

The Use of Mobile Phones in Educational Processes: Health Implications

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Abstract

Mobile phones in the education sector have, up till now, caused much harm than good due to frequent misuse of these devices. The experience in the 21st century reveals that modern societies were not well prepared for this technology. The paper reviewed several application of mobile phones on the health, social, economic, psychological and educational consequences on students and how it influences their attitude and behavior to academic activities. It critically noted the positive and adverse effects of the use of mobile phone in the teaching-learning process stating the implication on health and discussed in detail certain determinants responsible for the use of mobile phones in educational processes. It further explains that the use of mobile phones in classrooms harbors more serious adverse effects on students and the teaching-learning process but however, it tends to offer the educational process some tremendous benefits which cannot be overlooked or call for the termination of its usage in teaching and learning as the adverse effects are controllable and very well subjected to sanctioning. The paper suggests that mobile phones for educational use should be specifically designed in such a way that it only supports the function and use of educational software thereby eliminating any form social media applications.

Introduction

Over the years' mobile phone devices have become a pertinent aspect of our daily life and a valuable means of information dissemination since its evolution in the late 1990s' in Nigeria and in most developing countries. A mobile phone is a telephone or cell phone that can make and receive calls over a radio frequency link while the user is moving within a telephone service area. It is simply defined as a portable device for connecting to telecommunication network in order to transmit and receive voice, video or other data. Many researchers perceive it to be a wireless handheld device that allows users to make and receive calls.

Educational process on the other hand is referred to as all procedures or steps taken in other to facilitate teaching-learning process. It is clearly defined as a series of actions, techniques or steps taken in order to achieve a particular educational objective. The application of mobile phone has social, economic, psychological and educational consequences on students as it usually influences their attitude and behavior to academic activities. Several studies have found the use of mobile phone among youth

particularly students to be a necessity and aid to academic success as mobile technologies are commonly found nowadays even in areas where schools, textbooks, and computers are scarce. In Nigeria, the emergence of mobile phones with internet services i.e. the smartphones has brought about a profound and diverse pool of knowledge. However, it has also led, unintentionally though, to circumscribed students' especially in terms of their commitment to serious academic work and negatively impacted their thinking processes, communication and language skills (Mojaye, 2015).

The portability and affordability of mobile phones has increased its spread and availability in most communities in Nigeria particularly among adolescents, students and even the elderly, which represents a tremendous opportunity to leverage the power and ubiquity of mobile technologies to enhance learning and extend educational opportunities (Edeh, 2019). However, some of the constraints posed by ownership of mobile phones to effective learning include inattentiveness, disruption, noise and distraction during teaching-learning process. Ling (2005) reported that there is a strong relationship between students' performance and commitment to academics in lecture rooms as those who use mobile phone during lecture hours are more likely to experience distraction, inattentiveness, and non-participation in academic class work. It is therefore of indication that the use of mobile phones among students has become habitual thus negatively impacting on conscious efforts required to achieve effective teaching and learning.

Statement of the Problem

The integration of mobile phones into educational processes has become increasingly prevalent, offering numerous benefits such as enhanced communication, access to educational resources, and personalized learning experiences. However, the widespread adoption of mobile phones in educational settings also raises concerns regarding its potential health implications, particularly among students who utilize these devices extensively. Despite the convenience and utility of mobile phones in education, there is a dearth of comprehensive research focusing specifically on the health consequences associated with their prolonged use within educational contexts.

The Advent of Mobile Phones in Nigeria

The advent of mobile communications technology was welcomed with open arms because it promised advancements in knowledge sharing which in turn would significantly enhance development in all spheres of modern life: commerce, medicine, transportation, construction, and education among others. In Nigeria, as in most other developing countries, the mobile phone has been instrumental to the rapid increase in telecommunications accessibility. Before digital mobile telephony was introduced in Nigeria in 2001, the country had less than 500 thousand telephone lines. Today, the story is different with the number of telephone lines in Nigeria put at more than 30 million (Omeruo, 2009).

