Internet Usage by Adolescents
Implication on their Studies and Academic Performance

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Abstract

Educationists and researchers have been constantly investigating the effects of media and technologies such as the Internet, on the psycho-social behaviour of adolescents. Moreover, recent studies conducted suggest that the use of the Internet impact the academic performance of students. This paper aims to explore the effects of Internet usage on higher secondary school students' academic performance. To collect data, a personal information form, and an Internet Usage Scale developed by the authors were applied to 511 students from 11 different schools of Darjeeling district. Results revealed that the time spent online was found to be associated with academic performance while Internet usage did not correlate very well to academic scores. Family demographics did not play any role on Internet Usage.

INTRODUCTION

It is interesting to note that before the Internet and communications technology was made accessible to the general public globally, their use had been limited to only educational institutes and defense establishments. Apparently, the policy makers knew that it would revolutionise research activities and

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later teaching-learning experiences. Historically, it was during the 1980s that computer-based communication was introduced. However, the Internet and various other types of computing technology were accessible to the general public only in 1993 (McMillan and Morrison, 2006). While Internet, on one hand can deliver enriching learning experiences to a student, it also brings forth the possibilities of other potential costs which may result in the degradation of high school students' scholastic performance. Its use for educational purposes include students utilising their online time to improve their knowledge relevant to their academic interests. For example, downloading study materials, watching Powerpoint presentations relevant to the student's academic courses, watching online lectures, etc. Its use for non-educational purposes are usually related to entertainment, viz., watching movies online, listening to music online, online gaming, watching television channels, getting online on social media and instant messaging, etc.

As of today, the Internet has surpassed all other media in terms of deliverance of knowledge with academic content. With the commercial applications like Byjus, online educational organisation like the Kahn Academy and the Government of India's free online portal like the 'Swayam' which imparts educational courses for students, to name a few, the Internet has been tapped in every conceivable way to better the means of providing the best to the students. In other words, it has become a student's paradise, if put to good use. However, Internet use has both positive and negative aspects (Guan, 2009), be it for academic or non-academic purposes. The positive aspects include increased self-confidence, increased frequency of communication with friends and family, and feelings of empowerment (Clark, 2004). But if used excessively, to the point of addiction, it can also have adverse consequences, which may affect one's personal, occupational, mental and physical well-being (Murali, 2007). An individual may initially use the Internet for purely academic purposes but later get indulged more in non-academic activities. Whatsoever the reason, the individual gradually becomes more and more Internet dependent. This existence of Internet dependency among Internet users of different ages was first investigated by Young (Young, 1996). Scherer narrowed the research by Young by focusing on the existence of Internet dependency among college students (Scherer, 1997). Both Scherer and Young were of the opinion that excessive Internet usage has an impact on scholastic performance among students. Research surveys show that the Internet usage by students are not primarily for gaining learning experiences, but more so on indulgences on entertainment and other activities. There is ample literature to prove that the Internet

can distract students from their study (Young and Rogers, 1998), which could also be explained by the fact that students tend to get indulged so much on online activities that it leaves them with little or no time for studies (Griffith, 2000).

The problem of indiscriminate use of the Internet by the school-going adolescents is a universal one. Over the past decade, India has seen a boom in the Internet and communication technology related Industry. Internet service providers and mobile phone companies have made data and smart phones available at much cheaper rates which has led to the Internet becoming easily available and the devices to access them, affordable to almost everyone. People of all age groups, and more specifically the school-going adolescents are more prone to get addicted to their use as we have started to spend more time in online activities. High school students are at the middle of the adolescence period and hence more vulnerable to addiction since, of late, students have to compulsorily and regularly go online for many educational purposes. Once they start surfing the Internet, they get drawn on to social media platforms and other online activities like, online gaming, chatting, online shopping, etc. This leads, in the long run, to a decline in the academic performance of the students. This has necessitated their parents, teachers and guardians to keep a tab on the extent of Internet usage and the online activities. It is therefore very imperative to know what the students are using the Internet for, and find answers to some very pertinent questions. Is the use of the Internet amongst students limited to educational purposes? If the Internet is also used for purposes other than academic activities, then does this lead to a decline in the academic performances of the students?

In this study, the researchers have investigated the Internet usage activities of Higher Secondary students belonging to the hill region of Darjeeling District in West Bengal, India. The Internet usage data was then correlated with academic performance data of the students to see whether Internet usage really affected their studies.

