

SOCIAL SCIENCES

EFFECTS OF USING SMART DEVICES ON ACADEMIC RESULTS OF THE STUDENTS OF MAWLANA BHASHANI SCIENCE AND TECHNOLOGY UNIVERSITY (MBSTU)

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Abstract

In this study our attempts is to find out the relationship between the academic performances of the student of Mawlana Bhashani Science & Technology University (MBSTU) with their uses of smart device. For this purpose, a survey was conducted over 255 students from various departments of MBSTU by stratified sampling with proportional allocation. Out of 255 student 55.7% are Male students and 44.3% are Female students. A structured questionnaire has been developed to gathered data from students. Cross tabulation and chi-square test have been applied to investigate the relationship between use of smart device and academic performance of the students and several graphical presentations are used in this study. From this study it is found that there is a significant relationship between use of smart devices and CGPA of the respondents ($P\text{-value}=0.00$). This research indicates that there is a significant relationship between use of smart device and Health problem ($P\text{-value}=0.00$) and there no significant relationship between use of smart device and study hampered. Thus, this study suggest that students should reduce to intense use of smart device and if they use it in study purpose they will be performed a good result.

Keywords: Effects, Smart devices, Academic results, MBSTU

Introduction

Smart device is an electronic device, generally connected to other devices or networks via different wireless protocols such as Bluetooth, NFC, Wi-Fi, etc, that can operate to some extent interactively and autonomously. Several notable types of smart devices are Mobile, Tablet, Laptop, Gaming devices etc. It can be designed to support a variety of factors, a range of properties pertaining to ubiquitous computing and to use in three main system environments: physical world, human centered environments and distributed computing environments.

One smart device having web-browsers that can be connected through internet. It is a sources of education and entertainment though the uses of numerous applications. Smart device has become more popular to all generations because of its social networking applications such as twitter, Facebook that concepts people under umbrella.

A report by Kvavik and Caruso (2005) found that 62% of students own a desktop computer, while 55% own a laptop, 90% own a cellular phone, and 38% own a music device. Although some research has shown the impact computer and electronic mail use has on student learning, little research has been conducted to explore the impact of various types of technology use, including instant messaging, blogs, iPod, and Facebook on student development. In addition, little has been done to explore the differences between students based on gender and ethnicity.

Users of smart device habitually engage in browsing web, checking email, pocking social networking

sites, sending text messages, watching movie, playing games with touch and giant screen facility. However, the excessive usage of smart devices become addicted to it.

By using smart device interacts among people in which they can create, share and exchange information and ideas in virtual communities and network. It creates the opportunity to network with other members who share similar or common interest, dreams and goals. They usually interact each other by using social media network like Facebook, Twitter, LinkedIn, imo, Viber, WhatsApp, Skype and Messenger etc. These are currently available in Laptop, Tablet, iPhone, Android, Windows phone, Nokia Symbian60 and Blackberry. It is popular because there is no cost to message friends and family other than the internet data plan that users already have on their devices.

In 2015, the International Telecommunication Union estimated about 3.2 billion people or almost half of the world's population, would be online by the end of the year. Of them, about 2 billion would be from developing countries, including 89 million from least developed countries.

In Bangladesh, the smart device users are increasing rapidly and among them most are young adults. It becomes more popular among young generation, specially students, who study in college and university. It is increasing very rapidly. With the rapid growth of smart device users, the negative consequence of these devices usage is increasing. There also some positive and negative effects of using smart devices on academic performance of MBSTU students. Furthermore,

the perception of university students on smart devices addiction was investigated and the possible impact of this on the academic performance was evaluated.

Background of the study

Due to the enormous development of technologies, this era can also be called the age of technology. With the purpose of serving in the social, educational and employment world technology is become the most essential tool (www.customessaymeister.com). Social network sites, online games, video-sharing sites and gadgets such as iPods and mobile phones are now fixtures of youth culture (UNICEF, 2011). They have so permeated youth lives that it is hard to believe that less than a decade ago, these technologies barely existed. An important question which this paper tries to address is how smart devices affect academic performance of these young people. Technology is an integral part of most students' lives, hence it is important to understand the impact it has on academic achievement. We want measure the student academic performance by student academic results (CGPA). Most of the researcher around the word used the GPA to measure the student performance (Galiher, 2006; Darling, 2005; Broh, 2000; Stephen & Schaban, 2002).

According to Bangladesh telecommunication regulatory commission (BTRC), the total number of internet subscriber is 66.862 million up to September 2016, of which 62.968 million subscriber use mobile internet. About 80% internet users of Bangladesh are on a single social networking website, Facebook (BTRC, 2016).

