Dynamics of the Effects of Increased use of Mobile Phone on the Academic Performance of College Students in Kerala

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Abstract—*Mobile phone has become the most popular way to communicate with other person. It's use has both positive and negative impact .The study on "The Dynamics of the Effects of Increased Use of Mobile Phone on Academic Performance of the College Students" aimed mainly to examine the pattern of use and the time invested on mobile phone on one hand and on the other the impact of mobile phone use on student's academic performance. A face to face interview using pre designed schedule was conducted to collect the data from students who have been selected on the basis of Multi Stage Random Sampling Technique with due weights to gender and streams of study. For analysis, the study used Pearson's Correlation Coefficient, Regression Model and ANOVA. Students in all streams use mobile phones and the mean time they do spent on mobile phone per day is 6.16 hours with boys (7.33 hrs) out stepping the girls (5.78 hrs). Pearson's Correlation coefficient is estimated to be - .564 implying that there exists a moderate negative correlation between time spent on mobile phone use and the academic achievement defined in terms of percentage of marks obtained in Vth semester university examination. Besides MLRM showed that the time spent on mobile phone use influences significantly the marks obtained in the Vth semester examination that is the marks of students who spent more time on mobile phone has lesser marks given identical status in previous levels mark, stream and college, It has also been estimated that there exists difference in the mean marks of students who use lesser time mobile and those who spent more time on mobile. The F ratio found to be significant with p value less than 0.05. The study thus has suggested that there must shoulder the responsibility of wisely using the mobile phone so that they can excel in their study and thereby to achieve their targeted goals. For this teachers and parents must motivate them and authority must see that rules and regulations with respect to the use of mobile phones are enforced seriously.*

Keywords: *Mobile Phone Use, Mean Time Spent on Mobile, Purpose of Mobile Phone Use and Academic Achievement.*

1. INTRODUCTION

The development of modern technology has made people's lives easier and contributed significantly to their social well-being, making them hi-tech in every respect. Mobile phones are arguably a revolutionary invention of our time, after computer and internet technologies. The emerging new technologies have made the mobile phones more attractive and functions similar to mini-computers, facilitating searches for information and entertainment and social interaction. It supports multiple uses including music player, games, internet, video camera, calculator, alarm clock and social media services etc. India's mobile Phone Subscriber base crested the mark of 1.078 billion users in 31 October 2016 as per the data released by TRAI, India's Telecom Regulator (TRAI, 2017)[1].

Mobile phones are an integral part of college life and culture too. Even a casual observation of today's college students will reveal smart phones being used, both overtly and covertly, in every possible campus setting, including the classroom (Andrew, Jacob, & Aryan.C, 2015)[2]. Research suggests that college students frequently use the cell phone at campuses despite rules against doing so (Tindell & Bohlander, 2012)[3]. As mobile phone technology continues its rapid development, the device appears capable of contributing to student learning and improved academic performance. For example, modern "smart phones" provide students with immediate, portable access to many of the same education-enhancing capabilities as an Internet-connected computer, such as online information retrieval, file sharing, and interacting with professors and fellow students (Bull & McCormick, 2012)[4]. Conversely, recent research suggests that many college students perceive the cell phone primarily as a leisure device, and most commonly use cell phones for social networking, surfing the Internet, watching videos, and playing games (Lepp, Li, & Barkley, 2015)[5]. The present study is an attempt in this direction and aims at among other things, understanding whether there is any significant impact of the usage of mobile phone on the academic performance among the college going students in Kerala.

2.   THE RESEARCH QUESTIONS

- What is the extent of time spent by the students of various streams in colleges on the mobile phone?

- What is the relationship between total time spent on mobile phone applications and the academic performance?

3.   OBJECTIVES OF THE STUDY

1. To ascertain the amount of time invested by the students, both boys and girls, of different streams of study on various applications/ use of mobile phones and

2. To find out the effect of the use of mobile phones and the participation in various social networking medias on students' academic performance.

4.   METHODOLOGY

The study is based exclusively on the primary data collected through direct personal interview of the respondents. The study employed Sample Survey Method of data collection and Multi Stage Random Sampling Technique is used for selecting the sample. The analysis employed the tables and ratios and percentage to get information. Besides this, the following exclusive measures were also used to analyse the relationship between mobile phone usage and academic performance.