Objectives of the Study

Since the Internet is available to most of the students, it has become imperative to analyse the relationship between their Internet usage and academic success. Though, numerous studies have been carried out all over the world looking into these aspects, the researcher did not find any literature pertaining to any kind of such research study being carried out in her study area, which comprises the hilly areas of Darjeeling district, in the state of West Bengal. As with all adolescents, the teenagers of the study area are no different when it comes to being tech-savy or Internet-savy. Therefore, it is extremely relevant to expect high Internet usage levels of secondary

school students, and even more pertinent to examine the relationship between students' Internet usage and their academic performances taking into account their gender, school type, kind of families they belong to, and more importantly the time they spend on the Internet. Therefore, the more specific objectives of the study were put forth as follows:

1. To find out the level of Internet usage of adolescents studying in higher secondary school students.
2. To find out the percentage of Internet usage by students for academic purposes.
3. To find out whether there was any significant difference among boys and girls studying in higher secondary schools in terms of the level of Internet usage.
4. To find out if there is any significant difference in the level of Internet usage of the adolescents studying in the higher secondary schools with respect to certain demographic variables.
5. To find out if there is any significant relationship between Internet usage and the academic achievement of the adolescents studying in higher secondary school.

Research Methodology

A survey method using a structured questionnaire, and an Internet Usage Scale was used to gather the information required for the study using a random sampling approach. Sample of the study consists of 511 higher secondary students from 11 different Schools of Darjeeling district. The questionnaire was divided into two sections: (i) Demographics and (ii) the Internet Usage Pattern. The first section of the questionnaire consisted of questions related to the demographic details like gender, type of school, parent's education, their occupation, type of family, etc. The second section included questions pertaining to their generic internet usage activities and internet usage pattern. Questions like preferred activity online, time spent online daily, purposes, etc., were included in this section. The Class X results of West Bengal Board of Secondary Examinations were taken from the school records to calculate academic scores and taken as academic performance of the students.

Internet Usage Scale (IUS)

The IUS was developed by the researchers. It was constructed to understand the effect of Internet usage among the adolescents. The scale measures the easeness of use, the purpose and overall feelings of detachment in individuals through a self-report Likert-type scale comprised of 19 items rated on a five point scale with options ranging from 1 "Strongly disagree" to 5 "Strongly agree". 17 of these items are positive statements and the rest are negative statements. The maximum score was 95 and minimum score was 19. The high scores on the scale indicate an individual's high Internet activity as well as the level of detachment, which may increase the tendency to addiction.

Reliability and Validity of the Scale

The IUS was initially constructed with 23 items. To test the reliability of the scale, a pilot study was carried out, wherein, the scale was administered on a randomly selected sample from four higher secondary school students and their responses were scored on a 5 point scale. A Cronbach Alpha for the total instrument was conducted in order to test for reliability of the 23 items in the questionnaire taken as a whole. The Cronbach coefficient alpha for raw score variables for the total instrument was found to be 0.59. To choose internally consistent items, four items were deleted from the Internet Usage Scale to achieve the reliability close to 0.630 (Mukhia and Saileela, 2019). Therefore, the IUS which was finally presented to the students for this study had 19 items. The initial draft of the scale was also presented to the experts, among who were psychologists, sociologists and educationalists, for their opinions. The scale has high face validity since all the items have been included in the scale only after seeking the opinions and approval of the experts. The scale also possesses content validity because only those items which significantly discriminated between high scores and low scores were retained in the scale. According to the validity and reliability studies, the IUS is a valid and reliable instrument.

Data Analysis

The datas obtained from the questionnaires were analysed with the help of IBM's statistical package for social sciences, the SPSS 16.0 program. Frequency, percentage, mean and standard deviation were used in a descriptive analysis of the data. For correlational analysis, two groups were compared by independent samples t-tests and for determining Pearson's correlation coefficient, a Bivariate Correlation was carried out. The significance level was taken as .05 from the analysis of data.

Results

Internet Usage Pattern: Time spent, preferred online activity and the medium of use

In general, 26.8 per cent of the students were found to spend less than 1 hour for Internet daily, about 48.6 per cent spend 1–3 hours, 15.4 per cent spend an average of 3–6 hours daily and almost 9.1 per cent of the students were found to spend more than 6 hours for Internet daily. But the majority of students were found to spend a moderate 1–3 hours on online activities. The percentage of Internet usage among the students in terms of gender and the locality of school were also estimated. It is apparent from Table 1, that, girls preferred to use the Internet for a limited period of time while the boys seem to be uncontrollable and tend to use it for a prolonged period of time. While students from rural schools spent less time online (82 per cent spent 1–3 hours against only 18 per cent spending more than

3 hours) their counterparts from urban schools were found to spend more time on online activities (68.9 per cent spent 1–3 hours against 31.1 per cent spending more than 3 hours).