However, in 2001 the Global System of Mobile Communication (GSM) was launched in Nigeria. GSM was then one of the second generation (2G) mobile technologies in the world. GSM in Nigeria proved to be an instant success immediately

dominating the digital cellular market. Econet Wireless (which later had a lot of metamorphosis changing from Econet to Vmobile, Celtel Zain and now Airtel) was the first GSM mobile phone network to go live in Nigeria. It was soon after joined by MTN, Mtel and Glo mobile. However the story of mobile telecommunication in Nigeria is not just about GSM, as the Code Division Multiple Access (CDMA) has also contributed its own quarter. Companies like Starcomms, Visafone and Bourdex are leaders in CDMA technology.

The Use of Mobile Phones in Educational Process

Mobile phones in the education sector have, up till now, caused much harm than good due to frequent misuse and misapplication of these devices. The experience in the 21st century reveals that modern societies were not well prepared for this technology. Little did modern societies know about how much ills this piece of technology could harbor. And unfortunately, modern man is currently struggling to rise above the ills of modern technological advancements and seek out for more and newer beneficial ways to utilize the wide array of available technology. The use of mobile phone in the education sector is not immune from this dilemma. Throughout the world, from developed through developing to underdeveloped countries, the debate on whether to use or not to use mobile devices in education, in the school, in the classroom is still on, with experts from various fields of the education enterprise advancing sound and valid arguments against and in favor.

Application of mobile phones offers diverse opportunities for teaching learning. As the demand for use of more educational technologies increase, mobile phone technology would increasingly become significant in teaching and learning. Edgar *et al.* (2015) states that mobile phones equipped with good built-in cameras have become an essential part of everyday lives of students and educators. Edeh (2019) stated that mobile phones have a wide range of educational attributes, such as spontaneity, informality, portability, personalization, ubiquity, pervasiveness and the functions such as voice, text, video, radio, and the internet. Application of mobile technologies in education is becoming a norm for most learning institutions particularly in developed countries. Mobile (cell) phones have become ubiquitous in society, but they are typically seen as a problem in the classroom and can help students access and take ownership of knowledge (Jack, 2013).

A study carried out at Ball State's Hanley Institute for mobile media research revealed that students not only use a mobile phone for voice calls, but they also use it to email, send text, download and listen to music and access social media sites. The study also found that 49% of students use mobile phones to access websites for entertainment or concert information, 52% use it for movie viewing, 61% for news, 87% for weather reports while 57% of students reported using it for searching and 51% reported making one or more calls per day (Park, 2005).

Young (1998) studied attitudes of students towards the use of mobile phones and the perceived social pressure and likely consequence. The study revealed a high usage of mobile phones and found that some students see mobile phone usage as pleasant, helpful and easy while others said they experience feelings of anxiety,

distraction and that it sometimes takes too much of their attention that could have been allotted to other mainstream school programmers.

Cheung (2008) asserted that students use their mobile phones for tagging location, status update, and broadcasting and revealed that boys tend to use mobile phones for recreational and communicative purposes such as playing games, listening to music, sending or receiving e-mails and accessing the internet whereas girls are more likely to use the device for maintaining social contacts by using features such as text-messaging or using the phone as a phonebook.

What are the primary health implications of prolonged mobile phone use among students engaged in educational processes

Prolonged mobile phone use among students engaged in educational processes can have various health implications, including:

1. Physical Health Effects:

- a. **Musculoskeletal Issues:** Holding mobile phones for extended periods and adopting poor posture while using them can lead to neck strain, shoulder tension, and repetitive strain injuries.
- b. **Eye Strain:** Staring at the small screens of mobile phones for prolonged periods can cause digital eye strain, characterized by symptoms such as dry eyes, eye fatigue, blurred vision, and headaches.
- c. **Sleep Disruptions:** The blue light emitted by mobile phone screens can interfere with the body's production of melatonin, a hormone that regulates sleep, leading to difficulties falling asleep and disrupted sleep patterns.

