Reviewing the Impact of Smartphone Usage on Academic Performance Among Students of Higher Learning

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Abstract – Adoption of Smartphone by students of higher learning has been a global phenomenon in recent years. It is more than an integral part of adolescents’ daily lives and has become the most popular form of electronic communication. Infact, the Smartphone has turned from a technological tool to a social tool. Smartphone and tablets play a very significant role in higher learning student’s information seeking behaviour in meeting their learning and research needs. This paper explores the impact of Smartphone on academic performance of higher learning students. The study revealed high level of awareness about the usage of smartphones by higher learning students for their academic works. Results showcases that smartphones have tremendous impact on their higher education. Especially with easy internet access and high speed browsing as it saves time and money rather than going to cybercafé/college library. Moreover, lack of experts who are technically strong on repairs during fault occurrence, operational difficulties, high cost of data subscription from service providers and fragility are the major problems that are encountered while using smartphones. This study aims in finding out the relationship between smartphone usage and academic performance among students of higher learning. The study involved data collation based on description of the phone usage habit such as browsing frequency, information sourced, sites visited, and examining the effect of smartphones on students’ academic related activities. The hours spent on the phones by students were also gauged and compared with one another focusing on studies and learning perspectives respectively.

Key words: Smartphones, Student academic activities, Higher learning students, academic performance

I. INTRODUCTION

Learning is imperative for growth and in today’s era the gadgets become a supplement to add value for learning activities. Invariably the students are those who either become a beneficiary if they use the gadgets in appropriate manner or become a trap if used inappropriately. This study as indicated previously focuses on the impact of Smartphone among the students who takers of higher education and the relative impact on academic performance.

A mobile phone is an electronic device used for two-way radio telecommunication over a cellular network of base stations known as cell sites (as defined by Vijayakumaran Nair.K & Vinod Chandra S.S, 2014). Many definitions of mobile phones validates the point that its existence in the world was for emergency purpose but over the time the usage has taken varied purposes.

If students have a mobile phone, then it is easy to contact anyone at their needs. For instance, if a student is in danger, he/she can contact their parents for rescue and safeguard themselves. Likewise, a student with a phone can contact police at any harmful situation, or contact fire brigade if they find fire somewhere, or even they can call any useful departments on their needs. Therefore, mobile phone is one of the best solutions for any emergency situations.

Mobile phones have become an essential part of anyone’s day to day life since 1990s. As cell phones have become more available, they are increasingly owned and used by college/university students as well.

The aim of this research is to assess the impact of mobile phones in learning as they enhance students’ learning in different ways. Smartphones easily promote collaborative and
different types of learning through their wireless connection to the internet. Their adoption in learning processes by the higher institution management as student-learning and communication device tools is useful. Taking a step ahead, the impact of mobile learning on students’ learning behaviours and performance have also been highlighted in recent research (Wand, Minjuan et al 2009). Mobile phones motivate students in a classroom environment to be more engaged to the lesson promoting learner-centred participation. This indicates the dynamic support that the Smartphone has brought to students’ learning practice.

2. LITERATURE REVIEW
The survey conducted by D. North, K. Johnston, and J. Ophoff (2014) showcased few signs of addiction to respondent’s mobile phones. Their study explored the use and role of mobile phones among South African university students. The focused on four main categories to examine the students’ mobile phone use were namely a) reasons to use mobile phones b) pattern of mobile phone use c) purchasing factors d) behaviour-related issues.

Differences in mobile phone use by gender were found, with female students showing increased mobile phone use for safety and socializing, interest in brand and trends, as well as signs of addiction. They found that Males and females differ significantly in some areas of mobile phone use.

A recent study conducted by (Gretchen Krebs, 2012) shows that smartphones have a huge impact on student achievement. Skeptically, including some parents, worry about kids wasting time in class, but so far the benefits of allowing personal technology in schools outweigh the risks.

