

SMARTPHONE USE AND ITS IMPACT ON THE ACADEMIC PERFORMANCE OF THE UNDERGRADUATE STUDENTS

Dr. Lokman Ali

Assistant Professor, Department of Education, Doomdooma College (Affiliated to Dibrugarh University, Assam, India), P. O. Rupaisiding,
Dist. Tinsukia, Assam, PIN-786153

Email: alilokman101@gmail.com, Orcid Number: 0000-0003-4358-1290

ABSTRACT

The present study was conducted to determine the amount of smartphone use, its impact on academic performance, and its health effects on undergraduate students. A total of 240 undergraduate students from the Arts and Commerce streams of Doomdooma College, Assam (India) were selected as samples through the purposive sampling technique. The descriptive survey method of research was followed. A self-made questionnaire and an in-depth interview with the teachers and students were used for data collection. The results of the study reveal that most of the undergraduate students use smartphones in their day-to-day lives, in the classroom, for study, and to communicate with others. Excessive smartphone use has rigorous health effects relating to sleeplessness, tension, headaches, eye strain, etc.

Keywords: Smartphone, Academic Performance, Undergraduate Students, Health Effects etc.

Introduction

In the 21st century, society has witnessed that technology is becoming an indispensable part of life. Smartphones are one of the most popular ICT tools used by almost all categories of people. A smartphone is a sophisticated portable device that combines all the advantages of a mobile phone with computer functionality. Litchfield, S. (2010), opined that a smartphone is a mobile device with an open operating system and a constant internet connection. Numerous programs, including video calling, web surfing, calendaring, weather information, a camera, a navigator, and many more, are available on this device. Because of their manifold functions and low cost, smartphones have become more popular among users (Kaur, N. 2018, p. 242).

Among younger generations, smartphones have grown to be a fantastic and vital instrument for communication. The use of smartphones has been seen to have significantly increased during the past several years. At present, an individual considers himself or herself incomplete without possessing a smartphone. Smartphone use has completely changed every aspect of human existence, including commerce, sports, entertainment, health, education, and research. Everyone stays in contact with it on any given occasion, whether it be at a family gathering, place of employment, or public space. Studies show that most people, particularly the younger generation, are always on their phones, reading messages, sending or viewing videos, updating social media, conversing, and engaging in other activities. As a result, these activities have become an essential part of people's lives. (Rather, S. A. & Khazer, M., 2019).

Portability and price of smartphones played the most important role in making this device more popular among all sections of the user base. Smartphones are used by people for many different things, such as watching, navigating, chatting with friends and family, accessing the internet, getting weather broadcasts, clicking photos, and capturing videos. Smartphone use has also become extensively popular among school and university students. The use of smartphones has helped people in a number of ways, but its use has certain drawbacks too. In many cases, the use of smartphones has become an addiction, and many people spend a significant portion of their working, playing, learning, and even sleeping hours engrossed in their smartphones. Thus, the use of smartphones in our lives is so tremendous that it has affected not only our personal lives but also our behaviours, habits, culture, health, attitude, communication system, and education to a large extent. Under these conditions, the current study aims to investigate how smartphone use affects college-bound teenagers' lives and academic achievement.

Smartphone use and academic performance

The way students approach their studies and how they finish the many assignments that teachers offer them are referred to as their academic performance (Bedassa, F., 2014). Numerous investigations and studies carried out across the globe have demonstrated a strong correlation between students' use of social media and their academic achievement. Constantly using social media diverts students from their academics and may have an impact on their academic achievement.

Unrestrained use of mobile phones for social networking, texting, and talking has been linked to lower grades and poor academic performance in students, according to numerous research studies conducted worldwide. (TT

Sundari, 2015, p. 904). The research findings demonstrated that some students had a propensity to use their cell phones to disturb others while studying and taking classes, even in the library. Thus, the extensive use of smartphones by the students in day-to-day life, during class, and during study time enormously affects their academic performance. The goal of this study is to ascertain whether smartphone use has a beneficial or detrimental effect on undergraduate students' academic performance.

Literature Review

Numerous global research findings show that smartphone use has both beneficial and harmful effects on a child's academic achievement. Many researchers suggested smartphones use affect students both ways, academically as well as in their personal life. A few relevant studies have been reviewed here.