2. Mental Health Effects:

- a. **Increased Stress and Anxiety:** Constant connectivity through mobile phones can contribute to feelings of being overwhelmed, as students may feel pressure to respond to messages and notifications immediately, leading to increased stress and anxiety levels.
- b. **Decreased Attention and Concentration:** Excessive use of mobile phones, particularly for non-educational purposes such as social media and entertainment, can detract from students' ability to focus on academic tasks, leading to decreased attention and concentration levels.
- c. **Risk of Addiction:** Excessive reliance on mobile phones for social interaction, entertainment, and information retrieval can increase the risk of developing problematic smartphone use behaviors, characterized by compulsive usage patterns and difficulty disengaging from the device.

3. Socio-Emotional Effects

- a. **Social Isolation:** While mobile phones facilitate communication and connectivity, overreliance on digital interactions may lead to reduced face-to-face social interactions, potentially contributing to feelings of loneliness and social isolation.

- b. Negative Self-Comparison:** Constant exposure to curated social media content and unrealistic portrayals of lifestyles can lead to negative self-comparison and feelings of inadequacy among students, impacting their self-esteem and overall well-being.
- 4. **Cognitive Effects:**
 - a. Impaired Memory and Learning:** Multitasking on mobile phones, such as texting while studying, can impair memory retention and academic performance by dividing students' attention and disrupting the process of encoding and consolidating information.
 - b. Reduced Critical Thinking Skills:** Relying on mobile phones for quick access to information may diminish students' ability to engage in deep, critical thinking and problem-solving, as they may become accustomed to surface-level information consumption rather than engaging in reflective analysis.

Overall, while mobile phones offer numerous benefits in educational processes, it is essential to recognize and mitigate the potential health implications associated with their prolonged use. Implementing strategies such as setting boundaries for screen time, promoting ergonomic practices, encouraging digital detoxes, and fostering digital literacy skills can help minimize the negative health effects while maximizing the educational benefits of mobile technology. However, some of the positive effects of the use mobile phones in educational process includes:

1. Easy Information Access

One advantage of mobile phones is that they allow students to find information on the go. They can use the phone to complete group activities in class by doing a quick search on a topic. Students can also access university library resources and databases virtually anywhere, getting a start on the research process without having to wait for access to a computer (Morgan, 2012).

The use of mobile phones also makes instructional materials to be readily available and accessible at ease. Students can easily surf the internet and download necessary materials. More so, mobile phones can be used by teachers or educators to share course materials during classes through wireless technologies like Bluetooth, Xender, etc. for easier access to students. This eliminates the problem of copying notes manually on the chalk board or running around to make photocopies of course materials.

2. Enhancement of student's interest

The use of mobile phones has also help to modify instructional pattern in classrooms from traditional (teacher-centered) to a more interactive method (learner-centered) which is more motivating for learners, with the use of mobile phones, several applications that support learning can be installed by students which can increase their learning interest in different subject areas.

3. Distance learning

The use of mobile phone technology facilitates distributed and blended learning. It provides opportunity for adoption and practice of different teaching learning styles

which can be fixed at any time and place of convenience without the physical presence of the participants. It enhances the success of distance learning, e-learning and even tablet learning thereby taking learning beyond the regular walls of school. This goes a long way to remedy some obstacles in learning such as distance, transportation delays, unfavorable weather, physical disabilities, and many more.

4. Team and Collaborative Learning

The use of mobile phones such as smartphones and tablets has made it easier for students to form different learning or discussion groups on different platforms like Whatsapp to create knowledge and to share ideas relating to a given course, or assignments. These assist students to also participate actively on group assignments. It also makes it easier for students to collaborate and cooperate on given projects, thereby enhancing team work.

5. Facilitates Mobile/virtual learning

Mobile-learning takes place when a student uses portable devices, such as smart phones, notebooks or tablets, or handheld gaming devices, to access learning materials and systems, create content and interact with other students, teachers, learning systems and the world around them. UNESCO report in 2012, revealed that easy access to mobile phones enhanced the success of some mobile-learning activities in South Africa (UNESCO, 2012). More so, in Nigeria during the COVID19 pandemic, it was the help of smartphones that students across the nation were able to gain access to the suggested virtual learning. Mobile-learning is famous for convenience and flexibility and ensures that all kinds of learners are accommodated especially those with special needs that requires specialized software to be installed in their mobile devices to learn.

