sending instant messages and those

who reported working while IMing reported that IM negatively affected their work [8]. At the same time, excessive use of popular social networks also has a range of negative consequences, and concerning Facebook addiction, the results depicted here portray the following picture: individuals with low mental well-being, such as loneliness, anxiety, or depression, motivated to use Facebook in search of social support or to pass time, experience mood elevation (also called mood enhancement), which may lead to inadequate self-regulation, possibly due to negative reinforcement. In severe cases, this ultimately leads to negative life outcomes [9]. Although none of the previous studies specifically examined the use of mobile social networks, it can confidently be said that the results of internet addiction studies are applicable to mobile internet as well, as they predominantly involve the same media [10].

2.4. Academic Performance and Grades

The influence of electronic product usage on academic performance has been extensively examined in various studies. Although some research indicates a negative correlation between excessive electronic device use and academic outcomes, it is essential to recognize that the relationship is intricate and reliant on specific contexts. Some studies have shown that there is no direct connection between students' final grades and the use of electronic devices, The impact of e-device use on overall academic performance was negligible. Use of e-devices by students enrolled in their first pharmacotherapeutics course may negatively impact academics [11]. Similarly, Kuznekoff and Titsworth demonstrated that students who used electronic devices for non-academic purposes during class had lower course grades compared to those who refrained from such behaviors [12]. In summary, the impact of electronic product usage on academic performance seems to be influenced by several factors, such as the nature of device use, self-regulation skills, and the educational context. A comprehensive understanding of these factors is vital for developing effective strategies to enhance the integration of electronic products in educational environments. With the aim of addressing this research objective, the author devised the subsequent research inquiries:

- 1) How does the utilization of electronic devices impact academic performance?
- 2) What is the connection between the duration of using social media and the academic performance of college students?
- 3) What is the impact of using electronic devices for nonacademic activities in the classroom on GPA?

3. Method

3.1. Research Design

A systematic approach is employed to thoroughly explore the impact of electronic product usage on college students' learning habits and grades. By integrating quantitative surveys and qualitative interviews, a more profound comprehension of the connection between electronic devices and academic performance will be attained. The mixed-methods design enables data triangulation, thereby enhancing the study's findings' validity and reliability.

3.2. Participants

The participants in this study will consist of college students from various academic disciplines and educational backgrounds. To ensure a well-rounded representation, a stratified sampling technique will be employed, encompassing students from different faculties and academic years.

3.3. Data Collection

3.3.1. Surveys

To collect quantitative data on participants' electronic device usage patterns, a meticulously structured questionnaire will be developed. The questionnaire will encompass items related to the frequency and duration of electronic device use, preferred learning activities conducted through electronic devices, and the perceived impact of electronic product use on learning habits. To facilitate data collection, the survey will be conducted online using a secure survey platform, and participants will be allotted a specific time window to complete the questionnaire.

3.3.2. Interviews

The planned semi-structured interviews play a crucial role in this study as they offer a more profound and detailed understanding of college students' perspectives regarding the use of electronic devices for learning. Through these interviews, a wealth of qualitative data was collected, which goes beyond the surface level answers obtained from the survey. Participants will be given the chance to articulate their thoughts, emotions, and experiences in their own language and phrasing. Carefully designed interview questions will cover a range of relevant topics, such as the types of electronic devices commonly used, the specific purposes for using these devices, and any perceived benefits or drawbacks associated with their usage. Furthermore, participants will be actively encouraged to share anecdotes or real-life situations that exemplify the influence of electronic devices on their study habits and academic achievements. Furthermore, the interviews will explore how students can strike a balance between using electronic devices for educational purposes and potential distractions, such as social media, entertainment, or games. Understanding the challenges, they encounter in maintaining focus and managing screen time can offer valuable insights for educators aiming to create an environment conducive to learning.

4. Result

4.1. Quantitative Analysis

The quantitative data collected through surveys will undergo analysis using suitable statistical methods. Descriptive statistics, including frequencies and percentages, will be calculated to provide a summary of participants' electronic device usage patterns and learning preferences. To explore the connections between electronic product usage, learning habits, and academic performance, inferential statistics, including correlation analysis and regression analysis, will be employed. These statistical analyses will offer valuable insights into the associations and potential impacts of electronic device usage on college students' learning experiences and academic outcomes.

A total of 139 samples were collected in this survey questionnaire, and descriptive analysis is now conducted on the questionnaire.

Table 1: Daily usage time of electronic devices.