Ng, S. F., and others (2017) studied the extent to which students at a Malaysian university use smartphones to enhance their academic performances and the relationship between these activities and their CGPA. Data was collected over a period of seven days from 176 students enrolled in three academic programs. The sampled students recorded how they used smartphones every day for education. Findings of the research showed that students' CGPA decreased with the amount of time they spent using their smartphones. It also indicated that there is a need to assess and comprehend smartphone instructional applications for students in higher education.

Ifeanyi, I. P., & Chukwuere, J. E. (2018) examined the effect of smartphone use on undergraduate students' academic achievement at North-West University in South Africa. Data were collected using a questionnaire from 375 undergraduate students. The results of the study indicated that most of the samples used their iPhones to interact with teachers and other students. Additionally, it was discovered that using a smartphone interferes with respondents' academic performance in some ways. The outcomes also demonstrated how smartphone use affects children's academic progress and abilities.

Kaur, N. (2018), carried out a study to examine the extent of young people's addiction to cell phones, the effect of students' use of phones on their academic achievement, and the degree to which mobile phones have permeated young people's lives. Purposive sampling was used to choose a sample of 50 Chandigarh University graduates and undergraduate students, from which data was gathered through the administration of a survey. The researcher used a self-constructed questionnaire for data collection. The findings of the study indicated that the participants were severely influenced by mobile phone usage. A large number of participants spent the whole day using mobile phones, which distracted them from their studies.

Nayak, J. K. (2018) studied the effects of smartphone addiction on students' academic achievement and how using a smartphone is influenced by gender and relationship status. A self-made questionnaire was used with a sample of 429 students from universities and technological institutions in India. Findings of the study indicated that the usage of smartphones was higher for females than male students. However, in the case of the male students, the impact of smartphones on performance was shown to be quite significant. It was discovered that female students showed essentially no signs of smartphone addiction, in contrast to male students, who showed signs of work neglect, anxiety, and loss of self-control.

Mukhdoomi, A., and others (2020) conducted research on the impact of smartphone addiction on the scholastic achievement of higher education students. The purpose of the study was to investigate the effects of smartphone addiction on the scholastic achievement of college learners. Data and related information were collected from a sample of 500 Iqra University North Campus Karachi learners through a numerical study technique. The correlational investigation approach was adopted. The results of the study indicated that the pupils' scholastic achievement was positively impacted by their smartphone behavior in a statistically meaningful way. Additionally, it was discovered that students use their smartphones for entertainment, which causes them to become drowsy and may have an impact on their academic performance.

The problem statements

Young people are using smartphones more and more frequently. As an advanced technological innovation, smartphones are being increasingly used by young students for making audio and video calls, transferring text messages, social networking, chatting, sending and receiving emails, e-learning, m-learning, etc. They are becoming more smartphone-addicted due to their overdependence on technology in every phase of life. In spite of the numerous benefits and advantages of smartphone use for students' performance, there are many negative impacts and limitations that cannot be overlooked. The research findings of many researchers also indicated contradictory results. Lepp, Barkley, and Karpinski (2014) looked into the issue and discovered that smartphone addiction has a detrimental effect on college students' academic performance. According to Hawi & Samaha

(2016), smartphone addiction has a detrimental effect on academic achievement but a favourable influence on life satisfaction. Therefore, it becomes essential to conduct comprehensive research on the potential benefits and drawbacks of smartphone use for the scholastic performance of higher education learners. The present study attempted to understand whether smartphone use among undergraduate students affects their academic performance positively or negatively.

Significance of the Study

The use of smartphones among the learners of higher education institutions has been increasing tremendously around the world. Numerous studies and surveys conducted in different nations show that young people are using smartphones at an earlier age and at a faster rate than ever. The age range of nearly half of mobile internet users is 18 to 25. Research indicates that the frequency of smartphone use varies between nations and at different ages (TT Sundari, 2015, p. 898). A literature review indicates that there are numerous studies carried out to ascertain the consequences of smartphone use by students. But the query remains on whether approval of smartphone use facilitates or undermines learning. There is a dearth of research on the effects of smartphone use on college students' academic performance in this locality. Accordingly, the investigator chose the problem to investigate the influence of smartphone use on the academic standing of the undergraduate pupils. It is expected that the results obtained will add to the assets of knowledge currently available on smartphones and their effect on their educational performance. It would determine whether smartphone use can be beneficial for college students' academic performance and their health impact on them, which may be crucial for parents, teachers, administrators, policymakers, and researchers. Consequently, the findings of the present research work may help these initiatives by raising cognizance at the ground level.

