Review Article

Impact of Smartphone on Academic Learning for the Students of Damphu Central School under Tsirang Dzongkhag

ABSTRACT

The influence of utilizing cellphones on pupils' academic learning at Damphu Central School, Tsirang was explored in this study. This study used a quantitative research technique to collect data from 532 students in grades X-XII using questionnaires in order to estimate the impact. The empirical findings demonstrated that the majority of respondents utilized their cellphones to access social media apps, with the web browser being the most often used mobile application for interacting with classmates and teachers. The findings also revealed how smartphone use affects pupils' academic ability and growth. Smartphone use has a favorable substantial influence on respondents' academic performance in terms of communicability with fellow students and teachers, as well as access to study resources. Furthermore, smartphone usage has a negative substantial influence on respondents' academic performance in terms of student focus and smartphone-related lifestyle. It was also discovered that using smartphones diverts students' attention away from their schoolwork in several ways. Those who had them at school, on the other hand, opted to utilize them instead of participating in sports or social activities. On the other hand, they felt bored and unoccupied in the centers where the use of mobile phones was restricted. As a result, schools will need to establish instructional practices that stimulate social contact and activities in the classroom, particularly during break. However, prohibiting the use of electronic gadgets in the educational setting is not encouraged, as this encourages pupils to use them surreptitiously and enhances their desire to use them. As a result, its usage in the classroom is promoted from an educational standpoint, fostering collaborative learning and student motivation.

Keywords: smart phone; academic ability; performance; social contact.

1. INTRODUCTION

Smartphones are the most powerful technical devices available today, and their multi-functional capabilities have made them an essential component of practically everyone's daily routine. Smartphones play a crucial influence in practically every aspect of a person's day-to-day employment. It is widely acknowledged as a significant instrument for business, pleasure, learning, and teaching, among other things. Smartphones have been acknowledged as an essential educational instrument that enhances both learning and teaching processes in the area of education, in addition to their usefulness in various sectors of life. Mobile technology is believed to be the acknowledged face of educational applications for modern technologies [1]. Although many colleges and institutions previously did not welcome the use of smartphones by students during school hours, and its use was recognized as a disruption to students' learning, educators and policymakers in the field of education are now recognizing smartphones as a powerful educational tool that can be used both by students and teachers. Furthermore, students in the twenty-first century are so enamored with technology advances that it would be difficult for them to conceive not using them in their daily lives. Students in colleges, according to Yu & Conway [2], can't go a day without checking their technical equipment, such as cellphones and computers. When it comes to technology, students are generally the first to jump in and try new technology, and it is most probable that they

will innovate in order to find new methods to use the available technology, therefore the research of smartphone use among students is crucial [3]. A free Wi-Fi network is available to students at the Mahikeng Campus in select places. Students from middle- to lower-income households [4] or underprivileged cultures make up the Campus, and smartphone use is becoming the norm. Students using smartphones may quickly connect to wireless networks and have unrestricted access to internet connections designed to improve their learning experience and performance. In addition, the provision of these internet (Wi-Fi) connections aims to improve access to instructional materials across the Campus and beyond. E-Fundi is one of the most popular platforms for increasing access to educational materials. It is a course or learning management system that is used to facilitate learning engagement, communication, and the delivery of learning content between students and teachers. Students can use e-Fundi to get their study materials, such as lecture slides, participate in online forums, submit assignments, write tests, quizzes, and exams, connect with lecturers and other students, and much more. It also has e-Fundi characteristics in that, it can offer students with the appropriate learning resources for their academic work via cellphones, regardless of their geographical location within the country.

In recent years, the use of mobile phones by children and teens has skyrocketed. This increase may be attributed to two forms of usage: communication (which includes calls, texts, and, most significantly, social networking), and recreational (which includes reading multimedia material and playing a range of mobile games). In recent years, events such as the Youth Tuber phenomenon, which turns young people into both recipients and makers of their own content, have contributed to an increase in mobile device usage rates [5].

In most cases, children desire to learn about, investigate, and research the possibilities of these devices on their own. As a result, individuals may find themselves in circumstances that are inappropriate for their age group. Due to a lack of maturity and ability in controlling inappropriate information, some of them have experienced psychological, bodily, or behavioral conduct such as pubbing or monophobia [6; 7].

