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# Influence of Mobile Phones Usage on Academic Performance of Junior High School Students in Ghana

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**Abstract—This study investigated the influence of mobile phone usage on the academic performance of students in Kpone Presbyterian Basic School. Descriptive survey design was adopted for the study. A sample of 100 students were selected through stratified and simple random sampling for the study. Data were collected through the use of a questionnaire and descriptive analysis used for analysing the research questions while the hypothesis was tested using the independent samples t-test. The study found that, students perceived mobile phones as capable of improving their academic performance positively when used wisely. However, the students were of the view that when mobile phones are not used appropriately and wisely, they can be a distraction to students and affect their academic work negatively. In addition, the study revealed that mobile phones foster interactions and teamwork among students, help with assignments, increase access to learning materials and help prepare for examinations. Students are also able to access supplementary materials and thus accomplish learning tasks more quickly. All of these culminate in an improvement in academic performance. Finally, the study found that there is a statistically significant difference in the influence of mobile phone usage on the academic performance of male and female students. Specifically, males were influenced more by mobile phone usage than females. It was recommended that school authorities organise workshops on technology utilisation for students to ensure that they acquire the skills needed to effectively use their phones to enhance their academic work.**

***Index Terms*— academic performance, influence, mobile phone usage, social network sites.**

## 1. Background to the Study

Globalisation has changed our lives, particularly in the way we communicate (Rabiu, Muhammed, Umaru, & Ahmed, 2016). This is due to the rapid developments occurring in Information Communication and Technology (ICT). Mobile Phone is one of such technological devices that keeps improving with over 7 billion mobile connections worldwide and unique mobile subscriptions of over 3.5 billion (Twum, 2011). Mobile phones have become an almost essential part of daily life since their rapid growth in popularity in the late 1990s (Ling, 2004).

Mobile phones were originally created for business use by adults (Aoki & Downes, 2003). Early mobile phones resembled the fixed telephones of the early 20th century, which were also intended for business use rather than social conversation (Flinchy, 1997). Advances in information technology have expanded mobile phone functionalities to include voice calls, messaging, data use, multimedia, games, and social media services (Jackson et al., 2008). Mobile phone usage is influenced by demographic variables, particularly gender, with studies showing that males use mobile phones more than females (Sundari, 2015; Rabiu et al., 2016).

In education, mobile phones offer benefits such as portability, collaboration, and motivation (Barker, Krull, & Mallinson, 2006). They enable students to access course information ubiquitously and facilitate various learning settings. Social network sites like Facebook and Twitter support collaboration by allowing students to form groups and share information easily. Mobile phones are considered essential for academic work, aiding in research, personal learning, and information sharing. The ICT Constructivist Theory of Learning posits that effective mobile phone use can improve academic performance (Papert, 1980). Sarwar and Soomro (2013) noted that smartphones offer educational benefits, allowing students to collaborate and keep up with classes even when absent due to health issues.

However, mobile phones can also negatively impact students' academic performance when used for non-educational purposes. Pulliam (2017) found that non-educational use of mobile phones in classrooms leads to distraction, with Junco (2012) reporting that 53% of undergraduates text during class. Dietz and Henrich (2014) linked increased classroom technology use to a decline in overall grades. Despite these negative effects, mobile phone use among young people continues to rise globally, with those aged 18 to 23 being more tolerant of phones in classrooms (Campbell, 2006). In Africa, and specifically Ghana, mobile phone usage among students has increased significantly, often interfering with academic work (De Bruijn, Nyamnjoh & Brinkman, 2009; Porter et al., 2012; Twum, 2014). This growing trend among Ghanaian students forms the background for this study.

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### *A. Statement of the Problem*

Sundari (2015) notes that mobile phones have transitioned from being status symbols to fashion accessories, leading to an unspoken social reliance. Consequently, students are increasingly engaging in activities like texting, calling, browsing the internet, and playing games on their phones (Hughes, Burke & Morrison, 2013; Valkenburg & Peter, 2011). Despite concerns about the negative impact of mobile phone usage on academic performance, there's widespread acknowledgment of its potential to enhance learning experiences, allowing easier access to information and empowering students to express themselves (Stark, 2013; Strassberg, Rullo & Mackaronis, 2014).

