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Using Smartphone in Education: How Smartphone has impacted in Education, A Review Paper

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Abstract: Mobile technology has become popular in the current social, educational and health sectors in the society. In general there are several names that are launched on smart devices, it can be divided into two categories, the first of which are advanced mobile phones: a type of phone that can send and receive audio and video calls and files in various formats, and provides features and services, the most important of which are Internet browsing, email synchronization, and communication services. Social. The second category is the tablets: it is a development of the laptop computer, and the most important difference between it and the latter is that it has the feature of writing on the screen with a special pen or with a finger, which enables you to work more easily and flexibly in new and effective ways, and it is not stored on a hard disk. Disk, but flash memory. In this research will illustrate the benefit the smartphone in education . In addition, the research will show the disadvantages of using smart devices. Also , the continued use of smart devices in schools will be explained to find out the effects of using smartphones in education.

Introduction

Recently, Smartphones have become widespread and used everywhere in areas such as schools, higher learning institutions and universities. For that reason, people have access to knowledge and information wherever they are. For instance, students can learn a new language or learn new words by using smartphones. Therefore, the Smartphone has become useful for learning purposes (Herrington et al., 2016). Computer and internet inventions are other developments which have increased knowledge and information for the students. Mobile subscriptions have greatly increased from 12.4 million to over 6.9 billion from 1990 to 2014. This is a clear indication that mobile phones have greatly penetrated all over the world. Mobile phones have improved their services from only voice calls for short message services, video player, recording, reminders, calendar, online dictionary, emails, etc. Social network is widely spread through the availability of smartphones in the society.

Smartphones have also impacted learning in schools with the evolution of mobile learning for smooth studies of students. Mobile phones allow students to access the internet and download web content that are helpful in learning. Assignments and research have been made easier by smartphones as students are able to access online libraries. Students are able to compare sources and share it with other students for a rich delivery in class. Students and teachers collaborate through a social network so as to stay updated



with class progress. People are supposed to change their view of mobile phones as troublesome devices and view them as beneficial to the educational progress. Mobile learning or m-learning has made it possible for individuals to do long distance studies and achieve their certificate in a particular course. Long distance learning started developing in the 1980s, when the mobile phones and internet was developed. Many learning institutions have applied mobile technologies to reach out to potential students who intend to study via long distant learning. The student morale and progress is increased by using smartphones in education. Ishita, Santoshi, and Abhijit (2015) explains the need of using mobile phones in studies where over two thirds of students in universities worldwide use mobile phones to perform essential assignments and research. Electronic media such as mobile phones are widely used in higher education sectors, so as to reach students from all parts of the world. This research will focus on the impact of smartphones on education.

Methodology

The study uses earlier academic papers which were discussing the effects of using smartphones in education. This provides significant information about the impact that mobile phones have on education so as to come up with an extensive research. The Google search engines such as IEEE website, science direct and Google Scholar were used to come up with the required information about mobile phones and education. Most of the scholarly papers used were from the IEEE website and web of science to provide detailed information about use of smartphones in education. In order to come up with accurate information the scholarly articles were dated from 2009 To 2023. This made it possible to come up with a more updated research about use of smartphones in education.

Literature review

Smartphones have been used by many learning institutions as a tool of learning to achieve set learning goals by the school. In the research the focus will be on wireless devices which are desired by many learners to do their assignments and projects in class. There is a need to evaluate the mobile technologies and social practices in order to come up with the most effective strategy of using smartphones in education. The study focused use of mobile phones by the informal learners in order to develop a framework that will support the changing educational sector. It is important to identify areas where informal learners have greatly accepted the use of mobile devices in learning. Informal learners act in a way that resources and tools used suits their educational needs (Clough et al 2008). Mobile phones are unique devices which are supposed to be implemented in learning institutions to reach out a large number of learners. The research does not have an empirical study to identify the level of relationship between learners and the use of mobile phones. Due to the lack of empirical research it is hard to identify the impact level of smartphones on learning. Therefore, due to lack of evidence mobile phones can be stated as disruptive to the attention of students. Although there is no empirical data it is clear that mobile phones provides effectiveness, efficiency and accessibility of education. But Mobile LMSs allows students and teachers to attract in order to improve the quality of education in the learning institution. According to Han and Shin (2016) mobile LMSs influences the academic achievement and learning satisfactions in online learning. In

addition, Students' use of smart phones, along with their use of the Internet, is an educational tool that has a positive effect on their academic experience (Shooriabi, ., KaabOmeir& Mousavy 2023).