The legality of cell phone use in schools is a contentious issue. Several experts suggest that mobile devices in schools offer educational benefits, noting their novelty, the appeal they have on students, and the wide range of educational opportunities they allow instructors by introducing new teaching/learning approaches [8]. Based on these assumptions, several studies have included these gadgets into their educational practice, with favorable outcomes from students [9; 10].

Those who argue for the disadvantages of mobile phone usage in the educational area, on the other hand, point to a number of known concerns linked with mobile phone use in the youth sector. Among these, the greatest source of concern is its huge addictive potential [11; 12]. This refers to the idea that digital technologies excite the human brain both physically and mentally. Receiving a "Like" on Facebook or Instagram becomes a priority for today's youngsters to attain [13]. Several experts have examined the potential use of these devices by children and adolescents throughout the day, concluding that it is necessary to understand young people's attitudes toward their use in each context in order to promote preventive attitudes that encourage responsible use of these devices.

1.1 Literature Review

Modern courses are no longer constrained by traditional bricks and mortar walls; students may access them from anywhere, and smartphone technology allows 21st century learners to be engaged in learning while on the move. This allows learners to have their individual learning style suited to them and to experience ownership and control over their learning. Smartphone technology also requires educators to be innovative in designing pedagogies that make it easier to integrate technology into classroom learning as an educational tool [14]. Kolb, [15] and Papadakis, [16] feels that the effectiveness of incorporating technology into the teaching process is highly dependent on teachers' attitudes and willingness to adopt it.

Some mobile technologies, such as tablets and smartphones, allow students to have tactile and intimate encounters with their digital environments [17]. Mokoena [18] claims that students' usage of cellphones increases collaborative learning by connecting them to the internet. This remark indicates that students are more engaged in learner-centered participatory learning when they utilize cellphones. This is a clear example of the numerous benefits that smartphones have provided to students: it improves their understanding by increasing academic

performance, social media participation, and information sharing; it improves their social skills by allowing them to seek academic assistance and support; and it does so much more.

According to Kinsella [19], the introduction of cellphones has solved the problem of communication in lecture rooms with students. Similarly, Mokoena [18] claims that group projects and/or work assigned to students by their professors may be completed quickly and simply using cellphones. This also demonstrates that students may now record their professors' courses and instructions in real time. This is accomplished by using the advanced tools available on cellphones to record information during courses. People strive to embrace the usage of smartphones from many viewpoints because they are no longer simply utilized as communication tools (calls and text messages), but also as tools for people's social and work lives, as well as a possible instrument in their academic life [17]. According to Buck et.al. [14], school students who used the Study Blue Flash Cards claimed it helped them remember essential concepts when studying for examinations. According to the survey, some students use iPhones to access the Ever note Peek program, which acts as a note-taking cloud service, allowing them to organize their notes and turn them into useful study resources.

With the advancement of cellphones, what students do outside of the classroom is becoming increasingly similar to what they do within the classroom. This point is critical to the study's discussion on the duty or role of smartphones outside of school grounds. If there are no limits, children can be seen using their cellphones for a variety of purposes at school. Then, according to Vanwelsenaers [20], pupils use cellphones for a significant portion of the class time. Collaboration is a critical 21st-century skill that Singapore's instructors are attempting to educate their students. Furthermore, students are involved in dialogues and other collaborative activities as a result of their successful usage of smartphones, and this is a good example of how the smartphone fosters discourse and information/content exchange.

As a result, there is a viewpoint in which the popularity of mobile phones is not synonymous with their effective usage. In support of this notion, research has found a link between students' use of mobile phones on school grounds and a lack of focus, reflection, and criticism, or bad school performance, all of which have a negative impact on their overall school performance [21;22]. Similarly, the evidence suggests a link between the usage of mobile devices in the classroom and an increase in incidents of school bullying and cyberbullying [23]. In numerous nations, this has resulted in a ban on the use of mobile phones in classrooms. Several experts, however, argue that prohibiting the use of mobile devices in schools is not the best way to eliminate the prevalence of addiction in society [24].