Regardless, mobile phone usage in the undergraduate lecture room continues to be a growing trend (Berry & Westfall, 2015). However, studies in Ghana highlight a pervasive worry about mobile phone use in education, with debates over whether it aids or hinders academic progress (Arku, 2013). Arku argues for its communication benefits, Frimpong, Asare, and Otoo-Arthur (2016) and Twum (2011) worry about distraction and neglect of studies. Existing research in Ghana has mainly focused on the negative effects, overlooking potential positives. This gap motivates the current study, which aims to explore both sides of mobile phone usage. Specifically, in Kpone Presbyterian Basic School, junior high school students are increasingly bringing mobile phones to school and spending excessive time on them, particularly during weekend classes. This issue demands investigation, especially considering the lack of prior research in the area.

### *B. Purpose of this Study*

The purpose of this study was to investigate the influence of mobile phone usage on the academic performance of junior high school students of Kpone Presbyterian Basic School. Specifically, the study sought to:

1. examine the extent to which mobile phones are used by students in Kpone Presbyterian Basic School,
2. assess the perception of students in Kpone Presbyterian Basic School about mobile phone usage,
3. examine the influence of mobile phone usage on the academic performance of students in Kpone Presbyterian Basic School.
4. evaluate the gender differences of mobile phone usage on academic performance of students.

### *C. Research Questions*

Based on the specific objectives of the study, the following research questions were answered by the study:

1. To what extent do students in Kpone Presbyterian Basic School use mobile phones on school campus?
2. What is the perception of students in Kpone Presbyterian Basic School about mobile phone usage?
3. To what extent do mobile phone usage influence the academic performance of students in Kpone Presbyterian Basic School?

### *D. Hypothesis*

The hypothesis below was tested in the study:

$H_0$: There is no significant difference in the impact of mobile phone usage on the academic performance of male and female students in Kpone Presbyterian Basic School.

$H_1$: There is a significant difference in the impact of mobile phone usage on the academic performance of male and female students in Kpone Presbyterian Basic School.

### *E. Significance of the Study*

The study's findings would have significant implications for various stakeholders in education. Particularly, policymakers like the Ministry of Education would gain insights into the real impact of mobile phone use on students' academic performance, informing potential policies regarding technology usage among Junior high students.

Additionally, authorities and teachers at Kpone Presbyterian Basic School would benefit from understanding the study's results to implement effective policies to mitigate the negative effects of mobile phone use.

Moreso, students would be enlightened on how their mobile phone usage affects their academic performance, enabling them to better manage their usage and potentially improve their academic outcomes.

Lastly, the study would contribute to the existing literature on mobile phone usage among students in Ghana.

## 2. Review of Related Literature

### *A. Concept of Mobile Phone Usage*

The concept of mobile phone usage has evolved significantly in recent years, becoming the predominant mode of communication, as highlighted by Thompson, Ansoglenang, and Awugah (2018). Almost everyone now possesses a mobile phone, making it the most popular and quickest means of communication. Various types of mobile phones with diverse features have been produced by different manufacturers, including smartphones like iPhones and Samsungs, as noted by Olanrewaju (2015). These devices offer capabilities beyond simple communication, such as video calls, internet browsing, and photography.

Android-enabled devices and iPhones are particularly popular among students. Rebello (2010) emphasizes the rapid growth of mobile phone technology globally, with Akanferi et al. (2014) noting their ubiquitous presence in people's lives worldwide, including among young adults. Mobile phones serve multiple purposes, including entertainment, information access, and social connectivity, especially for individuals seeking to alleviate boredom through instant connection.

### *B. Uses and Benefits of Mobile Phones by Students*

Kelly (2018) notes that mobile phones serve as tools for three primary communication forms: verbal, written, and electronic. While eloquence was once valued, brevity now prevails, with text-speak, composed of acronyms, becoming common. Dietz and Henrich (2014) observe that students engage in extensive texting, often using mobile internet to access social media platforms like Facebook and Twitter. Sundari (2015) highlights the educational benefits of mobile phones, enabling students to exchange information and access educational resources.