Smartphones are manufactured with capabilities such as GPS, internet connectivity, video capabilities, camera and other PC like operating systems. Digital technology has greatly increased the use of smartphones in teaching students starting from early childhood education. Smartphones have made it possible for students to engage citizens when doing research on a particular topic. Developments of mobile applications and software has made it possible for citizens to learn when they are far from school. Educational applications have relevant articles to provide required information to the learners. Palumbo et al (2012) explains the need of applications with research programs in order to achieve set learning goals. The new applications are cost effective as they have integrated the latest technology to boost the learning of students using the smartphones. According to (Gui, Marco 2023) that one of the advantages of using smart phones is that it increases intelligence awareness and reduces stress and depression.

Studies that have been conducted recently shows that mobile phones have positive effects in education. Students are able to share important information about an assignment using smartphones regardless of the distance. This has also increased the research conducted by students as there are applications with research programs for an intensive information and data regarding a particular project. Smartphones allow sharing of information globally to increase the knowledge of the learners. Positive responses in the study encourage the use of mobile phones in education for quality information and data to the students. Ishita, Santoshi and Abhijit (2015) states that, there are many educational advantages of using mobile devices as a learning tool in schools. The study evaluated the attitude of undergraduate in using mobile phones as educational tools to perform various assignments and research given by the instructor. Extensive literature was reviewed to come up with the impact of smartphones on the educational developments in schools. Smartphones in America are widely used by students to do research while in Nigeria, students use mobile phones to record lectures, access online catalogue and send emails to lecturers. Mobile learning applications are widely used globally to interact with other people anytime and anywhere for educational progress. M-learning has developed in the recent past with the continued advancement of the technology. Therefore, it has become easy for students to perform their studies in any parts of the world online and submit the assignment to the lecturer using smartphones. This has made it possible for the students to interact and acquire more educational information online using smartphones (Halder & Guha 2015). The online public catalogue allows students to share their experience about a particular subject in their class. This allows interactions and come up with ways to increase the performance of a student. According to Ferry (2009) smartphones have made it possible for students to access websites with educational content. This increases the collaboration globally, thus increasing the quality of education through m-learning. The educational contents are widely deliverable to the teachers and global audience to help students who use online



studies. The study provides the students' perceptions of mobile phone technology usage, especially in secondary school for the improvement of the educational sector.

According to Ishita, Santoshi and Albhijit (2015), positive rejoinders from studies have identified and offered recommendations that favour the implementation of mobile phone usage as tools for learning in schools. In the whole higher sector of education, the contexts of educational and social-politics give a variety of proof that there is indeed amplified focus on the learning that is mobile and as such the higher sector of education cannot do without it. Technological growth together with the degree of usage at the secondary school and primary school level clearly demonstrate the extent to which how far the university students are willing to go with the use of smartphones and mobile technology because all along they were exposed to their usage in their learning process. There has been an increased usage rate and other services on mobile devices like for example call-for-the use as reported in the UK's education in schools.

Despite the substantial probability of mobile technologies to be used as influential tools for learning at a higher level of education, their present application looks like they are mainly within a moral, teacher-focused model, instead of an approach that supports an environment that is constructivist. The use of the devices that are mobile for learning at a higher level especial in the delivery of content is academically old-fashioned deteriorating. The educators have a way of going back to the old-fashioned models for their convenience as they try to accommodate the current usage of technology. In this kind of scenario, Mioduser, Nachmias and Oren look at it as a way of moving one step ahead and backtracking two levels with regard to pedagogy.