1.2 Research Objectives

This study was conceived and carried out based on a survey of Damphu Central School students' perceptions of the influence of smartphone usage on academic learning. As a sample, the findings of a survey conducted in this context were studied on a representative of Damphu's population. There hasn't been any published study on students' attitudes of smartphone usage in the district. As a result, we believe that our research will cover that knowledge gap. Given current events, such study can raise student awareness, curiosity, and interest in smartphone usage and its influence on academic learning, paving the way for future research and enabling smartphone use in all of the country's schools.

1.3 Purpose Of The Study

The primary goal of this study is to determine the level of acceptance of smartphone technology as a mobile learning tool among Damphu Central School students, with the following objectives in mind:

1. To determine the level of smartphone usage for academic purposes among Damphu Central School students, and
2. To determine the level of simplicity of smartphone operation as a mobile learning tool among students of Damphu Central School.

1.4 Research Questions

1. Do Damphu Central School student truly utilize their smartphones for educational purposes?

2. What proportion of Damphu Central School students utilize their cellphones as a mobile learning tool?

1.5 Hypothesis

Ho1: Between different levels of pupils, there is no substantial influence of smartphone usage on academic achievement.

Ho2: Neither male nor female students' academic performance is affected by their use of smartphones.

Ho3: Using a smartphone does not have a substantial influence on academic performance among students of various ages.

2. METHODS

2.1 Research Design

This is a quantitative survey design study based on research. The researcher viewed the survey design as the ideal research design to lead this study since the goal of the study was merely to analyze the existing trends based on the opinions of students at Damphu Central School about the usage of cellphones as an educational tool in the classroom.

2.2 Instrument

The data gathering instrument for this investigation was a questionnaire generated from existing literature. The researcher employed tools that were tailored to students' current situation and conducted a pilot with 50 pupils. Following question analysis, 25 questions were judged to be relevant, and 600 pupils from Damphu Central School were administered with the questionnaire. To ensure its validity, the questionnaire was shared with a content specialist. Before it was utilized for data collection, certain elements of the questionnaire were altered with changes and deletions. The questionnaire is divided into three sections. The first section gathered information on the respondents' demographic profiles. The second section contained 17 questions on a five-point Likert scale (strongly disagree to strongly agree) that asked respondents to identify their perceptions of the benefits of smartphone use in class, while the third section contained eight questions that asked respondents to identify the barriers posed by students' smartphone use in class.

2.3 Population and Sampling

The pupils in this research are from Damphu Central School in Tsirang District, and they are in grades X-XII. Questionnaires were distributed to all students in grades X-XII via a via telegram, mail, WhatsApp, and WeChat by their instructors. Only 532 pupils (X-XII) out of a total population of 600 sent replies. Gender, class, and age are required fields in the demographic data.

2.4 Sample Frame

Table 1. Demographics of the Respondents

Grade	Male	Female	Total
X	25	66	91
XI	19	35	54
XII	167	220	387
Total	211	321	532

When questioned about their gender, 211 (39.7%) of the respondents are male, while 321 (60.3%) are female. 91 (17.10%) were from grade X, 54 ((10.15%) from grade XI, and 387 (72.74%) from grade XII which made the

maximum portion in the study. When questioned about their age, 470 (88.2%) of respondents said they were between the ages of 15 -20 years. Only 2 (0.4%) said they were between the ages of 21 -25 years, while another 63 (11.8%) said they were between the ages of 26 – 30 years. The bulk of the study's respondents are youths, and they all possess and use smartphones on a regular basis, according to the demographic data.

2.5 Reliability

The questionnaire's reliability was tested using SPSS software's Cronbach's alpha (α) calculation. The perceived task values scale, which has a total of 25 items, was subjected to a reliability study, as shown in Table 2. The first 17 items of the questionnaire received a Cronbach's alpha of α = .865, whereas the second 8 items had a Cronbach's alpha of α= .623. All of the questionnaire's items looked to be worthy of keeping, and removing them would result in a drop in the alpha.