Schreiner (2018) argues that while mobile phones offer academic opportunities, they also pose distractions, depending on student attitudes and school policies.

Additionally, mobile phones facilitate safety communication and emergency responses. Grimus and Ebner (2013) suggest that mobile learning methods hold promise, particularly in developing nations. Sundari (2015) and Suryanarayana (2015) discuss the social and entertainment aspects of mobile phone usage, noting its role in forming social relationships, collecting information, and providing entertainment through games and media consumption.

### *C. Negative Effects of Mobile Phone Usage*

Thompson et al. (2018) highlight the adverse consequences of excessive mobile phone use. Mcneal and Hooft (2006) note resistance to mobile phone use in educational settings due to concerns about irritation, delinquency, and crime. Critics argue that cell phones are inappropriate for learning and can lead to negative effects such as chatting and texting during study time (Cumiskey, 2005). Kawasaki (2006) and Ling (2005) report psychological disturbances associated with mobile phone preoccupation, including depression and lower self-esteem. Suryanarayana (2015) identifies distractions, inappropriate behaviours, and accidents resulting from mobile phone usage. Sundari (2015) emphasizes the negative impact of social networking, texting, and chatting on academic performance, leading to lower grades. Dietz and Henrich (2014) further note a decrease in academic performance and satisfaction with instruction due to increased cell phone use in classrooms.

### *D. Empirical Review*

Womack and McNamara (2017) reviewed literature on cell phone use and its impact on college students' academic performance, finding a high prevalence of mobile phone usage among students and significant negative effects on academic performance. Sundari (2015) conducted a survey on mobile phone usage's influence on academic performance, revealing gender differences in usage and mixed opinions on its effects on learning. Frimpong, Asare, and Otoo-Arthur (2016) examined classroom mobile phone usage and its effects, finding both distractions and benefits to academic work. Sarfoah (2017) investigated smartphone use for learning, identifying factors influencing students' willingness to adopt smartphones for educational purposes. Porter et al. (2016) explored the negative effects of mobile phone usage in educational contexts across Ghana, Malawi, and South Africa. Twum (2014) studied mobile phone usage's impact on science students' academic performance, finding it to be a potentially beneficial learning tool. Asabere, Enguah, and Mends-Brew (2012) assessed tertiary students' expectations regarding mobile device usage in Ghanaian institutions, noting low expectations and limited impact on education.

Thompson, Ansoglenang, and Awugah (2018) investigated perceptions of mobile phone effects among University for Development Studies students, identifying cheating, distraction, and class assignment use as top concerns. Pulliam (2017) surveyed college students and faculty on classroom cell phone usage, revealing differing opinions and distractions caused by student phone use. Akanferi, Aziale, and Asampana (2014) studied mobile phone usage among young adults in Ghanaian tertiary institutions, finding it predominantly used for entertainment rather than educational purposes. Rabiu, Muhammed, Umaru, and Ahmed (2016) examined mobile phone usage's influence on academic performance among secondary school students in Nigeria, identifying significant effects and recommending awareness campaigns among stakeholders.

## 3. Research Methods

The descriptive survey research design was adopted for the study. Descriptive survey design was considered appropriate for the study because it helped to clearly investigate the influence of mobile phone usage on the academic performance of students at Kpone Presbyterian Basic School. The population for the study was Kpone Presbyterian Basic School while the target population for this study was made up of JHS students, thus, 135 students.

### *A. Sampling Procedures*

A sample size of 100 students was used for the study, this was according to Krejcie and Morgan's (1970) sample size determination table. Proportional stratified and systematic random sampling techniques were used to select the sample. Proportionate stratified sampling divided the sample into strata based on gender and class levels, with each stratum's sample size determined by its proportion in the overall population. According to Ahmed (2009), this method ensures that each stratum's sampled proportion matches its population proportion. Gravetter and Forzano (2009) note that stratified sampling is advantageous for describing or comparing population segments, as it guarantees well-represented subgroups. The actual respondents within each stratum were then selected using simple random sampling.