Objectives of the Study

The research work was carried out with the following objectives:

1. To determine the amount of smart phone use among the undergraduate students.
2. To investigate how undergraduate students' use of smartphones influence their academic performance.
3. To find out the health effects of smartphone use on undergraduate students.

Research Questions

Keeping in view the objectives of the study, the following research questions were formulated:

1. What is the amount of smartphone use among the undergraduate students?
2. How does smartphone use influence the academic performance of undergraduate students?
3. How does smartphone use effect on undergraduate students' health?

Methodology

Research Method. A non-experimental, descriptive survey method of research was followed in the current study. The questionnaire survey method was used for collecting data from the participants.

Population and sample All the degree second and fourth semester students of Doomdooma College, Assam (India), studying through regular mode in the Arts and Commerce streams in the year 2022 comprised the population of this research work. A total of 240 undergraduate students' (n = 240) from Doomdooma College, Assam (India), were selected as a sample. The sample was collected from the Arts and Commerce streams of the college studying in the second and fourth semesters through the purposive sampling technique, since it was convenient for the investigator to approach the participants individually and to observe their behaviours constantly.

Tools Used. Data and relevant information were gathered from the participants using a self-created questionnaire. The sampled undergraduate students were asked to complete a self-made questionnaire containing nine items concerning their opinions and attitudes towards the impact of using smartphones in their day-to-day lives, courses, self-study, and academic performance. In-depth interviews with the teachers and students were also carried out. For the sake of clarity, the scores were rounded to whole numbers.

Data Collection. Primary data was used in this research. The investigator collected the required data from the participants individually. The questionnaire was distributed among the participants in printed form and collected on the spot to guarantee a high rate of return. Data were collected in the month of February 2022.

Data Analysis. The current research work is a mixture of both qualitative and quantitative approaches. The collected data were analysed by adopting quantitative as well as qualitative techniques. Descriptive statistics and qualitative analysis techniques were used for data interpretation.

Data interpretation and findings

The current study was carried out with the undergraduate students of Doomdooma College, Assam (India), to determine the effects of smartphone use on their scholastic achievement. Data gathered by using selected research tools on a sample of 240 undergraduate students were arranged suitably for analysis and interpretation.

Demographic Information of Participants

In order to collect demographic information, questions on their gender, stream of study, and academic levels were asked of the participants. Data relating to the demography of the participants has been presented in Table 1.

Table 1
Demographic Information of Respondents

Characteristics		No. of Respondents (N=240)	%
Gender	Male	128	53.33%
	Female	112	46.67%
Faculty	Arts	130	54.17%
	Commerce	110	45.83%
Academic levels	Degree 2 nd Semester	124	51.67%
	Degree 4 th Semester	116	48.33%

(Source: Data collected through a field study)

Table 1 shows the demographic characteristics of the sampled undergraduate students in the present study. This comprised three significant features: gender, faculty, and academic levels. Out of 240 sampled undergraduate students, 53.33% were male and 46.67% were female. Students from two faculties—arts and commerce—participated in the study. The numbers of sample from Arts faculty were higher (54.17%) than the Commerce faculty (45.83%). On the other hand, 51.67% samples were from degree second semester and 48.33% samples were from degree fourth semester students.

Amount of Smartphone Use among the Undergraduate Students

The primary goal of the investigation was to ascertain the amount of smart phone use by the participants. Data collected through the questionnaire relating to the amount of smartphone use among the undergraduate students has been presented in Table 2.

Table 2
Amount of Smartphone use among the Undergraduate Students

Items	Responses	Type of Respondents					Total
		Male	Female	Total	Arts	Commerce	
No. of smartphone possessed by the students.	0	02 (1.56%)	06 (5.36%)	08 (3.33%)	07 (5.38%)	01 (0.91%)	08 (3.33%)
	1	113 (88.28%)	104 (92.86%)	217 (90.42%)	119 (91.54%)	98 (89.09%)	217 (90.42%)
	2	11 (8.59%)	02 (1.79%)	13 (5.42%)	03 (2.31%)	10 (9.09%)	13 (5.42%)
	More than 2	02 (1.56%)	0 (0.00%)	02 (0.83%)	01 (0.77%)	01 (0.91%)	02 (0.83%)