Pearson's Correlation Coefficient

To analyse the relationship between the academic performance and usage of mobile phone Karl Pearson's Co-efficient of Correlation is used which is defined as

$$r = \frac{\sum (X - \bar{x})(Y - \bar{y})}{\sqrt{\sum x^2 - n\bar{x}^2}\sqrt{\sum Y^2 - n\bar{Y}^2}}$$

Multivariate Regression Analysis

In order to estimate the extent to which the increased use of mobile phone affects the performance of the students in their examinations a multivariate regression analysis has been used. The goal here is to see to what extent the variation in academic performance is explained by the hours of time spent on Mobile Phone. A multiple regression analysis used here has the percentage of marks obtained in V semester university examination as regrassand, Y_i and percentage of marks they obtained at SSLC, X_{1i} and HSS, X_{2i} and the mean [1] of the time spent on mobile phone both in working days and weekends as, X_{3i}, are the regressors. $Y_i = b_0 + b_1X_{1i} + b_2X_{2i} + b_3X_{3i} + U_i$

where, b_0 is constant which measures the variation in Y_i when all other variables are zero. b_1, b_2 and b_3 are the coefficients of the predictor variables and U_i is the error ormation on the use of mobile phone among students in various streams of study. term. The first two regressors are expected to affect positively the academic performance indicating that students with the ability of scoring marks at the previous levels of education are also capable to do so in the present level of education. However, the third one added to the model to test whether or not daily mobile phone use uniquely predicts the college academic performance in a significant manner.

Analysis of Variance

An ANOVA was used to compare mean academic performance (total marks obtained in the V semester university examination) across the groups of mobile phone use (high, moderate and low) defined on the basis of the hours of time spent on mobile per day. Post hoc t tests were performed for any significant main effect.

5.   DATA ANALYSIS AND INTERPRETATION

The time the respondents spend on mobile phone is of paramount importance as it is a factor which can positively and negatively affect the academic performance of these students. Mobile phone can complement learning if they do use the internet for information required for their learning. On the other hand if they do use phone for games, social media etc for a prolonged time, it can adversely affect their learning behaviour. Hence the analysis of the time invested upon the mobile is a crucial variable that enters in the present analysis.

Time Spend on Mobiles in Working Days

The table below portrays the time spent on mobile on ordinary days by the students.

Table 1: Time Spent on Mobile Phone in Working Day

Time in Hours	Arts		Science		total
	Boys	Girls	Boys	Girls	
< 2	1	9	1	9	20
2 – 5	5	11	6	11	33
>5	4	----	3	----	7
Total	10	20	10	20	60

Source: survey data

The table exhibits that 66% of the respondents use mobile phone for more than two hours on working days. Of these, 12 percent of respondents use more than five hours per working day. And the interesting thing is that girls do not have such a prolonged use of mobile per working days. With respect to the streams of study, it is found that there is no significant difference in the amount of time spent on the mobile between the streams. it can be seen that in both streams boys spent more times on mobile than the girls.

Time Spent on Mobile Phone in Weekend

Since weekends are usually holidays off days students' preferences to devote more time to mobile phone are more likely than an ordinary day where they have to attend the classes. Some may prefer weekends as days to complete the unfinished academic works, but for some others these days may be free days to connect themselves to social media friends and/or for other mobile phone activities. Following table analyzes the total time spent on mobile phone on weekends by students.

Table 2 : Time spent on mobile phone in a weekend.

Time	Arts		Science		Total
	Boys	**Girls**	**Boys**	**Girls**	
< 5	5 (50%)	11 (55%)	2 (20%)	13 (65%)	31 (51.6%)
5–10	4 (40%)	6 (30%)	5 (50%)	7 (35%)	22 (36.7%)
> 10	1 (10%)	3 (15%)	3 (30%)	----	7 (11.7%)
Total	10 (16.7%)	20 (33.3%)	10 (16.7%)	20 (33.3%)	60 (100%)

Source: survey data

The table unequivocally shows that the weekends are days for investing more time upon mobile phone for various purposes by all categories of students. Near 50 percent of the students spend more than 5 hours a day on mobile during weekends. This is true for all categories of students irrespective of their stream study. Forty eight percent of the students spend more than five hours per day on weekends on mobile phone. The proportion of boys is greater in this category.

The Purposes of Mobile Phone Use

Table: 3- Purposes of Mobile Phone Use

Purpose	Number of Respondents		Total
	Boys	**Girls**	
Education	5 (25)	21(52.5)	26 (43.33)
Entertainment	16 (80)	36 (90)	52 (86.7)
Job Search	1(5)	8 (20)	9 (15)
Online Shopping &Banking	3 (15)	-0	3 (5)
Social Media	20 (100)	38 (95)	58 (97.7)
Total	20	40	60 (100)

Source: Sample Survey

The table clearly explains that less than half of the students use mobile for education and other useful activities. Mostly they use the gadget for entertainment (games. music, videos, films etc.) and social media activities like face book and what's app chats. it's clear that such uses will have deleterious effect on their academic performances.

6. EFFECT OF MOBILE PHONE USE ON ACADEMIC PERFORMANCE

This section examines the effect of mobile phone use on the academic performance of the respondents in the sample. It examines whether there is any significant relationship between the time spent on mobile phone and marks the students obtained for the university examination. Since the sample includes only the students of final degree courses, the percentage of marks they obtained for the last university examination taken to evaluate the academic performance. This has been done with three methods:

1. Pearson's Correlation Coefficient between time of Mobile Phone Use and Percent of marks of Vth Semester university Exam

2. Multiple Regression Model is used to see how far, the percentage of marks of SSLC, and HSS and the time spent on mobile phone explains the respondents' performance in the fifth semester university examination.