A research conducted by H.M.Abuhassna and I.M.H. Amin indicates the differences due to age and gender do not appear to be particularly significant; most significant differences appear to be due to the mobile devices used or technologies available. The use or not of certain technologies like social networking among students is high compared to downloading podcast or searching for answers during examinations.

According to (M. J. Stollak, et al, 2011) students who have smartphones were more likely to both access social networks and spend time in chatting with others. From an educational point of view, student can enhance their academic performance level by watching online resources and professors may have to be wary of assigning project works involving social media to students as some may have an advantage in completing the work than others.

(P. Jubien, 2013) in her qualitative study concludes that graduate students combine their personal lives with their student lives influenced by the use of smartphones. This finding can be understood as a statement that students can have a classroom at home or wherever making use of communication and educational applications offered by smartphones. She also mentions another finding about how smartphones are influencing and changing educational practices. For example, changes in the way to gather information, to receive instructions from teachers, to do homework, to collaborate with classmates, among others.

The independent variable namely age becomes an important factor to be considered to gauge the impact of cell phone usage among students and in addition the age being at the level of adolescence is very critical which has been postulated by (Elkind, 1967), in his theory. As the theory focuses on adolescent egocentrism, pointed out heightened self-consciousness during adolescence. The theory highlights that the adolescence stage is critical because of authority, unwillingness to accept and quick to find fault with others which leads seeing from one’s own perspective alone and not being empathetic which has been conducted among students of the University of Ibadan. Similarly, his study also showcases that ostentatious mode of using and disposing of the internet enabled phones at will, in order to be abreast of current trends which validates his point that today’s students are more of attention seekers.

The West African Examination Council WAEC Chief Examiner Report, 2014 has shown the data from the Taraba State that most of the students fail English Language and Mathematics. This may be partly attributed to high usage of Mobile Phone telecommunication gadgets and student spend more time in mobile phone usage instead of concentrating their classroom work. The free night calls, chatting, instant messaging, social networking and exam malpractices etc are greatly influencing the student’s academic performance.

M. Tayseer, et al(2014) proposed a research article titled "Social Network: Academic and Social Impact on College Students. " and found that there is a correlation between the students GPAs and their frequent usage of social networks like twitter, face book. They also found that many of their respondents do not use social sites to look for academic related information; however, many of them support the idea of having online learning. Another finding showed that the students tend to use social networks like Face book and Twitter in social purposes rather than the academic ones.

This work concentrates on finding the Impact of smartphone usage on academic performance of higher learning students in virudhunagar district which includes 12 Arts and science colleges, 12 Engineering Colleges and one deemed university.

3. METHODOLOGY
The subjects of the study included students from the Virudhunagar. Quantitative research method was adopted and
data were treated accordingly. The population of the study comprised of 40% of the students from the various institutions during the year 2016. This constituted to the sample for the study. The data obtained for the survey was collected between October and November 2016 by questionnaire method. Closed-ended questions were adopted which in turn were interpreted and analysed. A total of 85 copies of questionnaire were distributed to students of the various institutions including those from the various departments of which 80 nos were returned with a response rate of 94.4%. The returned copies of questionnaire were analyzed using percentage and frequency count.

4. RESEARCH DESIGN
The design was such as to trace vital predictive relationship and degrees of association among variables. In order to analyze the information collected, the sampling method of research design was adopted. Simple random sampling method is adopted for data collection.

Simple Random Sampling (SRS) is a simple random sample of a given size; all such subsets of the frame are given an equal probability. Furthermore, any given pair of elements has the same chance of selection as any other such pair. This minimizes bias and simplifies analysis of results. In particular, the variance between individual results within the sample is a good indicator of variance in the overall population, which makes it relatively easy to estimate the accuracy of results.

The study population consisted of all higher learning students of the Virudhunagar District, Tamil Nadu State. Thus students were randomly selected on campus to administer the questionnaire. Henceforth it is noted that the findings of the study will have equal applicability to other students in the schools. The survey questionnaire was accordingly, administered physically and taken back immediately and some after few days.