The adoption of modern philosophies of learning is ordered when it comes to the possibility of exploiting the implementation of these technologies valuably. The arguments by Patten, Arnedillo, Sanchez and Tangney is that the realization of mobile learning benefits can be via collaboration, contextualizing, constructionism and constructivist environmental knowledge. This has a backing of Switzer, and reflecting that mobile technologies gives learners chances for teamwork in the formation of products and for distribution amongst their clique. Reliable environments for learning regarding higher education characteristically comprise these features. Classroom mobile phone usage is rare, though the topic has been researched on.

Much attention on language learning via Mobile phones is yet to be realized. Some of the approaches used to test this is an exchange of emails, lessons in vocabulary that were actually given set timings on the phones and then the explanations of English idioms were done via mobile phones' video cables. It was a feeling of the students that learning via the mobile phones was a method of teaching that was very valuable (p. 217), and as per the classroom, its effectiveness educationally, was highly rated (p. 217). Kiernan and Aizawa (2004) further evaluated mobile phone usage as apparatuses for classroom education. The students at Freshman University were surveyed on and the pre-testing done to evaluate the structures of learning. They were further grouped into subdivisions of three, namely, usage of messages from cell phones, emails from computer usage and finally talking verbally. According to the findings of the research, it was

discovered that it was worthwhile using mobile devices in the language study that warranted a further probe.

It was clear to them that mobile learning was very resourceful. These are in fact collective activities of learning that incorporates camera phones or messaging that is an interactive program linked to a web or a multimedia picture or map. Additionally, messaging via mobile phone and question that require the development of a quiz engine for SMS plus an editing tool that is. All in all, there exists a mini-course in language by SMS with a course structure that has 100 philosophies. With this in mind, each philosophy has test dialogues and word-based specimens created. Answers from the learner are sent via text message and after verification by the system, an SMS is sent back to the learner with all the recommendation for improvement and the results for the test. The contribution of Mobile phones the learning field has been felt in many ways. To begin with, there is skills improvement in literacy and numeracy and the recognition of the abilities that are existent. Secondly, both collaborative and independent experiences of learning can be encouraged. Also, it aids learners to recognize areas that require support and aid. Further, it assists to fight resistance to the use of Information Communication Technology (ICT) and can help break the link between mobile phone literacy and ICT knowledge. Additionally, it assists in the doing away with those formalities resulting from the experience of learning and involves unwilling learners. Besides, it aids learners to maintain their focus for elongated periods. Eventually; it helps to advance personal respect and self-assurance (Aamri & Suleiman, 2011). Furthermore, Smartphones can be used to enhance students' learning experiences and create a learner-centered approach to device use, enabling students to take advantage of learning opportunities (Alsayed, Sharifa & Alnajjar 2020).

Thornton and Houser, (2005) had a presentation of mobile phone learning in three studies. They involved students from Japanese University, whose email exchange via mobile phones was tested. They received lessons in vocabulary and had their intervals timed and the video-capable-phones were used in the explanations of the English idioms. This was indeed a very valuable method of teaching according to the Japanese students, in which they rated highly as being very effective in a classroom setting. Kiernan and Aizawa, (2004) assessed mobile phone usage as tools for learning in the classroom. Freshman University, sampled and pre-tested in which three subdivisions were made of text me messages via the cell phone, the email by the computer usage and speaking. The suggestions of the study were in favour of mobile device for the purpose of studying language and worthy to be researched further. This was attributed to the extensive use of mobile phones and their popularity with the students as a communication medium in which they may consider giving a motivating substitute for L2 education. They find mobile learning as resourceful. It is so because of collaborative learning activities that employs the usage of camera phones or interactive media program messaging to audio-visual material, a multimedia map or picture which is web-centred. Additionally, to this, cell phone text messages tests exist that require the development of an engine for SMS quizzes which is inclusive of an online tool for editing. Hand in hand with this, a mini-

language is offered in which, 100 issues are present with each philosophy being word-based. The answers are sent by the learner using the text messages and receives the system verifies and resends the answers and recommendation for improvements by using SMS.