Frequency of smartphone checked by the students	Every one minute	15 (11.72%)	22 (19.64%)	37 (15.42%)	25 (19.23%)	12 (10.91%)	37 (15.42%)
	Every five minutes	77 (60.16%)	68 (60.71%)	145 (60.42%)	78 (60.00%)	67 (60.91%)	145 (60.42%)
	Every one hour	27 (21.09%)	19 (16.96%)	46 (19.17%)	24 (18.46%)	22 (20.00%)	46 (19.17%)
	Other	09 (7.03%)	03 (2.68%)	12 (5.00%)	03 (2.31%)	09 (8.18%)	12 (5.00%)
Time spent daily on smartphone by the students	1-2 hours	34 (26.56%)	22 (19.64%)	56 (23.33%)	38 (29.23%)	18 (16.36%)	56 (23.33%)
	3-5 hours	79 (61.72%)	83 (74.11%)	162 (67.50%)	85 (65.38%)	77 (70.00%)	162 (67.50%)
	6-12 hours	12 (9.38%)	07 (6.25%)	19 (7.92%)	06 (4.62%)	13 (11.82%)	19 (7.92%)
	More than 12 hours	03 (2.34%)	0 (0.00%)	03 (1.25%)	01 (0.77%)	02 (1.82%)	03 (1.25%)
Smartphone is a need or status symbol	Need	56 (43.75%)	50 (44.64%)	106 (44.17%)	62 (47.69%)	44 (40.00%)	106 (44.17%)
	Status symbol	22 (17.19%)	47 (41.96%)	69 (28.75%)	38 (29.23%)	31 (28.18%)	69 (28.75%)
	Both	50 (39.06%)	15 (13.39%)	65 (27.08%)	30 (23.08%)	35 (31.82%)	65 (27.08%)
Purpose of smartphone use by the students	Communicating relatives	32 (25.00%)	37 (33.03%)	69 (28.75%)	39 (30.00%)	30 (27.27%)	69 (28.75%)
	Entertainment	43 (33.59%)	15 (13.39%)	58 (24.17%)	40 (30.77%)	18 (16.36%)	58 (24.17%)
	Study	39 (30.47%)	56 (50.00%)	95 (39.58%)	44 (33.85%)	51 (46.36%)	95 (39.58%)
	Game	12 (9.38%)	03 (2.68%)	15 (6.25%)	06 (4.62%)	09 (8.18%)	15 (6.25%)
	Any other purpose	02 (1.56%)	01 (0.89%)	03 (1.25%)	01 (0.77%)	02 (1.82%)	03 (1.25%)

(Source: Data collected through a field study)

Table 2 indicates that 3.33% of undergraduate students did not possess any smartphones, 90.42% had one smartphone, 5.42% had two smartphones, and 0.83% possessed more than two smartphones. Female undergraduate students possessed a higher percentage of one smartphone (92.8%) than male students (88.28%), and arts students possessed a higher percentage of one smartphone (91.54%) than commerce students (89.09%).

In respect of the frequency of smartphones checked by the undergraduate students, it was found that 15.42% of students checked their smartphones every one minute, 60.42% checked their smartphones every five minutes, 19.17% checked their smartphones every hour, and 5.00% checked them every other day. The frequency of smartphones checked by the respondents was the highest (60.42%) every five minutes. It also indicates that the frequency of smartphone uses every five minutes was a little higher for girls' participants (60.71%) compared to boys' participants (60.16%), and in the case of Commerce students (60.91%) than the Arts students (60.00%).

The time spent daily on smartphones by the undergraduate students between one and two hours was 23.33%, between three and five hours was 67.50%, between six and twelve hours was 7.92%, and more than twelve hours was 1.25%. The highest percentage (67.50%) of undergraduate students (61.72% male and 74.11% female, 65.38% arts and 70.00% commerce) were found to spend on smartphones between three and five hours.

Out of 240 undergraduate students, 44.17% considered smartphones as a need, 28.75% considered smartphones as a status symbol, and 27.08% considered smartphones as both their need and status symbol. The number of female students was slightly higher (44.64%) than that of the male students (43.75%), and arts students (47.69%) than commerce students (40.00%) considered smartphones as a need.

