

Original article

GENDER DIFFERENCES IN INTERNET USAGE AMONG HIGH SCHOOL STUDENTS: A SURVEY IN RAJSHAHI CITY

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ABSTRACT

The internet use by students has increased dramatically in recent years and also surfing the internet has become an important part of student life. To improve standard of education with diversified opportunities in internet, ICT education is already in place in Bangladesh. In this context, the authors' survey aimed at identifying gender differences in internet access and usage preferences among secondary level students in Rajshahi city. Data have been collected from 622 students of level IX and X of different types of schools in Rajshahi city under a subproject supported by Faculty of Science, Rajshahi University. The students have been selected using random sampling. Findings of the study support the postulated hypotheses that activities of boys and girls differ in the prevalence, pattern and purpose of internet use. Boys are found to be engaged with internet more in time, money and entertainment. Girls on the other hand fulfill their study using internet in greater proportion. This study provides pragmatic insights to the internet usage among high school students would be supportive to achieve the goal of Government regarding internet use for learning.

Key words: Internet usage; Gender difference; High school students; Rajshahi City

INTRODUCTION

The internet is presently being used as a source of teaching and learning materials. The internet, in particular, has provided people especially students with a foundation for meeting their information needs (Christopher & Maria-Gorreti, 2012). Number of studies has noted that adoption of ICT (information and communication technologies) for teaching-learning processes have some advantages (Cheng & Fu, 2009; Tutkun, 2011). To make use of diversified opportunities of internet, Bangladesh government has already adopted master plan for ICT education (2012-2021) (Ministry of Education, Bangladesh; 2013). With this

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effort internet uses among school students whether at home or schools have increased dramatically. High computer, smartphones ownership, and household internet connectivity rates have increased internet use among secondary school students (Chen et al., 2014).

Prevalence of internet use is less in women than men (Dufour et al, 2016; Anunobi and Mbagwu, 2009). Having more parental and social support along with higher computer self-efficacy, male are usually more advanced users of internet than female (Ahmad et al., 2018; Deechuay et al., 2016; Vekiri & Chronaki, 2008; Reinen and Plomp, 1993); however, better performance of girls in information literacy than boys is reported in the literature (Punter, et al., 2017; Gebhardt et al., 2019). Gender differences in internet usage and web information seeking behaviors have attracted considerable interests. Several studies have reported that playing games are the most popular internet activity among boys, while emailing friends or online communication is found to be the most popular internet activity among girls (Dufour, 2016; Papastergiou & Solomonidou, 2005; Volman et al., 2005). Tsai (2006) has reported a similar finding in Taiwanese high school students' perceptions of the internet. Liu and Huang (2008) have reported that there are some significant differences between male and female behavior in the online reading environment. Hupfer and Detlor (2006) have found gender differences in web searching; women are more into search reference materials about medical and government information, whereas men tend to focus on information about investment, purchase and personal interests. Tutkun (2011) argues that female students use the internet in a more functional sense than male students.

Gender gap is also evident in learning from internet. As strategic learners, female students can adapt themselves better than the males in asynchronous learning situations (Tsai et al., 2015). Meyers-Levy (1989) argues that being comprehensive processors, females are likely to assimilate all available information and elaborate more on it, whereas being selective information processors, males do not usually engage in wide processing of all available information. Suana (2018) has noted that females have better awareness about the benefit of the internet in learning, while males are mostly active in using internet for entertainment and accessing video and animation. The difference between male and female in the preference of internet program and learning is probably due to the fact that females tend to be more conscientious than males. Duckworth and Seligman (2006) have explained how self-discipline is more a natural phenomenon in girls than boys, which gives the girls edge to learn more

functionally and to achieve better score. This could result in another form of gender gap in technology.

In a study on university students of Bangladesh, Sultana and Imtiaz (2018) have found that gaming is more preferred online activity in males than in females, whereas females use internet more often for commercial transaction than the males do. Some other studies in Bangladesh have addressed internet usage pattern and addiction among university students (Mamun and Griffiths, 2019; Afrin et al., 2017; Islam and Hossin, 2016; Uddin et al., 2016; Karim and Nigar, 2014; Mostofa, 2011; Roknuzzaman, 2006); however, seldom have we found studies on gender gap in internet use among secondary school levels in Bangladesh.

The aim of this study is to investigate the possible gender differences in internet usage including prevalence, pattern and purposes among secondary level students in Rajshahi City, Bangladesh.