The positive contributions by mobile phones in learning have been many. To begin with, the skills in literacy and numeracy are improved plus the recognition of the abilities that exist. Secondly, there is encouragement of both collaborative and independent experiences of learning. Also, it assists learners in the identification of those areas that they require assistance and sustenance. Further, it aids to battle resistance to the application Information Communication Technology (ICT) and also assists in the bridging of the prevailing gap amid mobile phone knowledge and ICT knowledge. Furthermore, it aids to eliminate elements of formality from the experience of learning and the engagement of hesitant learners. In addition, it aids learners to continue being more attentive for elongated periods. Eventually; it assists to increase personal – regard and self-assurance. Important too, by applying technology children do feel that they have mastered the act and makes them develop a good feeling about themselves (Cited in Katz, p.95). Moreover, it allows for implementing low-cost of actual period, text-based communication and end the continuous statement of turning their mobiles off (Aamri & Suleiman, 2011). Currently there exists an additional comprehensive, complex, and reachable web of material in the world that has never been in existence. What is known as the information age the way it is better known? The rate at which technology is developing is astounding, enabling innovative kinds of usefulness and entertainment which used not to be imagined before in the past ten years. There has been an evolution of the human communication process towards a multi-faceted era. This involves texting, messaging that is instant, and calling with video to triangulate relations that are face- to - face as a mode of modern interaction. Without any doubt, smartphone happens to be a tool that is powerful and easy to master its usage in this digital world sector. This is a common scenario for many tools of this nature in the sense that a smartphone can be productive and counterproductive to the user at the same time.

A research was conducted to review the effect of smartphones on the performance of students in terms of academics in higher learning institutions in Tanzania. The results collected from the study of the Ruaha Catholic University (RUCU) students is show in the table below.

Comparison of Laptops and Mobile Technology .

Areas of Differences	Mobile technology	Laptops/Net books
Weight	Light weight, and therefore easy access to content	Heavy weight
Interactivity	More interactivity due to the touchscreen feature	Less user friendly than mobile devices
Switching	Instant capability and Fast switching	Delays due to slow switching
Portability	Easy to carry	Heavier, and difficult to carry
Development cost	Cheap for mobile platforms	No free or low cost apps such as those in mobile devices.

(Kibona & Rugina 2010)

The table above shows that about 36.6 percent of the respondents agreed to the fact that mobile phones are instrumental in the learning process compared to the 37.6 percent who had neutral responses. About 26.9 percent of the participants agreed that mobile phones assisted them in planning their learning compared to the 24.7 percent who disagreed. A large percentage of the respondents (39.8 percent) acknowledged that mobile phones can make them to be more productive against the 18 percent who were in contrary. A higher percent (43) of the students often seem to possess a higher tendency to using SMS compared to those (29 percent) who use dictionaries. An interesting observation was that 34.4 percent of the respondents agreed that they were enhanced by mobile phone use, but the same percentage of them were neutral. In summary, 39.8 percent believed that mobile phones were an effective tool in the process of learning (Aamri & Suleiman, 2011).

	1	2	3	4	5
	(%)	(%)	(%)	(%)	(%)
1- Mobile phone has been critical to my overall learning process this year	10.8	36.6	37.6	9.7	3.2
2- I enhance my planning for learning with mobile phone that without	14	26.9	22.6	24.7	8.6
3- The use of mobile phone in learning makes me more productive	10.8	39.8	25.8	18.3	2.2
4- I find the use of mobile phone enhancing the learning process	5.4	30.1	33.3	21.5	5.4

5 My vocabulary acquisition has increased because of text messages in English	12.9	43	24.7	10.8	5.4
6- My vocabulary acquisition has increased due to my mobile phone dictionary	19.4	29	21.5	18.3	9.7
7- I find it easy writing and receiving text- messages in English	15.1	44.1	28	7.5	3.2
8- My motivation is enhanced by the use of mobile phone in and out of class	3.2	34.4	34.4	17.2	3.2
9- Overall I believe using mobile phone in learning English is very effective	20.4	39.8	23.7	8.6	6.5