This is dependent on the choice of the individual making up the sample size. A self-administered process whereby the respondent himself reads the questions and records answer without the assistance of an interviewer. The questionnaire was designed to collect relevant information the questions were numbered for easy references and arranged so that the respondents can understand easily the reason and important attached each question.

The form of questionnaire used provided on easy quick way of collecting objective information from primary sources without necessary allowing the respondents to strain his or her brain for answers. The content validity ensured of the validity of the study. Coincidently, test-retest method was also used in this study in order to test the reliability, out of forty questionnaire returned, 15 questions were marked for test-retest.

5. RESULTS AND DISCUSSIONS
Based on the data collected 60% of the students reported that they have android mobile with internet connection and have the internet enabled phones. Around 90% of them have been actively using the internet mobile services to surf and browse the net. The following figure shows the analysis of browsing frequency of respondents. Data was collected around 373 students. Among them the 223 students having mobile phones with net connection and 200 students actively used internet mobile services to surf and browse the net.

Table 1: Showing average hours per day spent on both academic and social communication by respondents

![Time spent on usage of smartphones](chart.png)
Table 2: Showing the use of smartphone

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>110</td>
<td>55.0</td>
<td>55.0</td>
<td>82.5</td>
</tr>
<tr>
<td>Academic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non</td>
<td>65</td>
<td>32.5</td>
<td>32.5</td>
<td>32.5</td>
</tr>
<tr>
<td>Academic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both</td>
<td>25</td>
<td>12.5</td>
<td>12.5</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>200</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

The information in the above table can also be presented in a pie chart shown below:

As it can be shown above, the majority of respondents responded positively on the use of smartphone for academic purposes (55 %) like sharing of materials or notes provided by lecturers/instructors compared to 32.5% who use their smartphone for non academic purposes (32.5%) like communications, charting with friends, browsing some social news for celebrities.

So the above testament shows that most of students in higher learning institutions tends to use smartphones for academic purpose than non-academic purpose which let them to improve the quality and updated learning and increase the concentrations in class when instructor/lecturer is giving his/her lectures and this causes the better result in academic performance. This is also analysed with the help of Chi Square test.

**Hypothesis:**

H0: there is no significant relationship between the usage of phones for academic purposes and non academic purposes.

H1: there is significant relationship between the usage of phones for academic purposes and non academic purposes.

Table 3: Showing the browsing frequency of smartphone for academic and non academic purposes:

<table>
<thead>
<tr>
<th>Browsing Frequency</th>
<th>Academic</th>
<th>Non Academic</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>25</td>
<td>43</td>
<td>68</td>
</tr>
</tbody>
</table>

Table 4 - Computation of Test Statistical for Academic Purpose Compared to non academic purposes

<table>
<thead>
<tr>
<th>Browsing Frequency</th>
<th>Responses</th>
<th>O</th>
<th>E</th>
<th>(O-E)^2</th>
<th>(O-E)^2 / E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic Low</td>
<td>25</td>
<td>41.82</td>
<td>16.82</td>
<td>282.91</td>
<td>6.77</td>
</tr>
<tr>
<td>Medium</td>
<td>35</td>
<td>33.83</td>
<td>1.17</td>
<td>1.37</td>
<td>0.04</td>
</tr>
<tr>
<td>High</td>
<td>63</td>
<td>47.36</td>
<td>15.64</td>
<td>244.61</td>
<td>5.16</td>
</tr>
<tr>
<td>Non Academic Low</td>
<td>43</td>
<td>26.18</td>
<td>-1.18</td>
<td>1.39</td>
<td>0.07</td>
</tr>
<tr>
<td>Medium</td>
<td>20</td>
<td>21.18</td>
<td>-1.18</td>
<td>1.39</td>
<td>0.07</td>
</tr>
<tr>
<td>High</td>
<td>14</td>
<td>29.65</td>
<td>-15.65</td>
<td>244.92</td>
<td>8.26</td>
</tr>
</tbody>
</table>