6. Promotes Student-Teacher relationship

The use of mobile phones also helps facilitate healthy communications between teachers and students thereby improving their relationship. This brings about increased interactivity leading to improved students' confidence and trust, thereby making it easier for them to confide in their teachers particularly on issues that bothers on their academic performances or stay on campus. It also assists the teachers to understand students' learning differences and difficulties, and hence adopt suitable methodologies to address them.

Adverse effects of the use of Mobile Phones in Educational Processes

Mobile phone offers a lot of advantages but it also has negative aspects. In addition, excessive mobile phone usage gives rise to serious social, health and educational hazards. Ling (2005) observed a strong relationship between excessive mobile phone usage and criminal activities such as fighting, theft, use of alcohol and narcotics. These negative effects includes:

1. Classroom Distraction

In classrooms, mobile phones can become a serious distraction that interferes with learning. Several reports have shown that mobile phone usage during class affects students' grades and distracts classmates from learning as students are capable of checking their phones between one and five times during class. Even the attentive student misses out when his classmates fiddle with their mobile phones (Tindell &

Bohlander, 2011). Apart from these, sounds from the tones and vibration of phones generates noise and serves as a barrier to effective communication.

2. Reduced Cognitive Ability

A mobile phone offers numerous conveniences, including easy access to calculators, dictionaries and other tools. However, mobile phones do take a toll on students' cognitive thinking abilities. Attention spans have shortened so dramatically that many students struggle to read anything longer than a social network posting. In addition, becoming dependent on the phone as a quick fix for information can keep them from developing the ability to "think on their feet" in work situations.

3. Poor Writing Skills

Another serious negative effect of the use of mobile phones in educational process is poor writing skills. According to Lami (2011), slang terms and text-speak such as IDK (I don't know), LOL (Laughing out loud), SMH (Shaking my head), BTW (By the way), TTYL (Talk to you later) have become a common sight on students assignments, befuddling educators who are unsure of how to fix the growing problem. There has also been a dramatic decline in the writing abilities of students due to tweeting, facebooking and texting. They do not capitalize words or use punctuation marks anymore; any word longer than one syllable is now abbreviated to one word.

4. Cheating and cyber bullying

Many students have turned the devices to a cheat machines. Students no long bother exploring creatively, the Internet facilities they have but use it to devalue themselves by cheating. They see visiting the library, reading a text book, asking relevant and meaningful questions about a concept as a gross waste of time and energy. But rather, they copy and paste context from the internet directly by plagiarizing and even using their mobile phones in examination hall for malpractice. Secondly, Mobile phones, particularly models that allow access to social-networking, email and other applications, are sometimes used for cyber bullying. Mobile phones allow bullies to send unpleasant messages all day long, disrupting their educational progress as well as that of the recipients of such messages.

Health hazards and Psychological Disorder

Studies have shown that a lot of students suffer from difficulty in sleep, difficulty in concentration, fatigue, headache and infertility due to excessive use of mobile phones. There are also chances of Alzheimer's disease, leukemia, ear effects and blurring of vision among regular mobile phone users. Intense use of mobile phones may cause harm to the users' health including his/her other psychological wellbeing as students who are preoccupied with mobile phone tend to experience psychological disorders such as cornucopia, mania, paranoia, aggressive tendencies and anti-social behaviors (Lenhart, 2009).

Determinants of the use of mobile phones in educational processes in Nigeria

In Nigeria, the use of modern technologies particularly the mobile phone in education is hindered by many factors which can be categorized into; Economic and

infrastructural, cost, network issues institutional, resistance and other socio-cultural factors.

