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Effects of Laptop Computer and Social Media Use on University Student Achievement in Emerging Economy

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Abstract
During the last one decade, computer technology has diffused very rapidly in the emerging economies. Similarly, social media use is widely used across the globe including developing and developed countries. The present research article investigates to what extent the laptop computer and social media use has impacted student achievement in universities. The study has estimated the impacts on the bases of gender, degree, rural-urban students and residential status as well. The study is based on the cross-sectional data collected from one of the largest universities of Pakistan, being the emerging economy. Based on the estimates of logit model, we found that a 1% increase in using laptop computers for academic research and assignments causes a 0.36% increased probability of spending 5+ academic work hours whereas playing computer games and using social media are associated with a declining probability of 5+ academic work hours by 0.05% and 0.03% respectively. Probability of getting high CGPA increases by 0.09% for an increase in using laptop computer for academic tasks. Playing computer games and using social media were found declining probability of getting high CGPA score.
Keywords: Human-computer interaction, Social media, Academic achievement, Emerging economy

1. Introduction

In the recent past, students have access to a wide range of new technology. Access to new technology particularly desktops, laptops and smart phones in emerging economies including Pakistan has made it easier to approach the latest information, academic materials and assignments, in addition to social media. Social media has integrated social networking being an important for life of young generation (Deng & Tavares, 2013). Access to social media and laptop computer has also facilitated university students in interacting with peers, getting information, easy approach to new research and academic materials (Abdulahi, et al. 2014; Saijo, 2022). Assessing the contribution of laptop computer and social media use in student achievement becomes crucial particularly in emerging economies because university students are considered the future builders of the economy.

Laptop computer use has become important in building future human capital to address challenging goals of economic and social development (Nawaz et al., 2021; Audi et al., 2021). Many countries including developed and developing countries have started different initiatives to equip the students with modern technologies. However, laptop computer use among the students in the developing countries is still not at par with the developed countries. Laptop computer use in academics helps students in getting access to information through Internet. Laptop computers are considered as a constant universal source of access to new learning among the students (Brown & Petitto, 2003; Bianchi et al., 2022; Veselkova, 2024), since the students are able to get immediate and frequent access to unlimited and infinite information at anytime from anywhere for building capacity in new knowledge (Khan & Ali, 2018; Fairlie & Kalil, 2017; Penuel, 2006; Caudill, 2007; Dunleavy & Heinecke, 2008). Laptop computer use facilitates the students to find materials, information and solutions for completing academic assignments (Liu, et al., 2022; Sun & Wenar, 2021; Cheng et al., 2013; Cheng & Tsai, 2011), ultimately improving academic self-efficacy of the students (Shen, 2018; Akim, 2020). Many studies have explored that the students' academic achievements increase with computer supported education (Fernández-Gutiérrez et al. 2020; Shachar, 2002; Wong, 2001; Demb, Erickson & Wilding, 2004; Zhou, Brouwer, Nocente, & Martin, 2005). Laptop computer use is also associated with motivating students in active learning through experience (Stephens, 2005; Sharon & Kay, 2010). Promoting collaboration among students through easy interaction with each other is another major benefit of laptops (Penuel, 2006; Stephens, 2005).

In addition to improving academic achievements, the laptop computer use may cause the students indulge in non-academic activities thereby negatively influencing students' learning (Young, 2006). The possible reasons for divergence from academics include social media (Tang & Patrick, 2018) and entertainment related programs like playing video games (Barak, Lipson & Lerman, 2006; Fried, 2008; Tang & Patrick, 2018) and watching movies (Barak, Lipson & Lerman, 2006). Social media use also increases particular among children and teenagers (Rideout, et al., 2010). Rideout et al. (2010) and Strasburger, et al. (2010) argue that around 8 hours per day are spent in using social media by adolescents and it increases to 11 hours when media multitasking is considered. All these activities result in wastage of precious time of students leading to academic inefficiency. Since laptop computers make easy access to Internet, the tendency of copying materials and not combining ideas intellectually increases among the students (Guo, 2015; Li, 2015). There are also some studies indicating no positive or negative effect on student achievement with or without the computer use (Papanastasiou, Zemblyas, & Vrasidas, 2003).