In general, it is interesting to note that girl students accessing the Internet purely for academic purposes was about 24.6 per cent while the percentage of the boys was only about 9.8 per cent. It was also found that an almost equal percentage (25.2 per cent) of girl students went online only for social media while boys (11.1 per cent) were found to be less interested in social media. This study reveals that the boys usually prefer to go online looking for entertainment (20.0 per cent) rather than spend time on the Internet for educational purposes or on social media. It is also evident that girl students prefer to keep a balanced approach on their online activities (Entertainment 15.3 per cent, Social media 25.2 per cent, Educational 24.6 per cent).

With the advent of 4G, smart phones and data made available at cheaper rates, access to the Internet nowadays has become very easy, even in rural areas. Mobile phones have become cheaper and almost everybody is able to afford one. The students are no exception. It was evident from the data collected; 90.1 per cent of students use the mobile phone preferentially to surf the Internet, the rest 9.9 per cent use all three media for surfing the Internet, viz., mobile phones, laptops or tablets and cybercafes. None of the adolescents prefer to go online through a desktop nowadays.

Table 1
Time spent per day in Internet Usage Activities (in percentage)
Frequency of Internet Usage

Time spent on the Internet	Rural		Urban	
	Male (%)	Female (%)	Male (%)	Female (%)
Less than 1 hour	29	44	13	21
1–3 hours	47	44	45	59
3–6 hours	17	8	21	16
More than 6 hours	7	4	21	4

Internet for Education Purpose

On an average only 17.2 per cent of the adolescents were found to use the Internet purely for educational purposes. The bulk of the students (47.4 per cent) used it solely for getting project ideas and materials, 14.6 per cent used it for getting online study materials, 3.6 per cent went online to download maps and pictures and only 2 per cent used it for references. The rest 32.4 per cent of the students used it for any of the two, three or all four purposes. Here too, it was found

that the girl students (58.3 per cent) were eager to avail internet facilities to help them in getting ideas and materials for their project work than the boys (36.5 per cent). Girls were also found to spend more time than the boys for online tutorials (Girls 3.4 per cent, Boys 1.7 per cent).

Internet for Non-educational Purposes

It was found from the study that 17.7 per cent and 18.2 per cent of the students use the Internet purely for entertainment and for social contacts. Amongst the non-academic use, social networking media was the most preferred activity online for most of the students. On an average 68.6 per cent of high school students spend their data purely on social media, four times the amount spent for educational purposes. Here too, girl students (79.6 per cent) tend to spend more time and data on social media than the boys (57.7 per cent). Moreover, girls are found to spend more time and use more data than the boys for online shopping (Girls 12 per cent, Boys 5.1 per cent), watching music videos or movies (Girls 58.9 per cent, Boys 36.5 per cent) and online storage (Girls 8.4 per cent, Boys 6.1 per cent). Boys on the other hand spend more time and data on the Internet for e-mails (Boys 6.8 per cent, Girls 3.8 per cent), Wikipedia (Boys 6.7 per cent, Girls 5.6 per cent) and online games (Boys 17.0 per cent, Girls 7.9 per cent).

Internet Usage Levels

The mean and S.D. of the entire sample for the Internet Usage Scale were calculated and presented in Table 2. The mean and standard deviation of the total group are 63.05 and 6.871 respectively. A student's maximum score is 95. The mean value is greater than the mid score of 47.5. The mean value of girls 63.91 for Internet usage is slightly greater than the mean value of boys 62.05. Therefore, it is apparent that Internet usage of adolescents studying in higher secondary students is high.

Table 2
Mean and Standard Deviation of Internet Usage of Higher Secondary students

Internet Usage	N	Mean	Standard Deviation	M+1D	M-1D	Level
Entire Sample	511	63.05	6.871	69.92	56.18	High
Boys	236	62.05	6.564	68.61	55.49	High
Girls	275	63.91	7.023	70.93	56.89	High

An independent samples t-test performed on the above variables (Internet usage and Gender) show that there is significant difference ($p<.01$) between boys and girls studying in higher secondary schools with respect to Internet usage as is evident from Table 3.

Table 3
Mean Difference between Boys and Girls in Internet Usage

Gender	N	Mean	SD	't' value	dF	Sig (2-tailed) 'p' value
Boys	236	62.05	6.564	-3.067	509	0.002
Girls	275	63.91	7.023			

Several other demographic variables were tested against the dependent Internet usage variable using the independent samples t-test. Since some of the sample sizes under test were unequal, the assumptions for homogeneity was needed to be maintained so that the standard deviations of our dependent variable were equal in both populations. In all cases, the significance level for Levene's test for equality of variances was found to be > 0.05. A cursory glance at Table 4 indicates that there is no significant difference (p>0.05) between any of the demographic variables and Internet usage of higher secondary school students.