Option	Subtotal	Proportion
3 to 5 hours	43	30.93%
6 to 8 hours	72	51.8 %
Over 8 hours	24	17.27%

As Table 1 shows, a notable observation emerges, indicating that approximately 50% of college students show a substantial inclination towards using electronic devices extensively on a daily basis. The persistent trend of continuous upgrades in electronic devices underscores their indispensability and establishes them as an integral component in the lives of college students, crucial for their academic and personal pursuits.

Table 2: Pearson related - detailed format.

		College final grades affected
Daily usage duration	Correlation coefficient	0.261**
	P-value	0.009
	Sample size	139

* p<0.05 ** p<0.01

According to Table 2, it becomes apparent that a correlation analysis was performed to investigate the connection between the duration of electronic device usage and its influence on final grades. The Pearson correlation coefficient was utilized to quantify the strength of this relationship. The findings indicate a significant positive correlation (correlation coefficient of 0.261, $p < 0.01$) between the impact on final grades and the daily usage duration of electronic devices.

Table 3: Regression analysis data (n=100).

	Non standardized coefficient		Standardized Coefficient	<i>t</i>	<i>p</i>	collinearity diagnosis	
	<i>B</i>	standard error	<i>Beta</i>			VIF	tolerance
constant	3.074	0.264	-	11.647	0.000**	-	-
Daily usage time of electronic devices	0.352	0.131	0.261	2.681	0.009**	1.000	1.000
R^2			0.068				
adjust R^2			0.059				
<i>F</i>			$F(1,98)=7.189,$ $p=0.009$				
D-W value			1.699				

Dependent variable: Final grade affected

* p<0.05 ** p<0.01

Table 3 presents the results of the linear regression analysis, with daily electronic device usage time considered as the independent variable and its impact on the final grade as the dependent variable. The model formula can be expressed as follows: the final grade is affected = 3.074 + 0.352 * the daily

electronic device usage time. The R-value of the model is 0.068, indicating that the daily electronic device usage time can explain approximately 6.8% of the variance in the final grade.

Upon conducting the F-test on the model, it was found to pass the test ($F = 7.189$, $p = 0.009 < 0.05$), suggesting that daily electronic device usage indeed has a statistically significant impact on the final results. Further analysis reveals that the regression coefficient value of daily electronic device usage duration is 0.352 ($t = 2.681$, $p = 0.009 < 0.01$), signifying a significant positive influence on final grades.

In summary, the analysis indicates that daily electronic device usage has a significant positive impact on the final grade.

4.2. Qualitative Analysis

Thematic analysis will be applied to the qualitative data gathered from interviews. The transcribed interview data will be systematically coded and categorized into meaningful themes and sub-themes. This process will involve an iterative approach, encompassing code comparison and theme refinement, to fully capture the diversity and depth of participants' experiences and viewpoints.

The qualitative findings will be presented in conjunction with the quantitative results, providing a holistic comprehension of how electronic product usage influences college students' study routines and academic achievements. The study encompassed a random selection of participants from various universities and academic levels across the country. The primary objective was to examine students' perceptions concerning the potential advantages of using electronic devices in educational settings, particularly during classroom interactions, Q&A sessions, and topic discussions.

To obtain in-depth insights from the participants, a qualitative approach was employed. A group of 10 college students participated in semi-structured interviews, ensuring a diverse representation of different educational backgrounds and disciplines. The interviews were thoughtfully designed to elicit participants' opinions, experiences, and attitudes towards the integration of electronic devices into their academic lives.

Here are some of the main findings of this interview.

4.2.1. Positive Perceptions of Academic Enhancement

The majority of participants expressed a positive outlook on the utilization of electronic devices to enhance their academic performance. A substantial percentage of interviewees believed that incorporating electronic devices during classroom activities led to increased engagement, better retention of knowledge, and enhanced comprehension of challenging subjects.

4.2.2. Facilitation of Classroom Interactions

Participants frequently mentioned that electronic devices, including smartphones and tablets, played a pivotal role in conducting smooth Q&A sessions and topic discussions within the classroom. This technology allowed students to access pertinent information instantly, fostering active participation and stimulating insightful discussions.

4.2.3. Flexibility in Learning

Numerous interviewees emphasized that electronic devices offered them flexibility in accessing educational resources and materials. E-books, academic apps, and online study platforms were frequently mentioned as valuable tools that catered to individual learning preferences and schedules.

4.2.4. Digital Note-taking and Organization

A significant number of students highlighted that electronic device facilitated efficient note-taking and organization of study materials. This digital approach to note-taking enabled easy categorization, searchability, and retrieval of information, ultimately leading to more effective exam preparation and revision.