Intensity of laptop computer use in academics and social media varies creating the difference in technology self-efficacy across gender (Huffman et al., 2013). Tang and Patrick (2018) argue that the use of social media is higher among girls and boys spend more time playing video games. Lenhart (2015) and Rideout et al. (2010) provide evidence of more time spent by females than males talking and texting on the cell phone and interacting social media. However, males are found spending more time playing video games. However, more time is spent by males on the computers for recreational purposes whereas adolescent females are found spending more time on the computers for academics (Hunley et al., 2005; Rideout et al., 2010).

Diverse nature of individuals with different socioeconomic characteristics (Bronfenbrenner & Morris, 1998) makes it important to examine the effect of socio and demographic characteristics on the association between computer use and social media use and academic outcomes among the students. However, the research is limited in the context of developing countries as the many research

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studies (Brown & Petitto, 2003; Penuel, 2006; Caudill, 2007; Dunleavy & Heinecke, 2008; Sharon & Kay, 2010; Sharif & Sargent, 2010; Huffman et al., 2013; Lenhart, 2015; Tang & Patrick, 2018) have focused the developed countries. The present study is designed to explore the scientific evidence on the effect of laptop computer distribution program by Government of Punjab, Pakistan on interactive social media and academic outcomes among the students. Overall, the study attempts to investigate how laptop computer and social media use is related to academic outcomes. To achieve purpose of the study, following research questions are considered to guide the study:

1. Whether laptop computer and social media use varies across gender, degree programs, residential and background status of the students?

2. Does the use of laptop computers in social media and academic research work is associated with higher academic outcomes?

3. What are different factors responsible for spending 5+ academic work hours among the students?

Based on the research questions, two types of academic outcomes were considered namely the amount of time spent on university assignments, research, etc. and university grades. The study employed the theory of displacement of time on productive activities. Based on the theory, it was hypothesized that more time spent playing video games, watching movies and using social media would be negatively related with academic outcomes (Dumais, 2008; Hancox et al., 2005; Sharif & Sargent, 2010; Wiecha et al., 2001). And there exist a positive relationship between more time spending on university work assignments and academic outcomes mainly because of completion of university work assignments timely (House, 2010; Jackson et al., 2006; Subrahmanyam et al., 2001). The present study also hypothesized that laptop use and academic outcomes and social media use were different across gender and university degrees i.e. undergraduate and postgraduate. The present study contributes to the literature in a number of ways. Firstly, it contributes to provide evidence whether the use of laptop computers by degree, gender, rural-urban background and boarder/non-boarder residential status remains the same in the contemporary data as the technology is rapidly changing overtime. The use of laptop computers has widely started in the last decade in Pakistan and many other developing countries. The contribution of the study to the body of literature is important in providing insights on laptop computers and interactive social media use and academic outcomes in developing countries. This is the first ever study in Pakistan considering laptop computers and interactive social media and academic outcomes while considering demographic and control variables along with variables relating to social media and academic activities.

2. Materials and Methods

2.1. Data and source

Considering the important role of the youth in future development of the province, Government of the Punjab, Pakistan took an initiative to distribute laptop computers among the students through the Youth Initiative Program (YIP). The program was started with the aim of equipping the students with modern technology for higher learning. The present study has examined the efficacy of laptop computers among the students of University of Agriculture, Faisalabad who received laptop computers from YIP. This university is among the largest universities in the province. The data for the present study were collected from undergraduate and postgraduate students. The impact of laptop distribution program on the student academic outcome was estimated using cumulative grade point average (CGPA) or percentage marks obtained. Time spent on university work assignments/research was also considered as an outcome of the laptop computer use.

Table 1: Descriptive statistics of the study variables

Variables	Mean	Standard deviation	Min	Max
Outcome variables				
5+ acadmic work hours	0.57	0.49	0	1.00
High CGP (>=3.65)	0.33	0.47	0	1.00
Laptop and interactive social media use				
Academic activity (Hours/day)	2.09	0.89	0	5.00
Watch movies (Hours/day)	2.69	2.61	0	9.00
Use social media (Hours/day)	1.95	2.64	0	10.00
Univ. assignments(hours/day)	1.59	0.99	0	4.50
Computer games (Hours/day)	1.02	2.09	0	9.00
Demographic factors				
Post-graduate degree (yes=1)	.56	0.49	0	1.00
Semester	3.79	1.86	1	8.00
Gender (Male=1)	0.48	0.50	0	1.00
Urban background (yes=1)	0.68	0.47	0	1.00
Boarder student (yes=1)	0.40	0.49	0	1.00

We distributed questionnaires among 250 students in 2014. Out of 250 students, 229 students returned the filled questionnaires. Out of the filled questionnaires, we found that 8 students did not receive laptop computers from the Youth Initiative Program of the Government of the Punjab. These students were excluded. A pre-tested questionnaire contained information on communication through social media such as facebook, twitter, etc., typing academic assignments, analyzing data, surfing the net for academic purpose, playing games and music or other activities.