1. **Economic and infrastructural factor**

Ahmed (2003) states that teaching and learning take place under unfavorable environment, lacking the basic materials, thus hindering the fulfillment of educational objectives. The poor funding of educational sector in Nigeria has negatively affected the state of infrastructures at schools such as functional internet connections, steady power supply and many more which could have encouraged the use of mobile phones and other educational technologies in schools. Statistics revealed that between 2000 and 2010, allocation to the education sector by Federal Government in Nigeria was not more than 14% of the annual budget, which was even low when compared to the allocation of countries such as Kenya, Malawi etc (CBN, 2010).

Most schools in Nigeria lack the capacity and basic facilities needed to integrate technology in teaching learning. Even the usage of mobile phones is often hindered by poor electricity supply to charge the batteries.

2. **Institutional factors**

Some of the educational institutions in Nigeria do not allow the use of mobile phones in classrooms. Some have policies that forbid students from bringing mobile phones to school. This practice is common at the secondary school level particularly in the private schools. The institutional policies regarding the use of mobile phones may impede mobile phone incorporation into the teaching and learning process.

3. **Resistance to change**

The attitudes of some educators towards professional development or digital literacy skills affect the integration of technologies in the teaching and learning process. Some are so attached to the traditional method of pedagogy which gives them more control, and therefore tend to oppose the use of modern mobile technologies. This kind of attitude has not only affected their skills but also the students they teach. Teachers' reactions towards the usage of mobile phones in classrooms can either encourage or discourage students from using it for academic purposes.

4. **Cost**

It is generally believed that mobile phones are affordable, however, many students cannot still afford it in Nigeria. This is as a result of the high rate of poverty among the population. About 98 million people are living in extreme poverty in Nigeria. There is also the problem of data cost to access the internet.

5. **Network Issues**

Poor network discourages the use of mobile learning in Nigeria. Educators find it difficult to organize mobile learning activities due to poor network infrastructures. There has to be an improvement to enhance the use of mobile phone technology in pedagogy in Nigeria.

6. Mobile Phone Abuse

In Nigeria, many have argued that the use of mobile phones can lead to possible distractions in classrooms. As they feel that if students are allowed to use mobile phones in class, they may not pay maximum attention. This is because they may abuse it for other non-teaching-learning activities. There is need for educators to put aside these

fears in order not to deprive themselves and students the positive impacts of mobile phones in educational processes.

7. Socio-Cultural factors

The use of mobile phones in teaching and learning process can be affected by socio-cultural factors such as culture and religion. For instance, some teachers and students have cultural believes that it is disrespectful for a learner to operate his/her mobile phone while being taught or instructed by the teacher. This could be attributed to the use traditional method of teaching where the teachers acts as masters of knowledge unlike the students-centered approach where students are allowed to participate and contribute more in the learning process.

Conclusion and Future Prospects

It is quite obvious that the disadvantages of the use of mobile phones in educational processes overweighs the benefits as it harbors more serious adverse effects on students and the teaching-learning process. However, it tends to offer the educational process some tremendous benefits which cannot be overlooked or call for its termination, as a popular saying goes that 'beheading the head is not the remedy for headache'. More so, the negative or adverse effects are controllable and very well subjected to sanctioning. So therefore, school authorities in Nigeria should intensify more active role in the effort to reduce the adverse effects of mobile phone usage amongst students.

Nevertheless, for successful implementation of the use of mobile phones in education, it is highly suggested that:

1. Mobile phones for educational use should be specifically designed in such a way that it only supports the function and use of educational software thereby eliminating any form social media applications.
2. Government all levels should increase funding for education and provide a conducive environment that supports the use of these mobile phone technology in education.
3. There is need for awareness and collective efforts from parents, governments, teachers, policy makers and private organizations to encourage the society to embrace the positive impacts in the use of mobile phones in educational process.
4. Authorities in charge of education such as the Ministry of education should ensure the availability of these mobile technology as a prerequisite for accreditation or licensing and should make it mandatory for educational institutions to adopt and integrate learning through mobile technologies in education in other to improve the quality of education.
5. Educational institutions should also conduct trainings and re-trainings of staff to improve their digital skills and to welcome change in the teaching-learning processes. 6. Lastly, students should dedicate much of their mobile phone usage time to research and academic activities other than ping, snap chatting and messaging.

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