In respect of the purpose of smartphone use by the undergraduate students, 28.75% responded that they used smartphones for communicating with relatives, 24.17% for entertainment, 39.58% for study, 6.25% for games,

and 1.25% for any other purposes. It also indicates that 30.47% male and 50.00% female students, and 33.85% arts and 46.36% commerce students, used smartphones for the purpose of their study.

Impact of Smartphone Use on Academic Performance of Undergraduate Students'

The present investigation is intended to ascertain the impact of smartphone use on the academic performance of the sampled students. Data collected through the research tool has been presented in Table 3.

Table 3
Impact of Smartphone use on Academic Performance of Undergraduate Student's

Items	Responses	Type of Respondents					Total
		Male	Female	Total	Arts	Commerce	
Students use smartphone in the classroom.	Yes	62 (48.44%)	58 (51.78%)	120 (50.00%)	42 (32.31%)	78 (70.91%)	120 (50.00%)
	No	66 (51.56%)	54 (48.21%)	120 (50.00%)	88 (67.69%)	32 (29.91%)	120 (50.00%)
Smartphone use helps in learning	Yes	53 (41.41%)	64 (57.14%)	117 (48.75%)	57 (43.85%)	60 (54.55%)	117 (48.75%)
	No	75 (58.59%)	48 (42.86%)	123 (51.25%)	73 (56.15%)	50 (45.45%)	123 (51.25%)
Smartphone use in class distracts from studies.	Yes	82 (64.06%)	79 (70.54%)	161 (67.08%)	93 (71.54%)	68 (61.82%)	161 (67.08%)
	No	46 (35.94%)	33 (29.46%)	79 (32.92%)	37 (28.46%)	42 (38.18%)	79 (32.92%)

(Source: Data collected through a field study)

Table 3 shows that 50.00% of respondents used smartphones in the classroom. The percentage was marginally higher for female respondents (51.78%) compared to male respondents (48.44%) and for commerce students (70.91%) compared to arts stream students (32.31%). This table also indicates that smartphone use helps 48.75% of students (41.41% male and 57.14% female, 43.85% arts and 54.55% commerce) in their learning. This means 51.25% of respondents did not agree that smartphone use helped them in their learning. Again, 67.08% of respondents (64.06% male and 70.54% female, and 71.54% arts and 61.82% commerce students) were of the view that smartphone use in class distracts them from studies.

Health Effects of Smartphone Use on Undergraduate Students'

The current study also looked into how undergraduate students' use of smartphones affected their health. Table 4 below displays the facts and statistics that have been gathered on this.

Table 4
Health Effects of Smartphone use on Undergraduate Students'

Responses	Type of Respondents					Total
	Male	Female	Total	Arts	Commerce	
Sleeplessness	32 (25.00%)	25 (22.32%)	57 (23.75%)	34 (26.15%)	23 (20.91%)	57 (23.75%)
Headache	29 (22.66%)	34 (30.36%)	63 (26.25%)	38 (29.23%)	25 (22.73%)	63 (26.25%)
Eye strain	57 (44.53%)	51 (45.54%)	108 (45.00%)	52 (40.00%)	56 (50.91%)	108 (45.00%)
Tension	07 (5.47%)	02 (1.78%)	09 (3.75%)	05 (3.81%)	04 (3.64%)	09 (3.75%)
Other	03 (2.34%)	0 (0.00%)	03 (1.25%)	01 (0.77%)	02 (1.82%)	03 (1.25%)

(Source: Data collected through a field study)

Table 4 shows that 23.75% of undergraduate students (25.00% male and 22.32% female) suffered from sleeplessness, 26.25% (22.66% male and 30.36% female) suffered headaches, 45.00% felt eye strain, 3.75% (5.47% male and 1.78% female) experienced tension, and 1.25% (2.34% male and 0.00% female) suffered from other types of problems. Faculty-wise distribution of the effects of smartphone use demonstrates that 26.15% of Arts and 20.91% of Commerce students experienced sleeplessness, 29.23% of Arts and 22.73% of Commerce students suffered from headaches, 40.00% of Arts and 50.91% of Commerce students felt eye strain, 3.81% of Arts and 3.64% of Commerce respondents experienced tension, and 1.82% of Arts and 1.25% of Commerce students had other types of issues. This clearly indicates that the consequences of smartphone use for undergraduate students were found to be highest on eye strain (44.53% male and 45.54% female, 40.00% arts and 50.91% commerce), followed by headache (26.25%), sleeplessness (23.75%), and tension (3.75%).