The sample was 48% males, 56% postgraduate students, 68% urban students and 40% boarder students. We asked the students "about how many hours do you spend in an average week on your academics related work assignments?" The response was asked as an open-ended question. We dichotomized the response into two categories, namely 5 + academic work hours per week and below

5 academic work hours per week. We found that 57% students were those spending 5 + academic work hours per week. Cumulative grade point average (CGPA) was considered another academic outcome of the students. We asked the students their CGPA of the current year and we categorized CGPA into high (>=3.65/4.00 CGPA) and low (<3.65/4.00 CGPA). The students with high CGPA were 33%. Time spent on academic activity was 2.09 hours/day and 2.69 hours/day watching movies. The students spent 1.95 hours/day in using social media and 1.02 hours/day for playing video games (Table 1).

2.2. Analytical methods

The present study used descriptive analysis and econometric analysis. The comparison was made on the bases of gender and degree programs. We compared mean of technology and interactive social media use by gender, degree, residential status and urban-rural background and two academic outcomes, namely time spent on university work assignments, research, etc. (5+ academic work hours per week) and high CGPA (>=3.65/4.00).

Logistic regression models were used to determine the predictors of the two academic outcomes of interest in separate sets of the models. We included variables relating to academic work hours and interactive social media and demographic factors to predict academic outcomes. Dependent variables were 5+ academic work hours per week and high CGPA. It was taken as one for the students reporting 5+ academic work hours per week and zero for else. Similarly, dependent variable for the second model was taken as one if the outcome was high CGPA and else zero. Generally, the logistic regression model is written as:

$$Y_i = \beta X_i + \mu_i$$

Where Y_i is equal to "1", when a choice is made to use laptop computers for 5+ academic work hours per week and zero otherwise. Mathematically, the probability of allocating 5+ academic work hours per week or less than 5+ academic work hours per week (Y) can be represented as a function of independent variables (X). Both equations are written below:

$$Prob\ (Y_i = 1) = F(\beta' X_i) \quad (2)$$

$$Prob\ (Y_i = 0) = 1 - F(\beta' X_i) \quad (3)$$

Where Y_i is the observed response for the ith observation of the response variable i.e. Y. It means that Y_i=1 for the student who spends 5+ academic work hours per week and Y_i= 0 for the student spending less than 5+ academic hours per week. X_i is a set of independent variables including academic work hours, interactive social media and demographic factors (Table1), which determine the probability of spending 5+ academic work hours per week? The same description applies to high CGPA of the students. The maximum likelihood method was employed to estimate the parameters (Pindyck & Rubinfeld, 2008).

2.3. Ethical approval and confidentiality

We obtained ethics approval from Ethical Approval for Scientific Research, COMSATS University Islamabad, Vehari Campus (ECSR/CIIT/10-01, 09-06-14). The respondents were requested to provide verbal consent for providing information given in the questionnaire. Since face-to-face interview method was used to fill questionnaires, the interviewer explained the purpose and confidentiality of information. We analyzed the collected data anonymously.

3. Results

The interest of the present study was to examine the relationship between academic outcomes and laptop computers and social media use among the students. We explored this relationship on the basis of degree, CGPA score, gender, rural-urban students and residential status (boarder and non-boarder) of the students.

3.1. Laptop computer and media use by degree and CGPA score

Table 2 displays the results by degree and CGPA score differences. We divided laptop computer use into academic and non-academic activities. Academic activities included academic research work and assignments. Watching movies, using social media and playing video games were considered as non-academic activities. On an average, all the students spent more time on using social media, watching movies and playing video games. The undergraduate students spent relatively less hours on academic research work and spent more time on non-academic activities. The postgraduate students spent 17.98 hours per week on academic research work compared to 11.98 hours per week of the undergraduate students. The time spent on watching movies, dramas, etc. by the undergraduate students was 3.34 hours per day and it was 2.18 hours for the postgraduate students. Playing video games on laptop computers consumed 1.64 and 0.56 hours per day by undergraduate and postgraduate students respectively. An average of 2.02 and 1.91 hours per day were estimated for social media use by undergraduate and postgraduate students respectively.