Table 2. Reliability of the questionnaires

Variable	No of Items	Items deleted	Alpha Value
Benefits of smartphone use in classroom	17	none	0.865
Barriers of smartphone use in classroom	8	none	0.623

2.6 Data Analysis

The data from a questionnaire was examined using descriptive statistics in SPSS software, which found the mean scores, standard deviation, and frequency, as well as the proportion of the questionnaire items.

3. RESULTS AND DISCUSSION

The table below answers the second research question, "What proportion of Damphu Central School students utilize their cellphones as a mobile learning tool?" The results are listed in table 3 below.

Table 3. Smart phone usage among different grade, genders and years among learners

Different levels	Frequency	Percentage
Grade X	90	16.9
Grade XI	54	10.4
Grade XII	388	73.1
Total	532	100.0
Different genders		
Male	211	39.7
Female	321	60.5
Total	532	100.0
Different age groups		
15-20 years	471	88.2
21-25 years	63	11.8
26-30 years	2	0.4
Total	532	100.0

Table 3 shows that 90 (16.9%) of grade X respondents use their cellphones for educational purposes. From the overall sample, 54 (10.4%) of grade XI students use smartphones, whereas 388 (73.1%) of grade XII students make the best use of smartphones for educational purposes.

A total of 211 male (39.7%) use cellphones on a daily basis, while 321 (60.5%) female use smartphones for various purposes.

In terms of age groups, 471 (88.2%) of the total respondents between the ages of 15-20 use their cellphones. Only 2 (0.4%) of the 26-30 year olds use their smartphone for educational purposes, compared to 63 (11.8 %) of the 21-25 year who use it all the time.

3.1 Effect of Using Smartphones on the Academic Capabilities of the Students.

The following information were aimed at analyzing the effects on using smartphones on academic performance of Damphu Central School.

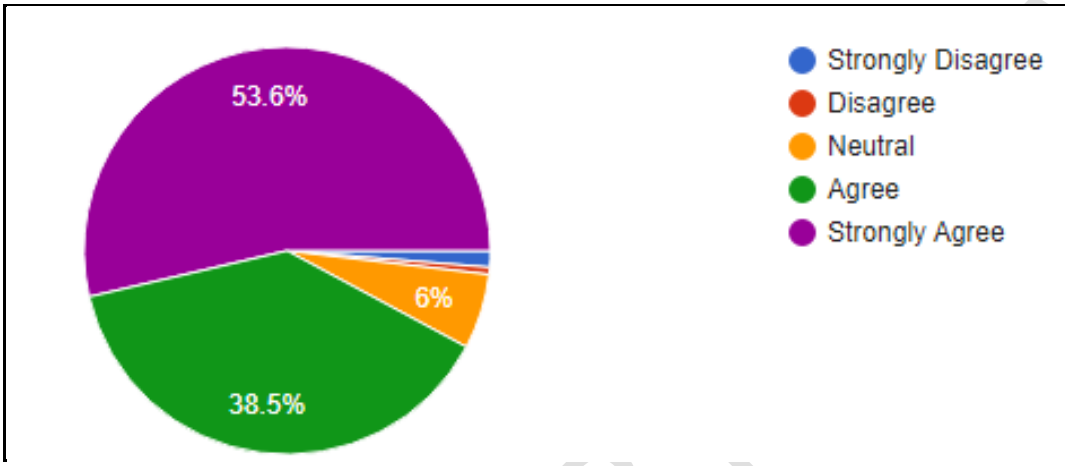

Fig. 1. Perceived learners that smartphones help them in finding updated information

Fig. 1. Presents the questions: “It helps to find updated information?” the finding proves that 288 (53.6%) strongly agrees on the support that smartphones to collect information they need and it also keeps them updated of the information around, while 7 (1.3%) have challenges at all. There are also 32 (6%) having neutral concept about the use of smart phones.