MATERIAL AND METHODS

This is a micro level cross-sectional study. Data were collected from 622 students of level IX and X of different types of schools in Rajshahi City under a project funded by Faculty of Science, Rajshahi University. Sample of schools was taken from the list of all institutions of secondary education in Rajshahi City Corporation. Since the socio-economic backgrounds of the students were expected to be different, samples of schools were selected from each of the four groups such as Government, Non-government, Madrasas and English medium schools. From the list of all schools in Rajshahi City Corporation, five schools were selected at random out of which two are Government school, one is non-government school, one Madrasas and one English medium school. However, due to obvious difficulty of identifying the children who do not go to school, we restricted our study to only school-going children. Data had been collected from all the students of level IX and X of selected schools who were present in the class at the day of survey. The survey was conducted for the period from March to May, 2019. We got permission from the selected school authorities to contact their students. Also, we communicated with the parents of our selected students for getting their permission, after getting permission we took written consent from students. Some variables had been considered to determine the associated factors of internet usage among students (all variables mentioned in Table 1). To present the data descriptive statistics were used. Chi-square test was used for

testing association between two variables each having multiple categories. If too many cells possess expected frequencies less than 5, Likelihood Ratio (LR) test is more appropriate. The Linear-by-Linear Association (LLA) test is suitable for testing association between two ordinal variables. If both variables have only two categories, Fisher's Exact (FE) test serves better decision than others. To test mean difference, independent sample t-test was used.

RESULTS

Basic characteristics of respondents: Basic characteristics of respondents are reported in Table 1. Out of 622 respondents 55.5% are from Government schools, 35% were from non-government school, 6.0% were from Madrasas and 3.5% were from English medium schools. Of them, 50.3% are studying at class IX and 49.7% are at class X. Most of the respondents were from science group (86%). Almost half of the students participated in this study were boy and others were girl. About 57% of the respondents used mobile personally. Majority of the students (80.9%) were used to with internet and about 60% of them used internet regularly. Most of the students used mobile data for internet use. About 31% of the non-users said they were not interested to internet and around 29% of them thought internet have negative impact on study.

Table 1: Basic characteristics of respondents

Variable		Frequency	Percentage
Category of school	Government	345	55.5
	Non-government	218	35.0
	Madrasha	37	6.0
	English medium	22	3.5
Level	Class IX	313	50.3
	Class X	309	49.7
Group	Science	535	86
	Non-Science	87	14
Gender	Boy	313	50.3
	Girl	309	49.7
Mobile use	Yes	356	57.4
	No	264	42.6
Internet use	Yes	503	80.9
	No	119	19.1
Device of internet use	Mobile	411	84.4
	Computer	54	11.1
	Tab	22	4.5

Network of internet use	Mobile data	327	67.7
	Wi-Fi	156	21.3
Reason for not using internet	No internet/ expensive	3	2.8
	No interest on internet	34	31.2
	Negative effect on study	32	29.4
	Parents restriction	22	20.2
	Other than above	18	2.4

Gender gap in prevalence and pattern of internet use among high school students:

Significant gender difference was found in prevalence of internet use. About 81% of high school student used internet to some extent (for boys 86.26%, for girls 75.4%). There was significant variation in time slot preference of internet usage due to gender. Significant difference between boys and girls was also noticed in internet usage frequency. Majority of boys used internet regularly, while majority of the girls used internet occasionally. Boys used internet more frequently at night (7 pm to 6 am) and noon (12 pm to 5 pm), while girl's used internet frequently in the morning (6 am to 12 pm) and afternoon (5 pm to 7 pm). Majority of the boys started using internet before level VII whereas around 60% girls started using internet level IX-X. It was also observed that there was a significant variation between boys and girls in level of skill on internet usage. Greater proportions of boys were advance internet user, whereas girls were mostly basic internet user. About 69% of the parents prohibited their children to use certain websites; however, no gender difference was observed (see Table 2).