### *B. Data Collection Instrument*

A questionnaire, adapted from Twum's (2014) mobile phone usage questionnaire, was used for the study to efficiently gather data from many respondents in a short time (Sidhu, 1999). It included four sections: demographic data, extent of mobile phone usage, students' perceptions of mobile phone usage, and the influence of mobile phone usage on academic performance. The questionnaire was modified to meet the current study's objectives.

### *C. Data Processing and Analysis*

The demographic data of the respondents were analysed and presented descriptively using percentages and frequencies. The data for research question 1 was analysed using frequency counts and percentages while research questions 2 and 3 were analysed descriptively using means and standard deviations. However, the hypothesis was tested using the independent samples t-test. The researchers administered the questionnaires to the respondents after obtaining permission from the school administration and the students' consent. They collected the

data themselves and ensured a 100% return rate by retrieving all completed questionnaires.

### *D. Validity of Instrument*

Validity refers to the extent to which the items on an instrument accurately represent the phenomenon being studied (Mugenda & Mugenda, 1999). The content validity of the instrument was confirmed by experts in the subject area, following the belief that expert judgment is the best way to establish an instrument's validity (Ogah, 2013).

### *E. Reliability*

Reliability refers to the consistency or dependability of a construct's measurement (Bhattacherjee, 2012). The reliability of the questionnaire was determined by calculating the Cronbach coefficient alpha after conducting a pilot test with 15 junior high school students from a different school in Kpone. Van Thiel (2022) suggests that 10% to 20% of the target population is a representative sample for quantitative studies. Students used for the pilot test were chosen because they share characteristics with those in the main study.

## 4. Results and Discussion

### *A. Demographic Characteristics of Respondents*

The background data of the respondents are shown in table 1.

Table 1
Background data of respondents (N=100)

| Demography | Frequency (f) | Percentage (%) |
|---|---|---|
| **Sex** | | |
| Male | 57 | 57.0 |
| Female | 43 | 43.0 |
| **Age (in years)** | | |
| 11-13 | 34 | 34.0 |
| 14-16 | 54 | 54.0 |
| Above 16 | 12 | 12.0 |
| **Class Level** | | |
| JHS 1 | 32 | 32.0 |
| JHS 2 | 42 | 42.0 |
| JHS 3 | 26 | 26.0 |

Source: Field Survey (2023)

The data covers the sex, age and the class level of the students.

Table 1, displays the demographic distribution of the respondents, indicating that 57% were male and 43% were female. The majority of respondents (54%) were aged between 14 and 16 years, with a minimum of respondents (12%) being above 16 years old. In terms of class level, 42% were in JSHS 2, while 32% were in JSH 1. These background data are relevant to the study as they may influence students' mobile phone usage patterns.

The results of research question one is shown in tables 2 and 3.

In table 2, the study found that 90% of respondents owned mobile phones, aligning with Twum's (2014) observation that globalization and technology have led to widespread mobile phone usage among students. Similarly, Ling (2004) suggested that mobile phones have become integral to people's lives, indicating that virtually all students are now mobile phone users.

Table 2
Owning a mobile phone

| Answer | Frequency (f) | Percentage (%) |
|---|---|---|
| Yes | 90 | 90.0 |
| No | 10 | 10.0 |
| **Total** | **100** | **100.0** |

Source: Field Survey (2023)

Table 3
Uses of mobile phone

| Uses | Frequency (f) | Percentage (%) |
|---|---|---|
| Making and receiving calls | 90 | 100.0 |
| Sending text messages | 90 | 100.0 |
| Social media usage (Facebook, Instagram) | 80 | 88.9 |
| Listening to music | 85 | 94.4 |
| Watching videos | 70 | 77.8 |
| Playing games | 60 | 66.7 |
| Studying | 55 | 61.1 |
| Doing assignments | 50 | 55.5 |

Source: Field Survey (2023)

The section required multiple responses, revealing in Table 3 that all respondents (100%) used their mobile phones for making and receiving calls, with listening to music (94.4%) and social media usage (88.9%) following closely. Conversely, the least common uses were doing assignments (55.5%) and studying (61.1%). These findings underscore the predominant uses of mobile phones, aligning with Kelly's (2018) assertion that mobile phones serve three main communication forms: verbal, written, and electronic. Additionally, Dietz and Henrich (2014) noted extensive texting among students, corroborated by the current study's results. Moreover, the study supported Kelly's (2018) claim that many young people use their mobile phones for internet communication.