3. Finally, to further illustrate the relationship between mobile phone use and academic performance ANOVA used by conducting tertile split of cell phone use as low, moderate and high on the basis of mean hours spent on mobile phone per day.

The results of these three measures are discussed below.

Relationship between Mobile Phone Use and Academic Performance

Karl Pearson's Correlation Coefficient calculated using SPSS to explain the relationship between mobile phone usage and Performance of Students in university examination. The value of Correlation coefficient was used to determine the relationship between mobile phone usage and Student Grade point. The result is summarized in the following table.

Table No 4: Correlation between Mobile Phone Use & Academic Performance

		Time on Mob Ph	% of Marks in V Sem
Time on Mob Ph	Pearson's Correlation	1	-.564*
	Sig. (2 - tailed)		.045
	N	60	60
% of Marks in Vth Sem	Pearson's Correlation	-.564*	1
	Sig. (2 - tailed)	.045	
	N	60	60

*Significant at 0.05 (5%) level (two tailed)

There is a significant negative correlation between mobile phone use and marks in V semester examination ($p < .045$). It is therefore significant to note that the increased use of mobile phone lead to poor academic performance of students. In other

words, It means as the use of mobile phone lowers, the academic achievement improves.

Variations in Academic Performance Due to Mobile Phone Use

An attempt is made here to understand how far the increased use of mobile phone affects the performance of the students in their examinations. In other words, to what extent the variation in academic performance is explained by the hours of time spent on Mobile Phone. A multiple regression analysis has been undertaken to estimate this with the percentage of marks obtained in V semester university examination as regrassand, Y_i and percentage of marks they obtained at SSLC, X_{1i} and HSS, X_{2i} and the mean of the time they spend on mobile phone both in working days and weekends, X_{3i}, are the regressors.

$$Y_i = b_0 + b_1X_{1i} + b_2X_{2i} + b_3X_{3i} + U_i$$

Where, b_0 is constant which measures the variation in Y_i when all other variables are zero. b_1, b_2 and b_3 are the coefficients of the predictor variables and U_i is the error term. The first two regressors are expected to affect positively the academic performance indicating that students with the ability of scoring marks at the previous levels of education are also capable to do so in the present level of education. However, the third one added to the model to test whether or not daily mobile phone use uniquely predicts the college academic performance in a significant manner. The result is illustrated in the following table.

Table No.5: Descriptive Statistics

Descriptive Statistics					
Variables	**Mean**	**Gender**		**Stream**	
		Girls	**Boys**	**Arts**	**Scienc**
% 0f marks in V Sem	67.23	74.6	52.5	61.03	71.04
% 0f marks in SSLC	83.43	F	45.63	F	10.73
% of Marks in HSS	85.32	Sig	0.001	Sig	0.002
Time Spent on Mobile Ph	6.16 Hrs	5.78	7.33	6.01	6.31
N	60	40	20	30	30

Source: Computed from Survey Data

The table given above shows the descriptive statistics of the sample distribution. On average, students reported spending 6.16 hours per day using their cell phones. The mean hour spend on mobile by girls is 5.73 hrs less than that of the overall mean hours and that of boy' mean hour (7.33) of time spent on mobile re exists. This rejects the first hypothesis that there is significant difference in the mean use of mobile phone between girls and boys. There exists significant difference between the mean time spent on mobiles between girls and boys.

The sample's mean V semester mark is 67.23. Independent sample t tests demonstrated significant differences between males and females (p < .001) and between and nonsmokers (p < .001). Females' V semester mean marks is 74.6 was significantly higher than males' Mean Mark is 52.5. Similarly the mean mark of V semester for streams is 61.03 and 71.04 respectively for Arts and Science streams respectively Analysis of ANOVA demonstrated significant differences in mean V semester marks between the male and female (P <0.001) and between Arts and Science Streams (p < .002) for the V Semester Marks.

7. CONCLUSION

It is observed in this study that students irrespective of Gender and Streams of study use mobile phones excessively and inappropriately even in college campuses and in late night hours. They give more preferences to use of mobile gadget for one or other reasons over their academics. Hence in order to overcome the adverse effects of mobile phone use on the academic performance of the students, effective activities must be undertaken by the parents, teachers and students themselves. They must understand that the best possible use of mobile phone will help them to articulate themselves and to attain their lifelong cherished dreams. Otherwise they may end up without attaining their cherished dreams and the hopes of parents and society. Anyway, what this study can presently conclude is that mobile phones and related devices will only increase in popularity and use. Therefore, there is a need to better understand how this technology can be harnessed to make a genuine contribution to student learning. Who knows whether there may emerge situations where learning is enhanced by having the mobile phone on, or the conditions where learning is enhanced by having it put off.

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