The awareness of possible negative consequences of smart device usage certainly reduces the overuse of smart device. Few studies have been articulated the impact of smartphone addiction on students' academic performance (e.g., SAMAHA; HAWI, 2016; HAWI; SAMAHA, 2016), stress (CHIU, 2014).

Therefore, this study attempts to explore the impact of smart device on students' academic performance of MBSTU in Bangladesh.

Motivation of the study

Empirical studies in traditional learning of determinants of students' performance have pointed to issues such as student's aptitude, class attendance, gender differences, study effort, instructor's teaching style, modern technology experience, academic environment and service received. There is also a factor which influences the result of a student, what is their smart devices expenditure. We found that Student age has no influence on overall academic success. We also found that Students who active on phone in the time of study also influence on overall academic success.

This study can contribute to find out the smart device related factors and other factors, which are responsible for student's inflexible behavior towards study, along with identifying those factors, which help a student to make progress in her studies. This study focuses on investigating the factors affecting performance of graduate and post graduate students. A survey was conducted to collect information and responses of students, regarding factors affecting their performance. At the end of the study, it is exposed that various variables have positive effects on the improvement of academic achievement.

Objective of the study

The aim of the study is to find out the effects between smart devices usage and academic performance among the students of Mawlana Bhashani science and technology university (MBSTU). The objectives were pointed out as follows:

- To find out the relation among the uses of smart devices and academic performance of the overall MBSTU students.
- To investigate the effects of smart device on academic performance of the MBSTU students' faculty wise.
- To investigate the effects of smart device on academic performance of the MBSTU students' department wise.

METHODOLOGY AND DATA COLLECTION

Accurate data collection and methodology used for any study are of main importance for any meaningful statistical investigation. So to describe a clear description on such aspects, selection of area and frame, sample selection, preparation of questionnaire, collection of data, tabulation and analytical method etc. we briefly discussed in this chapter. The methodology of survey involved the following stages.

Sources of data

The data needed the study were collected through formal interview schedule. The information collected from students of MBSTU. We collect data from people through face to face interview. The formulation of problem is far more often essential than its solution which may be a merely a matter of mathematical or experimental skill. To raise new questions, new possibilities, to regard old problems from a new angel require creative imagination and marks real advance in science. In the following paragraphs we discuss the steps of methodology of this science. Research process consists of series of actions or steps necessary to effectively to carry out research and desired sequencing of these steps. The steps are:

- i. Define research problem
- ii. Review the literature
- iii. Formulate hypothesis
- iv. Research design
- v. Data collection
- vi. Analysis of data
- vii. Interpretation and report writing

The working procedure of the survey study, statistical analysis of the surveying report will be discussed.

Preparation of Questionnaire

Preparation of questionnaire is essential part of any research work. It is considering as the heart of survey operation. The questionnaire is the only media of communication between the investigator and respondent's. So the questionnaire should be designed with utmost care and caution so that all relevant and essential information for the enquire may be collected without any difficulty.

- Questions of sensitive and personal nature should be avoided.
- Questions should be capable of brief solutions.

- Questions should be in accordance to the objective of the survey.
- The size of the questionnaire should be simple, clear and unambiguous.
- Questions should be brief.
- Questions should be arranged in a logical order.

Study Population and Design

The word population is the addition or whole set of individuals whose characteristics are of interest to us. In conducting any survey it is essential at first to define the target population clearly. The total number of respondents in MBSTU is our study population. The design of the study is investigator's plan of answering the research questions. The objective of selecting a study design is to minimize possible errors by minimizing the reliability and validity of the data in the study.

Sampling Unit

We actually have considered MBSTU (Mawlana Bhashani Science and Technology University) for our study.

Selection of area

It is most essential to select area where the particular purpose for study can be fulfilled. According for my small survey I have selected MBSTU, where I have

easily found the respondents. Only students of MBSTU are covered by the survey.

Sampling Technique and Sample Size

This research was conducted to observe the usages of smart devices and impacts on academic performance. For this by using stratified random sampling with proportional allocation technique 255 students were selected as sample.

At an early stage in the planning of any investigation decisions must be made concerning the study population. That is concerning the population of individual units to be investigated. My study population is the students of MBSTU under the 5 faculties. A sample elements selected with the intention of finding out something about the total population from which they are taken. A convenient sample of 255 subjects was selected from the study area. Available subjects were entered into the study until a sample size of 255 was reached. The sampling frame use for the study where enrolment of each student provided by 15 departments of MBSTU.

As we consider stratified sampling with proportion allocation. We know that, the sample size in the i^{th} stratum

$$n_i = nN_i / N$$

Where, n = totalsamplesize, N_i = size of i^{th} strata, $N = \sum N_i$ = totalpopulation.

Here we consider each department as strata.