*Research Question 1*

The results are presented in table 4.

Table 4
Perception of students about mobile phone usage

| Statement | Mean | Std. Dev. |
|---|---|---|
| Mobile phones can interfere with human relationships | 3.29 | 1.04 |
| Mobile phones can make a person's life comfortable and secure while in an emergency situation | 3.93 | 0.95 |
| Mobile phones can lead to unacceptable behaviour | 3.05 | 1.22 |
| Mobile phones can affect performance positively | 3.92 | 0.91 |
| Mobile phones can negatively affect students' academic performance if not used wisely | 3.75 | 0.97 |
| Mobile phones can be used in cheating during examinations | 2.88 | 1.34 |
| Mobile phones can be a distraction for students | 3.74 | 1.01 |

Source: Field Survey (2019)

Table 4 indicates that respondents rated the positive impact of mobile phones on comfort during emergencies (M = 3.93, SD = 0.95) and academic performance (M = 3.92, SD = 0.91) highly. However, they also recognized that mobile phones could negatively impact academic performance if not used wisely (M = 3.75, SD = 0.97), indicating a potential for distraction. These findings suggest that mobile phones can enhance academic performance when used responsibly but can

be distracting if not managed properly. This aligns with studies by Frimpong, Asare, and Otoo-Arthur (2016), Thompson, Ansoglenang, and Awugah (2018), and Pulliam (2017), which noted both the benefits and distractions of mobile phone use among students.

*Research Question 2*

The results are presented in Table 5.

Table 5
Influence of mobile phone usage on academic performance

| Statement | Mean | Std. Dev. |
|---|---|---|
| Mobile phone helps me with my assignments | 3.84 | 0.97 |
| Mobile phone helps me prepare for examinations | 3.81 | 0.93 |
| Mobile phones foster interaction between me and my mates | 4.10 | 1.01 |
| Mobile phones have specific mobile applications that aid in my learning | 2.90 | 1.11 |
| Mobile phone helps me increase access to learning materials and educational resources | 3.82 | 1.00 |
| Mobile phones provide access to supplement textbooks | 3.45 | 1.25 |
| Mobile phones help accomplish learning tasks quickly | 3.32 | 1.22 |

Source: Field Survey (2023)

Table 5 shows that students believe mobile phones enhance academic performance by promoting interaction and teamwork (M=4.10, SD=1.01), aiding with assignments (M=3.84, SD=0.97), and providing access to learning materials (M=3.82, SD=1.00) and exam preparation (M=3.81, SD=0.93). Mobile phones also offer access to supplementary textbooks (M=3.45, SD=1.25) and help complete learning tasks more quickly (M=3.32, SD=1.22). These findings suggest that mobile phones improve academic performance, supporting Twum's (2014) view of their potential as learning tools and Sundari's (2015) observation of their role in information exchange. Schreiner (2018) also highlighted their connection to educational resources. The results align with the ICT Constructivist Theory of Learning, which supports active knowledge construction through various media, including mobile phones, affirming their positive impact on education.

The hypothesis sought to find the significant difference in the influence of mobile phone usage on the academic performance of male and female students. In testing this hypothesis, an independent samples t-test was used. The results are presented in Table 6.