Calculated Value 31.11

Where E stands for expected value and O is the observed value

\[ X^2 = \sum \sum (O - E)^2 / E = 31.108 \text{ (H1)} \]

\[ X^2 \text{ table value} = (r - 1)(c - 1) = (3 - 1)(2 - 1) = 2 \times 1 = 2 \]

2 at 0.05 = 5.991 (H0)

**Conclusion:** Since the \( X^2 \) calculated value of 31.108 is greater than the \( X^2 \) table value of 5.991. Hence, we reject H0 and accept H1. There is significant relationship between the usages of the mobile for academic purposes like sharing of materials or notes provided by lecturers/instructors compare to non academic purposes like chatting on Facebook, Whatsapp and BBM.

**Discussion of Findings:**

From the analysis of result in table above, the following findings were made during the research:

- 213 questionnaires were administered; 200 were collected while 13 were rejected because of incomplete source of information.
- Most of the respondent expressed their academic performance was improved due to the proper usage of mobile phones.
- Most of the respondent believed that the biggest issue in mobile phone usage is the addiction to usage of social network.
- Most of the respondent believed that the students use their mobile phones on academic network (using it to learn eBooks) than using it to social network.
So we concluded that if the use of mobile phone is managed and properly harnessed, it would definitely improve the academic performance of students.

6. CONCLUSION

Based on the chi square test, it is observed that there is no significant relationship affecting the academic performance of students in using smartphones. Data was collected from students around Virudhunagar district. The relationship between smartphone usage and academic activities among higher learning students was found. Each and every technology has its own advantages and disadvantages for students and mobile phone is one of them. Students, who passed in first class, must be gained some extra knowledge and surely which is from the internet. Before the library helps the student to gain some extra knowledge and now the whole library is in the student’s pocket as a mobile phone. In this study data both Description of the phone usage habit such as Browsing frequency, Information sourced, Sites visited and etc., were collected and found that there is no significant relationship affecting the academic performance of students in using smartphones.

RECOMMENDATIONS

- Further study may be undertaken as to the specific extent when can smartphone usage can be disruptive of learning processes and detrimental to studies.
- The professors should give orientation on the use of smartphones especially for information to maximize their use as an aid to learning processes.
- College Administration may create a hub wherein texts messages and pictures can be sent twenty-four seven (24/7) for a safe campus.
- A mobile app may be generated to monitor the students’ behaviour on Smartphone usage to exhibit the accurate results.

REFERENCES


AUTHOR’S INFORMATION

Dr. K. Sumathi currently serves as an Assistant Professor in Computer Science and Information Technology Department, Kalasalingam University, India. Her overall teaching experience includes 14 years in various Engineering/ Arts & Science/ Polytechnic Colleges. Her notable publications include seven papers in international journals, apart from that she has published in many national journals. She has presented papers in various national and international conferences. She is a recipient of Elite Certificate in Programming in C++ and Elite & Gold Medalist in Problem solving using programming in C, NPTEL online course. She also serves as a reviewer in International Conference on Fuzzy Systems and Data Mining (FSDM 2017), Hualien, Taiwan. Her research interest includes mainly in programming and data mining. She is a life member in ISTE.

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Prof. Kundhavai Santharam currently serves as an Assistant Professor and heads the department of Business administration at Kalasalingam University, India. She has Business Administration as her basic degree and post graduated specializing in Human resources. In addition, had completed her Masters in philosophy in Management Studies from Madurai Kamaraj University. She is a recipient of best alumni award from her graduating college. She has served about eight years with TVS group and two years in IIM, Ahmedabad as an academic associate in Organisational Behaviour area. Being in the capability of Human resources incharge for TVS group of schools she has hands on experience in handling training modules for teachers, counseling, conducting exit surveys and employee engagement surveys, training need assessment project, emotional intelligence, time management, case study approaches, workplace creativity and personality traits and performance management system. She has vast experience in conducting case study based research work and has continuously participated in conferences in the area of her research interest both at national and international level. Her accolades include best case study award in human resources track in case conference conducted by Jansons Business School, Coimbatore, India in the year 2016.