- 1 = Strongly Agree
- 2 = Agree
- 3 = Neutral
- 4 = Disagree
- 5 = Strongly Disagree (Aamri and Suleiman, 2011)

5: The chat displays the answers to the questions about speaking with other students in English over the phone

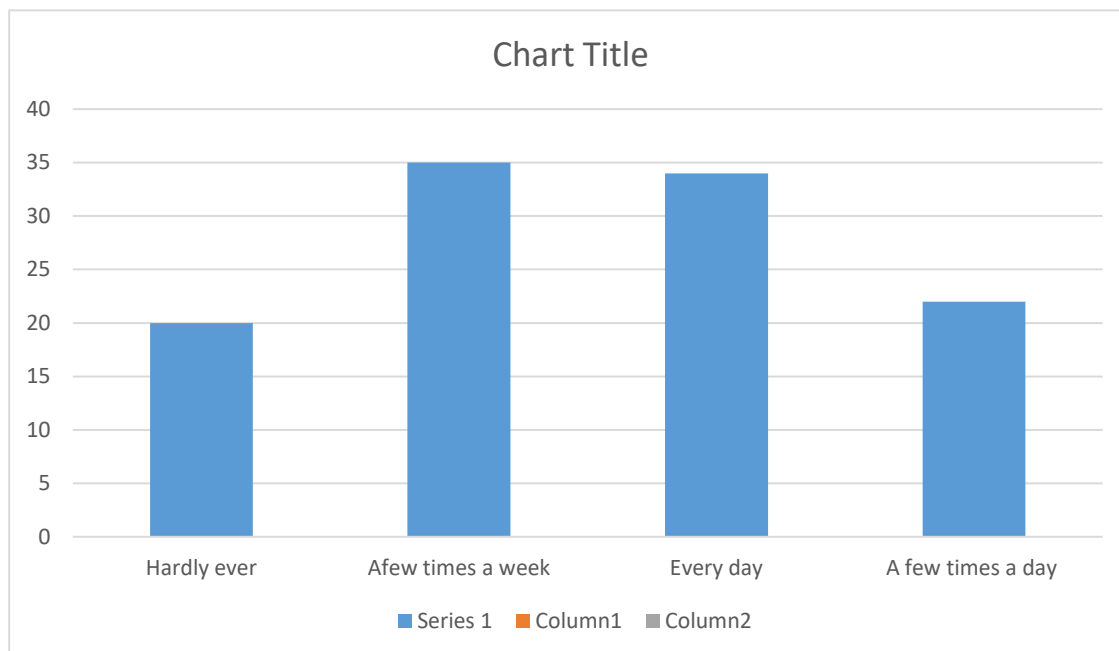


Figure 2



Mobile phone use for learning English language

Fig 2: The question features in Fig 4 seeks to find out how frequent students use their mobile phones in the learning process. As from Fig 2, 31 percent of the participants use their phones for English (Aamri & Suleiman, 2011).

Toward the end of lecture 5, 600 students were selected in a random manner to provide responses to a survey that contained 22 questions measuring the use of mobile phones, perceived students' impact in learning and user acceptable of the devices. 569 valid questionnaires (95 percent rate of response) were returned. These questionnaires were made in collaboration with the Victoria University's Teaching Development.

Sample distribution was done equally, considering gender balance (47.3 percent males, 52.7 percent females), mainly in their first year in the University (68 percent), mostly aged between 18 years and 22 years (72.9 percent) and mostly native English speakers (64 percent). A majority of the students (79.3 percent) participated in all the five lectures that involved a trial. About all students (96.8 percent) had a mobile phone that they carried to classes. Most students (64.9 percent) claimed to send over 14 messages every week and spent about \$35 per month on their mobile service subscriptions. There are currently two mobile phone operators in New Zealand that provide SMS services at different prices. Vodafone NZ bills their subscribers #0.20 per each SMS while Telecom NZ does it at a flat rate of \$10 per every month for a maximum of 500 messages. In this study sample, while the price difference was favouring Telecom for those heavy users of SMS services, the market share for Vodafone was a bit higher (54.5 percent) and most students (82.8 percent) preferred using their prepaid cards to monthly plans.