Table 6
Independent samples t-Test for gender difference in influence of mobile phone usage on the academic performance

| Gender | N | Mean | SD | Df | t-value | Sig (2-tailed) |
|---|---|---|---|---|---|---|
| Male | 57 | 34.1 | 3.91 | 278 | 2.201 | .029 |
| Female | 43 | 33.2 | 2.85 | | | |

Source: Field Survey (2023)

Table 6 displays the mean scores and standard deviations for male and female respondents, with males averaging 34.1 and females averaging 33.2. The standard deviation for males was 3.91, while for females, it was 2.85. The analysis revealed a statistically significant difference in the influence of mobile phones on academic performance (t= 2.201, df= 278, p=0.029, 2-tailed), with a p-value of 0.029, indicating significance at the 0.05 level. This suggests that mobile phone usage has a different impact on the academic performance of male and female students, with males being positively influenced to a greater extent. This finding aligns with Sundari's (2015) observation that gender significantly correlates with mobile phone usage, with males exhibiting higher usage. Similarly, Rabiu et al. (2016) also noted a gender disparity in mobile phone usage. Overall, these findings underscore the importance of considering gender as a key variable in understanding students' mobile phone usage patterns and their subsequent academic performance.

## 5. Major Findings

The study indicated that mobile phone ownership among respondents was high, with 90% owning mobile phones. The primary uses of mobile phones included making and receiving calls, sending text messages, and listening to music.

Students perceived mobile phones as potentially beneficial for improving academic performance when used wisely. However, they also acknowledged that improper usage could serve as a distraction and negatively impact academic work.

Furthermore, mobile phones were found to facilitate interactions, teamwork, assignment completion, access to learning materials, and exam preparation, leading to improved academic performance.

Additionally, there was a statistically significant difference in the influence of mobile phone usage on academic performance between male and female students, with males being more influenced by mobile phone usage.

## 6. Conclusion

The study concluded that students at Kpone Presbyterian Basic School predominantly owned mobile phones, primarily using them for making calls, sending texts, and listening to music.

Students held mixed perceptions of mobile phones, recognizing both their benefits and potential distractions. Wisely used, mobile phones were seen to facilitate interactions, teamwork, assignment completion, access to learning materials, and exam preparation, thus positively impacting academic performance.

Additionally, there was a gender difference in how mobile phone usage affected academic work, with males being more affected than females.

Overall, the study's conclusions align with existing knowledge, acknowledging the pervasive use of mobile phones by students and their dual impact on academic work.

### *A. Recommendations*

1. School authorities should organise workshops on technology utilisation for students to ensure that students acquire the skills needed to effectively use their phones to enhance their academic work.
2. Teachers should incorporate activities that demand the use of technology into their teaching to encourage students to use their mobile phones for more academic oriented activities.

3. Promote peer mentoring programs where students who use mobile phones responsibly and achieve good academic results can mentor their peers. This can help create a culture of responsible mobile phone use among students.
4. Intermittently, school counsellors and student prefects should organise programmes for students on how mobile phones can be both beneficial and a disadvantage based on how the phones are used. This can help cultivate wise usage of mobile phones in students.
5. Schools can develop or adopt educational platforms and tools that are accessible via mobile phones, ensuring that students can benefit from technology without it being a distraction. This includes providing access to online libraries, educational videos, and interactive learning modules.

*B. Implications for counselling*

1. Counsellors should develop behavioural contracts with students that set clear expectations and limits on mobile phone use, with agreed-upon consequences and rewards.
2. Counsellors should regularly monitor the academic performance of students and correlate it with their mobile phone usage patterns.
3. Counsellors should teach students effective time management skills to balance mobile phone use with academic responsibilities.
4. Counsellors organize workshops to educate parents on monitoring and managing their children's mobile phone usage.
5. Counsellors should assess how much time students spend on their mobile phones and what activities they engage in. Differentiating between educational and non-educational use is crucial.
6. Counsellors should work closely with teachers to identify students whose academic performance may be impacted by mobile phone usage and develop joint intervention strategies.
7. Counsellors should teach students critical thinking skills to evaluate the content they consume on their mobile phones.
8. Counsellors should educate students about safe and responsible internet practices to protect them from online dangers.
9. Counsellors should provide support for students showing signs of mobile phone dependency or addiction, addressing underlying issues such as stress or social pressures.
10. Counsellors should implement programs that teach students mindfulness and focus techniques to reduce the impact of distractions from mobile phones.

*C. Area for Further Studies*

Additional research is needed to explore methods for maximizing the positive impact of mobile phones on academic performance among students.

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