Sample taken by each strata are shown in the following table:

Name of The Department	Population Size	Sample Size	Name of The Department	Population Size	Sample Size
Statistics	275	18	BMB	140	9
Mathematics	275	18	Pharmacy	140	9
Chemistry	300	20	Textile	210	14
Physics	300	20	CSE	275	18
BGE	275	18	ICT	275	18
ESRM	300	20	Economics	200	13
FTNS	300	20	BBA	300	20
CPS	300	20			

Collection of data

We applied questionnaire method to data collection. For collection information we should have a good knowledge about the population. Each characteristic of study population was observed before sampling. We apply the sample procedure in every student. We collected data from each faculty of Mawlana Bhashani Science Technology University (MBSTU). The respondents were filled up the questionnaires short time

and not to discuss other. We tried our best to collect all information properly.

Result and discussion

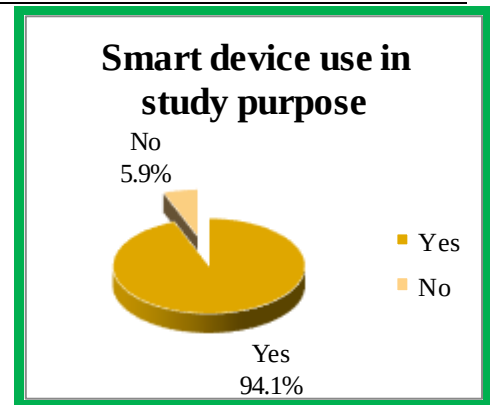
Cross tabulation for finding the association between using smart device and CGPA of the students

Hypothesis:

H_0 : there is no relationship between CGPA and using smart devices of the respondents.

H_1 : There is a relationship between CGPA and using smart devices of the respondents.

		CGPA of the students				Total
		2.00-2.50	2.50-3.00	3.00-3.50	3.50-4.00	
Using smart device	Yes	3	17	136	84	240
	No	0	2	0	13	15
Total		3	19	136	97	255



Chi-square test

	Value	df	P-value
Pearson Chi-Square	19.335 ^a	3	.000

Comment: From the above table, we see that the value of Pearson chi-square is 19.335 degrees of freedom 3 and the corresponding p-value is 0.00 respectively, which is significant at 5% level of significance. Therefore, we can reject the null hypothesis, thus we conclude that there is a significant relationship between CGPA and using smart devices of the respondents.

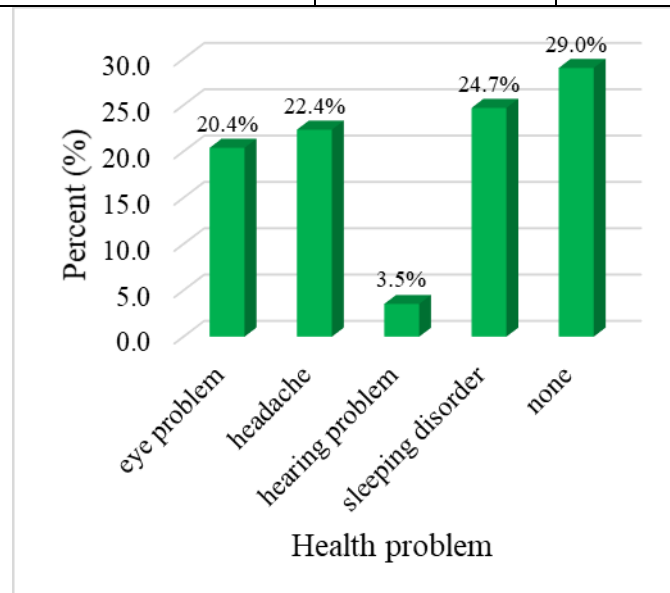
Cross tabulation for finding the association between using smart device and Health problem of the students

Hypothesis

H₀: There is no relationship between use of smart device and health problem

H₁: There is a relationship between use of smart device and health problem

		Use of smart devices		Total
		Yes	No	
Health problem	Eye problem	52	0	52
	Headache	54	3	57
	Hearing problem	5	4	9
	Sleeping disorder	60	3	63
	None	69	5	74
Total		240	15	255



Chi-square test

	Value	df	p-value
Pearson Chi-Square	27.708 ^a	4	.000

Comment: From the above table we see that the value of chi-square is 27.708 with degrees of freedom

4 and the corresponding p-value is .000, which is significant at 5% level of significant. Therefore we reject

the null hypothesis, thus we can say that there is a relationship between use of smart device and health problem.