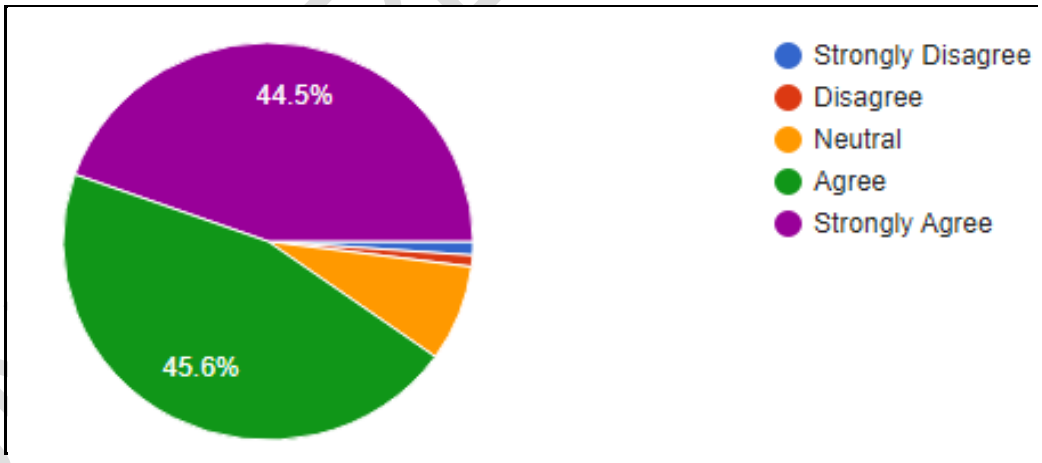

Fig. 2. It provides anywhere and anytime learning opportunities

Fig. 2. Presents the questions: “It provides anywhere and anytime learning opportunities?” the finding proves that 240 (44.5%) strongly agrees on the support that smartphones helps them provide anywhere and anytime learning opportunities, while 6 (1.1%) don’t support that smartphones are useful. There are also 42 (7.8%) having neutral concept on the opportunities provided by the smartphones.

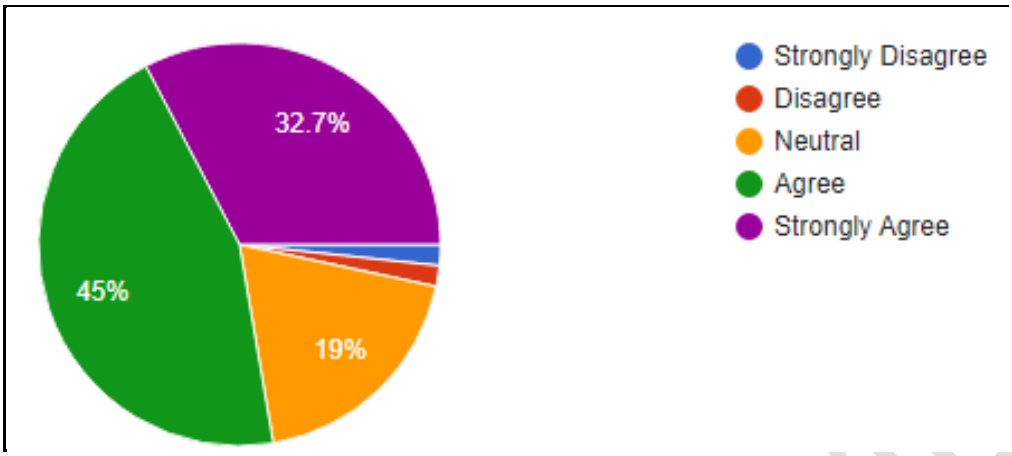

Fig. 3. It helps to complete assignment on time

Fig. 3. Presents the questions: “It helps to complete assignment on time?” the finding proves that only 176 (32.7%) strongly agrees on the support that smartphones helps them complete the assignment on time, while 9 (1.7%) don’t support that smartphones are helpful in completing their task on time. There are also 109 (19%) having neutral concept on the question that smartphones help them to complete the task on time meaning they uses other sources to get help for their assignment.