Table 2: Laptop computer and media use by degree and CGPA score (hours)

	Degree		CGPA score	
	Undergraduate	Post-graduate	High	Low
Academic activities				
Academic research work/week	11.9 (8.4)	17.9*** (10.3)	17.1 (10.7)	13.6*** (8.8)
Academic research work/day	2.1 (0.9)	2.1 (0.8)	2.1 (0.8)	2.1** (0.9)
Assignments/day	1.6 (0.9)	1.6 (1.0)	1.6 (0.9)	1.6 (1.0)
Non-academic activities				
Watching movies, dramas/day	3.3 (2.3)	2.2*** (2.7)	2.2 (2.5)	3.2** (2.6)
Using social media/day	2.0 (2.8)	1.9 (2.6)	1.8 (2.6)	2.1 (2.7)
Playing computer games/day	1.6 (2.6)	0.5*** (1.4)	0.6 (1.6)	1.5** (2.4)

The students with high CGPA spent 17.05 hours/week on academic research work compared to the students with low CGPA score (13.60 hours/week). A total of 3.18 hours/day was spent on watching movies, dramas, etc. by the low CGPA students and 2.22 hours by the students with high CGPA score. The students with high CGPA score spent 1.81 hours using social media compared to 2.10

hours spent by the students with low CGPA score. The students with low CGPA score spent 62% more time playing video games than the students with high CGPA students.

3.2. Laptop computer and media use by gender, residence and background

Table 3 shows means, standard deviations and ranges of laptop computers and media use on the basis of gender, urban-rural students and student residential status. The time spent on academic research per week and per day was approximately the same between male and female students. Female students spent about 11% more time on academic assignments than male students. Although male students spent relatively more time watching movies, dramas, etc., the difference in the time between male and female students was not much higher. Playing video games was another non-academic activity consuming 2.88 hours per day among the male students compared to 1.99 hours per day by female students. Similarly, the male students were found spending relatively more time playing video games than female students.

Boarder students spent around 13% more time on academic research work than non-boarder students. Watching movies, dramas, etc. took 3.15 hours per day by boarder students compared to 2.38 hours per day by non-boarder students. Time spent on social media by boarder students was 27% higher than non-boarder students. We found relatively more time sent playing video games by boarder students than non-boarder students.

Another aspect considered was rural-urban background of the students. We hypothesized that the rural students would spend more time on non-academic activities compared to urban students as the former would have less access to laptop computers in the rural areas. Table 3 shows results according to prior expectations. The rural-background students spent less hours per week and per day on academic research work and assignments. The urban students spent 2.82 hours/day watching movies, dramas, etc. The time spent using social media and playing computer games was relatively higher for the rural-origin students as compared to the urban-origin students.

Table 3: Laptop computer and media use by gender, residence and student background (hours)

	Gender		Residential status		Background	
	Male	Female	Boarder	Non-boarder	Rural	Urban
Academic activities						
Academic research work/week	15.0 (10.2)	15.7 (9.8)	15.8 (9.8)	15.0 (10.1)	15.0 (9.9)	16.0 (10.1)
Academic research work/day	2.1 (0.9)	2.1 (0.8)	2.2 (0.9)	1.9** (0.9)	2.1 (0.8)	2.3** (0.9)
Assignments/day	1.4 (0.9)	1.8** (0.8)	1.6 (0.8)	1.8 (0.8)	1.6 (1.0)	1.5 (0.9)
Non-academic activities						
Watching movies, dramas/day	2.9 (2.8)	2.4 (2.4)	3.2 (2.6)	2.4** (2.6)	2.6 (2.6)	2.8 (2.6)
Using social media/day	2.3 (2.9)	1.6** (2.5)	2.8 (2.9)	2.2* (2.6)	1.9 (2.7)	1.9 (2.6)
Playing computer games/day	1.8 (2.5)	1.4 (2.3)	1.7 (2.6)	1.5 (2.3)	1.2 (2.2)	0.7* (1.8)

3.3. Results of the logistic regression models

We run a series of logistic regressions for both academic outcomes variables. In the first step, we regressed each academic outcome variable on laptop computer and social media use. In the second step, we included demographic and control variables in the logistic regression to predict separately each academic outcome. Similarly, robustness of the models was also estimated by taking total number of academic work hours and total CGPA score separately. We found that signs and coefficients of the model given in Table 4 were more consistent and relevant to the theory.