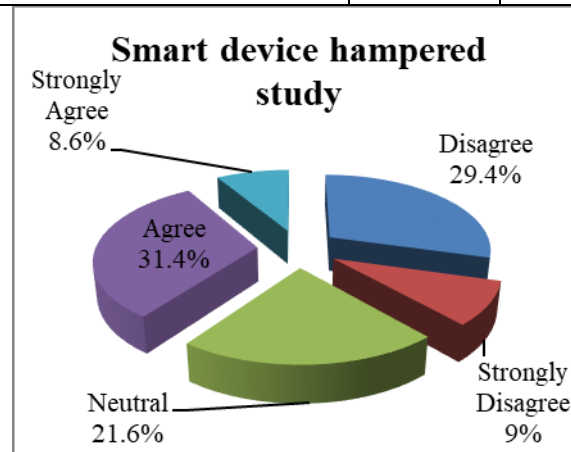
Cross tabulation for finding the association between using smart device and hampered of the study.

Hypothesis

H₀: There is no relationship between use of smart device and study hampered

H₁: There is a relationship between use of smart device and study hampered

		Use of smart devices		Total
		Yes	No	
Smart devices hampered study	Disagree	71	4	75
	Strongly disagree	22	1	23
	Neutral	51	4	55
	Agree	74	6	80
	Strongly agree	22	0	22
Total		240	15	255



Chi-square test

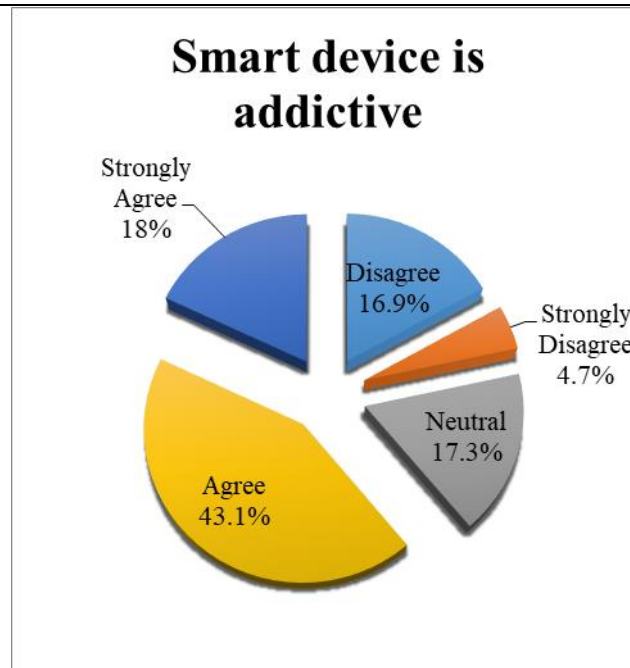
	Value	df	P-value
Pearson Chi-Square	2.084 ^a	4	.720

Comment: From the above table we see that the value of chi-square is 2.084 with degrees of freedom 4 and the corresponding p-value is .720, which is insignificant at 5% level of significant. Therefore, we cannot

reject the null hypothesis, thus we can say that there is no relationship between use of smart device and study hampered.

Frequency distribution of addictivity on smart devices

Smart device is Addictive	Frequency	Percent
Disagree	43	16.9
Strongly Disagree	12	4.7
Neutral	44	17.3
Agree	110	43.1
Strongly Agree	46	18.0
Total	255	100.0



Comment: From above we see that the opinion about “smart devices are addictive” 4.7% respondents are Strongly disagree, 16.9% are Disagree, 17.3% are Neutral, 43.1% are Agree and 18% are Strongly agree. Thus, we can say that Smart devices are addictive.

Recommendation

We found that there is light relationship between smart device usages and CGPA of the students. The student who use smart devices for study purpose have higher CGPA than those who do not use. However, if a student spent more time on smart devices than it has a negative impact on his CGPA. It will be better for improve CGPA if the following steps would be taken

- Students should be avoiding the addictivity to smart devices.
- The students should make routine to use the smart phone.
- At the time of class and study the phone should be switch off or silent mode.
- In the deep night time after 12 am students should not use smart phone.
- At the time of examination various social apps like Facebook, WhatsApp's, Skype, should off or little use.

Conclusion

Now-a-days smart device has become very essential device, people can't think a single moment without it. There are many useful directions to use smart devices. But some people has become addictive to it. For this reasons they may suffer in the future life. The purpose of this was to assess the smart devices related factors and other factors which affects the academic performance of the MBSTU students. An perfect solution can improve the academic performance of the students. We observe that there is a significant relationship between CGPA and study uses smart devices. That means who uses smart devices for academic study purpose have a good CGPA than who uses for others. There is a significant relationship between use of smart devices and Health problem. That is who uses smart devices may suffering from different types of health problem.

There are some another factors such as marital status, prepared class lesson regularly, attend class regularly and followed teacher lecture that influence the academic performance. The students followed these regularly, he/she has a achieved good academic performance. Therefore, this research is very important for the MBSTU students because it provides a better understanding of the context for smart device use.

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