About a quarter of the participants during the trial made use of the open channel to comment or send a question in classes. However, more than 90 percent of students had perceptions that sending their instructor SMSs during class hours was necessary. The instructor who took part in the trial had a positive experience in using the system and witnessed a significant intake in the quantity and quality of the students' feedback whole in class. Additionally, the numbers of questions and comments that were received through the system (almost 15 per class) was critical without necessarily being disruptive. The instructor was also able to manage the students using messages by clustering them together and assessing them at class "checkpoints". Checkpoints refer to the points at which the instructor pauses to ask where there could be any comments or questions from the students before proceeding to the next segment or topic. All in all, about 130 students during the five lectures at some point contributed actively using questions and comments. This is a substantial progress for a large classroom environment where learners are often passive listeners.

What made about 75 percent of the respondents not make use of the open channel? A number of respondents (42.5 percent) claimed that they had little to say, while a small number (4.6 percent) felt that by doing so, it would lead to distraction. Shockingly, about 33.6 percent cited cost as the key inhibiting factor while about 40 percent of Vodafone subscribers pointed that cost was a major factor, compared to about 26 percent of the Telkom subscribers. This is a significant different of about $\chi^2=13.96$, $df=4$, $p<0.7$ percent. M-quizzes participation was recorded to be higher compared to the

use of open channels. About more than half of the students that participated in at least one m-quiz and about 80 percent of the participants agreed that such m-quizzes were important. The instructor realized that these m-quizzes offered important benefits such as instantaneous feedback on the use of m-quizzes for class discussion stimulation and concept tests. In addition, it was noticed that students tended to be interested in poll results, which reflected their general opinion of a certain issue. On the part of m-quizzes, the participation of students was largely (55 percent) inhibited by cost and lesser affected by their lack of interests (20.7 percent) (Scornavacca, Huff & Marshall, 2009).

Mobile phones are currently universal due to the growth of various mobile applications found in current cell phones more so 3G, and 4G enabled phones. The applications include Internet, Television, MP3, and camera (video and still). The omnipresence of the phones has been manifested in the fall in price and size of the devices. The mobile phones can perform the task in a discreet and open manner since they can function anytime at anyplace. This has enabled several students in institutions of higher learning to utilize most of their time in browsing to gather social or academic information from their mobile phones.

The research study based on the impact of mobile phones on the social and academic life of college students establishes that there exist a correlation between the students' usage of the network and their GPAs. Interestingly, the study found out that most of the students do not utilize the network for information related to college although several numbers of them encourage the use of the network in online groups. Furthermore, the study indicated that several students prefer to use the network for purposes related to social life compared to academic research. The findings identified that those students who tend to use their mobile phones in lecture class recall limited information, write minimal information, and portray dismal performance in choices related to multiple tests compared to those who do not use the phones during lectures and this has a great impact on the performance of the student in class (Kibona & Rugina 2010).

Through the researches mentioned its clear utilize the Smartphone in Education has usefulness and disadvantage. However, there is no research showing that the use of smartphone hinders the learning process

Conclusion

Numerous studies have identified and described the limitations of mobile phone use in the education sector. Those who oppose the idea of using smartphones in education suggest banning the equipment in schools. The reason for their argument is that cell phones are a major cause of delinquency, irritation, and ultimately crime. Moreover, many researchers have indicated that children should refrain from using phones. Existing studies show that smartphones can significantly affect student performance. Besides , some of parents and many sceptics oppose the idea because students waste a lot of time in class due to disruptions caused by using cell phones during lecture hours .

However, the benefits derived from the use of cell phones in education outweigh the disadvantages. Students can use their phones to access information due to the limited amount of computers available, and the few devices available can be used by a large number of students in group work to facilitate learning. And , This can sufficiently enhance education in schools because the use of mobile phones can ensure cost reduction in the education sector. As well as the smartphone is considered an essential element to the student can enhance a digital world.

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