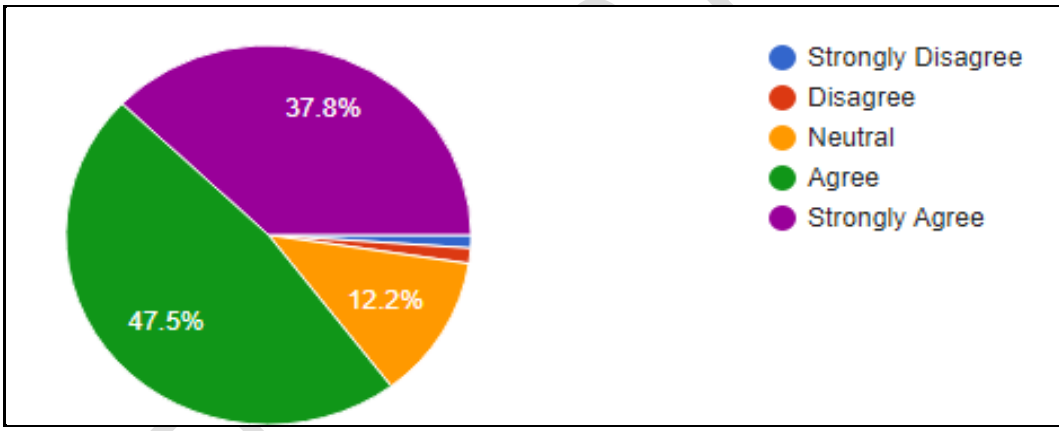

Fig. 4. Due to smartphone I could follow the development or innovations in the world

Fig. 4. Presents the questions: “Due to smartphone I could follow the development or innovations in the world?” the finding proves that only 204 (37.8%) strongly agrees that smart phones helps them to follow the innovation or development of the changing worlds, while 6 (1.1%) are still there who strongly disagree on this statement. There are also 66 (12.2%) having neutral concept on development and innovation that smartphone follows.

Overall, it's encouraging to see that the majority of students firmly believe that smartphones aid their studying and that they are making the best use of their smartphones to expand their knowledge thus rejecting the ***Ho1:*** “There is no substantial influence of smartphone usage on academic achievement”. There is a greater influence or significant relationship between smartphones and academic achievement of the students, and of course, there are also few who argue that cellphones are being used less for educational purposes too.

Table 4. Showing the Mean and SD on the Benefit of Smartphone Usage in the School

No.	Questions on benefit of smartphone use in the classes	Mean	SD
1	We have internet access in our classroom venues	5.54	.876

2	I can easily reach my classmates to get help using smart phones.	5.22	1.245
3	It helps to find updated information	4.98	1.112
4	It increases searching and learning skills	4.88	.826
5	It provides anywhere any time learning opportunity	4.76	1.054
6	It develops digital literacy	4.39	1.789
7	It increases productivity	4.32	.651
8	It helps to complete assignments on time	4.24	1.269
9	It increase collaboration	4.22	1.320
10	It provides opportunity for instruction differentiation	4.15	1.384
11	It saves time and increases productivity	4.10	.732
12	It increases students' motivation	4.07	1.209
13	It reduces the digital divide	3.87	1.872
14	It increases students' engagement	3.75	.681
15	I mainly use phones for distance learning	3.69	1.162
16	helps to learn through educational videos	3.51	1.087
17	Follow developments or innovations in the world	3.42	1.910

The mean score for "Benefits of Smartphone Use in Classroom" is shown in Table 4. The mean ratings for all of the items ranged from three to five. This indicates that the vast majority of responders agree or strongly agree with all of the benefits listed in the table above. 'We have internet access in our classroom' (M = 5.54, SD = .876), 'It helps to finish assignments on time' (M = 4.24, SD = 1.269), and 'It gives anytime, any time learning opportunity' (M = 4.15, SD = 1.384) were among the items with higher mean scores. Overall, respondents think that using a smartphone in the classroom provides the benefits of getting up-to-date information on internet connection in the classroom, as well as completing assignments on time and providing a learning opportunity at any time. However, the responders are practically unanimous in their agreement with the remaining benefits of smartphone use in the classroom as listed in table 4.