4.2.5. Awareness of Potential Distractions

While recognizing the advantages, some participants also acknowledged the potential distractions that could arise from using electronic devices during academic activities. They emphasized the importance of self-discipline to ensure that the benefits of electronic device usage did not compromise their overall focus and attention during classes or study sessions.

According to the interview results, a significant majority of college students hold the belief that the utilization of electronic devices positively influences their academic performance. The integration of these devices in classroom interactions, Q&A sessions, and topic discussions fosters engagement and enhances their learning experiences. Nonetheless, it is crucial to address potential distractions and emphasize responsible technology use to ensure that the benefits of electronic devices are fully harnessed in supporting academic success among college students.

5. Conclusions

The study reveals a significant impact of electronic product usage on college students' learning habits and grades. Excessive use of electronic devices negatively affected students' traditional study routines and academic performance. The author concludes, based on research and data analysis, that there exists a noteworthy correlation between college students' use of electronic products and a decline in their final grades. To optimize the integration of electronic products in education, it is crucial to promote digital literacy and self-regulation skills among college students. Educators and policymakers can achieve this by incorporating digital literacy training into the curriculum and encouraging responsible device usage.

It is crucial to recognize and address certain potential limitations of this study. Firstly, the findings may be influenced by self-report biases and social desirability effects, as participants might provide responses they perceive as favorable or socially acceptable. Secondly, The extent to which the study's findings can be generalized might be constrained by the specific context and the chosen sample of college students. Finally, the inability to establish causal relationships between electronic product use and other variables, learning habits, and academic performance is hindered by the cross-sectional nature of the study design.

Despite these limitations, including self-report biases and the specific sample of college students, the findings emphasize the necessity for interventions and guidelines to enhance the productive use of electronic products in education. Improving digital literacy and self-regulation skills can help students maximize the benefits of electronic devices for learning.

Overall, this study's outcomes are anticipated to deepen the comprehension of how electronic product usage influences college students' learning habits and academic performance. By identifying the potential benefits and drawbacks associated with these devices, educators and policymakers can develop effective strategies to optimize their use in the educational environment. Additionally, The primary objective of this study is to emphasize the significance of improving digital literacy and self-regulation skills among college students.

References

- [1] Elhai, J. D. , Sapci, O. , Yang, H. , Amialchuk, A. , Rozgonjuk, D. , & Montag, C. (2021) Objectively-measured and self-reported smartphone use in relation to surface learning, procrastination, academic productivity, and psychopathology symptoms in college students. *Human Behavior and Emerging Technologies*.
- [2] Byun S, Ruffini C, Mills JE, et al. (2009) Internet addiction: metasynthesis of 1996–2006 quantitative research. *Cyberpsychol Behav*. 12:203–207.
- [3] Beard KW. (2005) Internet addiction: a review of current assessment techniques and potential assessment questions. *Cyberpsychol Behav*. 8:7–14.
- [4] Campbell AJ, Cumming SR, Hughes I. (2006) Internet use by the socially fearful: addiction or therapy? *Cyberpsychol Behav*. 9:69–8.
- [5] Brody, J. E. (2015). Screen addiction is taking a toll on children. *The New York Times*, 6.
- [6] Tutgun-Ünal, A., & Deniz, L. (2015). Development of the social media addiction scale. *AJIT-e: Academic Journal of Information Technology*, 6(21), 51-70.
- [7] Szczygieł, K., & Podwalski, P. (2020). Comorbidity of social media addiction and other mental disorders—an overview. *Archives of Psychiatry and Psychotherapy*, 4, 7-11.
- [8] Yadav, M. S. , & Varadarajan, P. R. (2005). Understanding product migration to the electronic marketplace: a conceptual framework. *Journal of Retailing*, 81(2), 125-140.
- [9] Ryan, T., Chester, A., Reece, J., & Xenos, S. (2014). The uses and abuses of Facebook: A review of Facebook addiction. *Journal of behavioral addictions*, 3(3), 133-148.
- [10] Al-Menayes, J. J. (2015). Social media use, engagement and addiction as predictors of academic performance. *International Journal of Psychological Studies*, 7(4), 86-94.
- [11] Prescott Jr, W. A., Johnson, H. L., Wrobel, M. J., & Prescott, G. M. (2012). Impact of electronic device use in class on pharmacy students' academic performance. *American journal of pharmaceutical education*, 76(9), 167.
- [12] Kuznekoff, J. H., & Titsworth, S. (2013) The impact of mobile phone usage on student learning. *Communication Education*, 62(3), 233-252.