Table 4
Mean Scores of students from Internet Usage Scale by demographic characteristics

Demographic Characteristics		N (%)	Mean	SD	'p' value
Father's Education	Below High School	215 (42)	62.97	7.136	0.750
	High School and Above	296 (58)	63.16	6.683	
Mother's Education	Below High School	388 (76)	62.81	7.017	0.162
	Above High School	123 (24)	63.80	6.815	
Father's Occupation	Government Job	49 (10)	63.43	7.024	0.685
	Private Job/Unemployed	462 (90)	63.01	6.861	
Mother's Occupation	Government Job	8 (2)	60.38	9.303	0.268
	Private Job/Unemployed	503 (98)	63.09	6.829	
School Type	Urban	277 (54)	63.42	7.018	0.186
	Rural	234 (46)	62.61	6.681	
Family Type	Nuclear	317 (62)	63.42	6.888	0.122
	Joint	194 (38)	62.45	6.818	
No. of Family members	>= 5	304 (59)	62.80	6.843	0.327
	< 5	207 (41)	63.41	6.912	

Relationship of average duration of daily Internet Use, Internet Usage Levels and Academic Performance

The descriptive statistics show that the adolescents' average duration of daily Internet usage was found to be 2.07 hours with a standard deviation as *SD* = 0.876. The relationship of the average duration of daily Internet use with the Internet usage levels computed from the Internet Usage Scale was also determined. Pearson correlation analysis results reveal a positive significant relationship at a medium (r = .179, $p < .01$), between these variables (Table 5). The result is significant since it implies that with the increase in the duration of the Internet the Internet usage level also increases. The study also aimed at investigating the relationship between the average duration of daily Internet use, the Internet usage levels and their effect on academic performance of the students. A low-level, significant and positive relationship was found between students' duration of daily Internet use and academic performance ($r = .103$; $p < .05$). However, no significant relationship was found between the students' Internet usage level derived from IU Scale and academic performance as is evident from the results shown in Table 5, which presents the descriptive and correlation between internet usage and academic performance.

Table 5
Mean, Standard Deviation, and Correlation coefficient among the three variables Daily Internet use, Internet Usage and Academic performance

Usage	Mean	Standard Deviation	Daily Internet Use	Internet Usage
Daily Internet Use	2.07	0.876		–
Internet Usage	63.04	6.876	0.179*	–
Academic Score	45.85	11.665	0.103**	-.026

*$p < .01$, **$p < .05$.

Discussion and Conclusion

The results of our study are very similar to the findings of Young (1996), Scherer (1997), Morahan-Martin and Schumacher (2000), Anderson (2001), Kubey et al. (2001), Metzger et al. (2003), and Fortson et al. (2007) that there is an existence of Internet dependency also among higher secondary students, the mean scores on Internet usage being much higher than the mid score. This study also confirms findings by Young (1996), Rumbough (2001), and Metzger et al. (2003) that the most predominant reasons for which students use the Internet is for recreational activities. Internet usage for academic work was in the proportion of 17.2 per cent of our population in contrast to the

arguments by Lubans (1999), Scherer (1997), and Jones (2002) who found that the primary reason for students' online activity was purely academic in nature. Our study furthermore reveals that there is a difference in activities of boys and girls when it comes to the preferential online activity. It was found that while boys were more engaged in recreational activities online, girl students use the Internet more for academic work. It was further seen that there is no linear relationship between Internet usage and academic performance. We however, decided to investigate whether this remained true if the time spent online was correlated to academic performance. A low-level, significant and positive relationship was found between students' duration of daily Internet use and academic performance (r = .103; p < .05). The finding, which has an interesting similarity with the results of Jackson et al (2006) suggest that adolescents who spent more time on the Internet had better academic performance. The research was primarily focused on finding out the extent of Internet usage by adolescents, specifically the students studying in high schools, to determine whether the use could be categorically termed as healthy or unhealthy.

From the present study, it may be concluded that although the Internet usage has not had an effect on the student's academic performance, but still, the addictive-like features of the Internet will sooner or later make them potential victims of its negative effects since they are found to use it excessively. As it has already been mentioned, the main reason for providing the Internet for education was to enhance students' academic performance, more focused studies relating to the influence of the Internet on students needs to be carried out.

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