Table 4: Estimates of logistic regression models predicting academic outcomes

Variables	5+ academic work hours		High CGPA	
	Coefficients	Marginal effects	Coefficients	Marginal effects
Laptop and interactive social media use				
Academic research work (Hours/day)	1.53*** (0.27)	0.36 (0.06)	0.46** (0.18)	0.09 (0.04)
Watching movies (Hours/day)	-0.09 (0.08)	-0.02 (0.02)	-0.04 (0.06)	-0.01 (0.01)
Using social media (Hours/day)	-0.12*** (0.06)	-0.03 (0.01)	-0.06*** (0.03)	-0.04 (0.01)
Univ. assignments (hours/day)	2.04*** (0.29)	0.48 (0.06)	0.01 (0.16)	0.00 (0.03)
Playing computer games (Hours/day)	-0.09*** (0.04)	-0.05 (0.03)	-0.20* (0.11)	-0.04 (0.02)
Demographic factors				
Post-graduate degree (yes=1)	1.45*** (0.51)	0.33 (0.11)	1.22*** (0.41)	0.24 (0.08)
Semester	0.22* (0.13)	0.05 (0.03)	0.07 (0.10)	0.01 (0.02)
Gender (Male=1)	-0.84* (0.45)	-0.19 (0.10)	0.04 (0.35)	0.01 (0.07)
Rural background (yes=1)	-1.04** (0.48)	-0.23 (0.09)	0.87** (0.38)	0.17 (0.07)
Boarder student (yes=1)	-0.52 (0.44)	-0.12 (0.11)	-0.38 (0.36)	-0.08 (0.07)
Constant	-6.23*** (1.23)		-3.01***(0.92)	
Goodness of fit of the models				
Log likelihood	-85.66		-122.89533	
LR chi^2	131.24***		34.62***	
Pseudo R^2	0.43		0.12	
Observations	221		221	

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 4 displays the estimates of logistic regression models predicting academic outcomes. Results of first logistic regression model predicting academic outcome i.e. 5+ academic work hours per day showed that social media use, playing computer games, assignments, academic activity and university assignments were significant with 5+ academic work hours per day. Control variables namely postgraduate degree and semesters of the study were positive and statistically significant whereas students with urban background and males were negatively related with 5+ academic work hours per day.

High CGPA score logistic regression model also contained ten explanatory variables. Table 4 shows that with an increase in academic hour would increase probability of high CGPA score by 0.09%. Negative and statistically significant coefficient of playing computer games variable implied that probability of having high CGPA would be less by 0.04% with an increase in one hour playing computer games by the students. Similarly, using social media was negatively related with high CGPA. Out of five control variables, two variables were statistically significant. Postgraduate students were more probable of having high CGPA by 0.24% compared to undergraduate students. Urban students were found to have more probability of high CGPA compared to the students from rural areas. All other variables were statistically non-significant.

4. Discussion

Although time spent on academic research and assignments per day was the same, the time spent by postgraduate students on academic research per week was 6 hours higher as compared to undergraduate students. This lies in the fact that undergraduate students have very little research related work and they are usually assigned reading and solving some assignments. On the contrary, the postgraduate students are involved in research work because of the requirement of the degree. Sharon and Kay (2010) also found that the laptop computers were more effective for the students of higher degree programs. Similarly, Sim and Butson (2013) argued that personal computer was not crucial for undergraduate academic study. Regarding computer technology and interactive social media use, we found that undergraduate students spent more time (1.16 and 1.11 hours per day) on watching movies, dramas, etc. and playing computer games compared to postgraduate students. However, the time spent using social media remains the same between postgraduate and undergraduate students.

Statistically significant difference of time spent watching movies, dramas, and playing computer games contributed to high CGPA of the students. The students with high CGPA score were also found spending more time (3.45 hours per week) to academic research work compared to the students with low CGPA score. These results are in accordance with Liu et al. (2022) and Tang and Patrick (2018). They found that the students spending more time using the computers for the school spent more time on homework, ultimately obtaining high academic grades.