Major Findings of the Study

- Female undergraduate students possessed the highest percentage of smartphones (92.8%). The male students (88.28%), arts students (91.54%), and commerce students (89.09%) possessed one smartphone.
- The frequency of smartphone checks indicates that 15.42% of students checked their smartphones every minute, 60.42% checked every five minutes, and 19.17% checked every hour.
- The frequency of smartphones checked by the respondents was highest (60.42%) every five minutes.
- It was also found that the frequency of smartphone use after every five minutes was a little higher for female students (60.71%) in contrast to male pupils (60.16%), and for commerce students (60.91%) than arts students (60.00%).
- The time spent daily on smartphones by the undergraduate students between one and two hours was 23.33%, between three and five hours was 67.50%, between six and twelve hours was 7.92%, and more than twelve hours was 1.25%.
- The highest percentage (67.50%) of undergraduate students (61.72% male and 74.11% female, 65.38% arts and 70.00% commerce) were found to spend on smartphones between three and five hours.
- Most of the respondents (44.17%) considered smartphones as a need, 28.75% considered smartphones as status symbols, and 27.08% of students considered smartphones as both a need and a status symbol.
- The number of female students was slightly higher (44.64%) than the male students (43.75%), and arts students (47.69%) than commerce students (40.00%) to consider their smartphone as a need.
- The highest percentage (39.58%) of undergraduate students (30.47% male and 50.00% female, and 33.85% arts and 46.36% commerce) used smartphones for the purpose of their study.
- A total of 50.00% of respondents' (48.44% male and 51.78% female) used smartphones in the classroom setting.
- The use of smartphones in the classroom was higher in the case of commerce students (70.91%) than in the case of arts (32.31%).
- 75% of students agreed that smartphone use helped them (41.41% male and 57.14% female, 43.85% arts and 54.55% commerce) in their learning.
- This study revealed that 51.25% of respondents did not agree that smartphone use helps them learn.
- The highest percentage (67.08%) of respondents (64.06% male, 70.54% female, and 71.54% arts and 61.82% commerce students) were of the view that smartphone use in class distracts them from studies.
- The impact of undergraduate students' smartphone use on their health was found to be highest for eye strain (45.00%), followed by headache (26.25%), sleeplessness (23.75%), and tension (3.75%).

Conclusion and Implication

The use of smartphones has become a common feature among youths and students. There are multiple uses of smartphones, such as phone calling, audio and video recording, time-showing, calculating, weather forecasting, entertainment, etc. It makes communication easier amongst friends, family, and relatives. Literature reveals that smartphone use has a massive influence on the health, habits, lifestyle, and learning processes of students. The present research work revealed an enormous amount of smartphone use among the sampled undergraduate students, irrespective of their gender and faculty of study. Most of the female learners possessed a single cell phone. The frequency of smartphone checks by the pupils was highest after every five minutes, which was similarly dominated by the female learners. It was also revealed that the maximum number of samples used their smartphones for three to five hours a day. Most learners considered a cell phone a requirement rather than a status symbol and used it in a classroom setting for learning purposes. Moreover, the results of the research work indicated that undergraduate learners' academic performance was tremendously influenced by smartphone use in both positive and negative ways. Smartphone use in the teaching and learning situation (consulting teachers, fellow students, exchanging notes, attending online classes, etc.) assisted the learners in their learning process, thereby positively influencing their scholastic performance. On the contrary, the investigation likewise revealed that extreme smartphone use had a significant negative impact on students' health and distracted them from the class,

thereby reducing their academic performance. Consequently, the advantage or harmfulness of smartphone use exclusively depends upon the user's intention and extensiveness of use.

The implications of the study derive from making learners cognizant of both the positive and negative effects of smartphone use on their day-to-day lives as well as their academic accomplishments. The young learners, the future assets of the nation, should be prepared to realize that excessive cell phone use may have adverse effects on their eyes, sleep, behaviours, overall health, and lifestyle. They should likewise be aware that the sensible use of cell phones can encourage their learning. Young students may be provided with proper training on smartphone use for learning purposes, and they can also be encouraged to use cell phones with certain applications. However, parents, teachers, counsellors, caretakers, and administrators should shoulder the immense responsibility of witnessing judicious smartphone usage by college-going students and young people for their academic enhancement.

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