Table 5. Barriers Caused by the Smartphone Use in the Classroom

No.	Questions on barriers of smartphone use in the classes	Mean	SD
1	Disconnection of face-to-face activities	3.89	1.256
2	It helps in cheating	3.62	1.152
3	Negative impact of SMS language on writing skills	3.50	1.110
4	Distraction from other students during class	3.44	1.034
5	Interference in class	3.40	1.110
6	High cost of smartphones	3.38	1.960
7	It would cause socio-economic diversity among students	3.22	1.562
8	Access of inappropriate content	3.19	1.079

The mean score for "Barriers Caused by Smartphone Use in Classroom" is shown in Table 5. The mean scores for all of the items were in the threes. The average response of the respondents was determined to be "Almost agree." According to these data, respondents only partially agree with all of the hurdles posed by smartphone usage in the classroom, as shown in table 5. This means they aren't entirely convinced that using a smartphone in the classroom will lead to the disconnection of face-to-face activities, cheating, a negative impact of SMS language on writing, distraction for other students in class, interference in class, smartphone costs, socioeconomic diversity among students, or access to inappropriate content.

Table 6. Gender wise differences in smartphone usage for educational purposes

Dimension	Gender	N	means	SD	Df	t-value	p-value	Remarks
Benefits of smartphone usage	Male	211	21.50	4.22				insignificant
	Female	321	22.71	4.16	270	0.53	0.63	

Barrier on smartphone usage	Male	22.61	4.17				insignificant
	Female	21.50	4.09	270	0.68	0.48	

**Significance level (P = .05)*

Table 6 shows the differences between mean score of male and female students pertaining to benefits on smartphone usage. Male students unveil differences of male (mean = 21.50, SD = 4.22) in comparison to female (mean 22.71, SD = 4.16). Test for equality on mean shows no significant differences in benefit of smartphones usage between male and female students (P = .53, t-value = .63).

The second shows the differences between mean score of male and female students on relation to barrier on smartphone usage. Male teachers reveal slight higher (mean = 22.64, SD = 4.17) in comparison to female students (mean = 21.50, SD = 4.09). The test for equality on mean shows no significant differences in barrier on smartphone usage between male and female students (P = .68, t-value = .48). The null hypothesis ***Ho2:*** "Neither male nor female students' academic performance is affected by their use of smartphones" is being accepted as both the gender have similar believes towards the benefits of the mobile usage and less on its barriers.

Table 7. Age Wise Differences on Smartphones Usage on Academic Purposes

Dimension	Age group	N	means	SD	Df	t-value	p-value	Remarks
Benefits of smartphone usage	15-20	471	46.75	5.59				
	21-25	63	21.84	3.46	306	0.96	0.892	insignificant
	26-30	2	13.11	1.48				
Total		532						

**Significance level (P = .05)*

Table 7. Shows the differences between mean score of age group pertaining to benefit of smartphone usage. Age group of 15-20 years shows (means = 46.75, SD = 5.59), 21-25 years (mean = 21.84, SD = 3.46) and 26-30 years (means = 13.11, SD = 1.48). Test for equality shows no significant differences between different age group (P = .892, t-value = .96). Hence, the null hypothesis ***Ho3:*** "Using a smartphone does not have a substantial influence on academic performance among students of various ages" is accepted. The present conclusion might be due to the fact that smart phone usage is not dependent on age group but rather on community impacts on phone usage. As the demand for smartphone use in schools grows, the number of people using them grows as well, regardless of age. They are either used for instructional reasons or for various forms of entertainment, and the number grows in response to community demand.

4. CONCLUSION

In conclusion, the findings validate and support the assessing of smart phone acceptance among students by analyzing their utility and simplicity of use. The survey also revealed the extent to which students accept smartphones as a mobile learning tool. Smartphones were used by students for educational purposes. They use their cellphones to complete homework, find appropriate educational resources, and send and receive instructional emails from teachers and experts. Students of Damphu Central School also find using a smartphone for studying activities to be incredibly straightforward and easy. This suggests that the majority of school students have no difficulty using their smartphone as a tool to help them learn because it is so simple to use.

RECOMMENDATION

Based on the findings of the study, the following suggestions were made.

1. To support students' self-directed learning, the government should offer a dependable and inexpensive internet connection in school buildings.

2. Government authorities should train teachers and encourage them to put what they have learned about using smartphones in the classroom into practice.

ETHICAL APPROVAL

To continue ethically, each faculty member's permission was sought for the data gathering procedure. Each responder was informed of the study's objectives, and they were assured that the information they provided would be used solely for research purposes and would be kept confidential.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that no competing interests exist. The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

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