We found that laptop computers and interactive social media use were statistically different between male and female students. Female students spent 0.2 hour per day more time working on university assignments compared to their counterpart male students. Male students were found spending 0.9 hours more time using social media than female students. On an average spending more time on academic research and university assignments by the female students result in high CGPA scores and these results are confirmed by the Office of the Controller of Examinations, University of Agriculture, Faisalabad. Our findings are in accordance with Hunley et al. (2005), Lenhart (2005) and Rideout et al. (2010).

The present study considered both types of students-boarder and non-boarder students. This variable was taken to compare the laptop computer and social media use between boarder and non-boarder students. Boarder students have access to free Internet facility at their hostels and we hypothesized that such students would be spending more time using social media, watching movies and playing computer games. At the same time, they were also expected to surf Internet for academic purposes. Time spent on academic research work was statistically higher among the boarder students. However, these students were spending more time watching movies, dramas and using social media compared to non-boarder students. Urban students spent more time (0.3 hour per day) on academic research work and 0.5 hours more time playing computer games than students from the rural areas. This result indicates that the students from the urban areas are more familiar to computer games than the students from the rural areas, since video/computer games are very commonly played in the urban areas.

Logistic regression models were used to predict academic outcomes among the students. Estimates indicated that probability of spending 5+ academic work hours would increase by 0.36 and 0.48% by increasing one hour on academic research work and university assignments respectively. Social media use was negatively related with 5+ academic work hour. Male students were less probable to spend 5+ academic work hours than female students. Hunley et al. (2005), Lenhart (2005), Rideout et al. (2010) and Tang and Patrick (2018) also reported the similar results for gender differences effect on academic work hours. Similarly, positive coefficient of postgraduate degree implied that such students would be highly probable spending more time on academic research work. It also implied that the postgraduate students were more mature than undergraduate students and they learnt through experience to spend more time on academic research work. This finding was supported by Stephens (2005) and Bianchi et al. (2020).

The negative coefficient of rural background variable indicated that the students from rural areas had low probability of spending 5+ academic work hours as compared to the students from the urban areas. The reason lies in the fact that such students would not have access to the technology when they were in rural areas. So, these students having access to laptop technology would spend overall more time on non-academic activities, namely watching movies (Barak, Lipson & Lerman, 2006), and playing games (Fried, 2008). However, it cannot be concluded that the students from urban areas do not use laptops for non-academic activities. Surprisingly using social media, watching movies, dramas and playing computer games were not associated with 5+ academic work hours in the present study.

High CGPA score was negatively related with playing computer games variable and using social media. This implied that spending one more hour playing computer games and using social media would decline probability of having high CGPA score by 0.04% and 0.05% respectively. Dumais (2008) and Tang and Patrick (2018) also found playing video games was associated with lower odds of having high grades. This finding implies that parents should monitor the amount of time spent by children using social media and playing video games in ensuring higher academic outcomes.

Using the cross-sectional data in the present study is the limitation because cross-sectional data does not take into account rapidly changing technology overtime. Future research should consider laptop computer and interactive social media use and academic outcomes over a period of time. The study used the information on technology and social media use and academic outcome reported by the students. The reported information can be over-estimated or under-estimated by the students. However, many studies used reported information (Rideout et al., 2010, Tang & Patrick, 2018). The present study employed small sample size considering only one university. Future research needs to consider a large representative sample size taken from many universities. However, the findings of the present study provide insights on laptop computer and social media use and associated academic outcome in the context of Pakistan where wider use of computer technology has started in the recent past.

5. Conclusions

Although the present study has certain limitations, it contributes to the body of literature in many ways. This study is one of the pioneer studies examining laptop computer and social media and the associated academic outcomes among the university students. Although the students are found using all types of social media and watching movies, dramas, we found that playing computer games and using social media were significantly associated with lower probability of having high CGPA scores. Female students were spending more time on academic work than male students. Male students were also associated with lower probability of spending 5+ academic work hours than female students. Findings of the study are important for parents and teachers. They should keep close attention whether students are using laptop computers for academic activities or spending much time watching movies, dramas, playing computer games or using social media. This check can be confirmed by grades of the students on regular basis. The role of faculty becomes utmost important in encouraging and engaging university students in different academic research and assignments while using laptop computers. Particular attention is required for students residing in hostels. Leaving these students at their own may decline their academic outcomes. Visiting hostel and meeting with faculty by parents would be helpful for ensuring high grades as the boarder students will be caring for their studies.

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