Table 2: Gender gap in prevalence and pattern of internet use

		Total (%)	Gender		p-value for test of association
			Boys (%)	Girls (%)	
Internet use	Yes	503 (80.9)	270 (86.26)	233 (75.4)	0.001
	No	119 (19.1)	43 (13.74)	76 (24.6)	
Internet usage frequency	Regularly	264 (59.5)	180 (72.87)	84 (42.64)	< 0.001
	Occasionally	180 (40.5)	67 (27.13)	113 (57.36)	
Time slot of internet usage (24 hours format)	Morning(6-12)	9 (1.9)	3 (1.17)	6 (2.91)	< 0.001
	Noon(12-17)	65 (14.0)	49 (19.07)	16 (7.67)	
	Afternoon(17-19)	146 (31.5)	64 (24.9)	82 (39.81)	
	Evening(19-24)	180 (38.9)	106 (41.24)	74 (35.92)	
	Night(24-6)	63 (13.6)	35 (13.62)	28 (13.59)	
Grade of starting internet use	Within Class V	55 (12.58)	38 (15.51)	17 (8.85)	< 0.001
	Class VI-VIII	278 (63.62)	165 (67.35)	113 (58.85)	
	Class IX-X	104 (23.80)	42 (17.14)	62 (32.3)	
Skill on internet	Basic	183 (38.04)	67 (25.67)	116 (52.73)	< 0.001

	Medium	148 (30.77)	88 (33.72)	60 (27.27)	
	Advance	150 (31.19)	106 (40.61)	44 (20.0)	
Parents restriction on using certain website	Yes	334 (68.9)	191(72.08)	143(65.0)	0.095
	No	151 (31.1)	74(27.92)	77(35.0)	

Table 3 shows the expenses of mobile and internet usage by gender. Significant gender difference was found in expenses of both mobile and internet usage. On an average, monthly expenses of boys for mobile and internet usage were Tk. 310 and Tk. 399 respectively. On the other hand, girls spent respectively Tk. 181 and Tk. 225 for mobile and internet usage.

Table 3: Gender gap in expenses of internet use

Variables	Gender (N)	Mean	SD	95% CI for mean		p-value
				Lower	Upper	
Expenses on mobile or others	Boy (208)	310.29	64.068	0.41	257.34	0.049
	Girl (113)	181.42	50.817			
Expenses on internet	Boy (221)	398.56	67.705	67.57	279.70	0.001
	Girl (137)	224.93	33.796			

Gender gap in purposes of internet use among high school students: Table 4 represents the use of internet in study purpose by gender. Significant variations between boys and girls were found in internet usage for study, study fulfilled by internet, use of email to communicate with the teacher and online group for study. Greater proportions of girls used internet most of the time for study purpose than boys did. Proportions of girls were higher than boys among students who fulfilled their study more than 40% using internet. Almost 50% of the students never used email to communicate with their teacher. Only 3.13% students extensively used internet for this purpose and proportions of extensive use of email are found to be higher among boys than girls. Based on student's opinion regarding online group study, around 27% students extensively used online group for study (for boys 39.69% and for girls 12.05%).

Table 4: Gender gap in internet use in study purpose

		Total (%)	Gender		p-value for test of association
			Boys (%)	Girls (%)	
Frequency of Internet usage for study	Most of the time (hours)	208 (44.54)	98 (38.58)	110 (51.64)	0.018
	Once in a day	106 (22.70)	68 (26.77)	38 (17.84)	
	Once in a week	58 (12.42)	38 (14.96)	20 (9.39)	
	Once in a month	37 (7.92)	21 (8.27)	16 (7.51)	
	Occasionally	58 (12.42)	29 (11.42)	29 (13.62)	
Study fulfilled by internet	> 50 %	33 (6.83)	9 (3.44)	24 (10.86)	0.010
	(41-50 %)	42 (8.70)	19 (7.25)	23 (10.41)	
	(31-40 %)	46 (9.52)	27 (10.31)	19 (8.6)	
	(21-30 %)	65 (13.46)	41 (15.65)	24 (10.86)	
	(11-20 %)	139 (28.78)	85 (32.44)	54 (24.43)	
	(10%)	134 (27.74)	69 (26.34)	65 (29.41)	
Use of email to communicate with the teacher	(0%)	24 (4.97)	12 (4.58)	12 (5.43)	0.039
	Extensively	15 (3.13)	11 (4.28)	4 (1.8)	
	Frequently	39 (8.14)	27 (10.51)	12 (5.41)	
	Sometimes	64 (13.36)	33 (12.84)	31 (13.96)	
	Not much	126 (12.31)	73 (28.4)	53 (23.87)	
Online group for study	Never	235 (49.06)	113 (43.97)	122 (54.96)	< 0.001
	Extensively	129 (26.82)	102 (39.69)	27 (12.05)	
	Frequently	113 (23.49)	63 (24.51)	50 (22.32)	
	Sometimes	52 (10.81)	24 (9.34)	28 (12.5)	
	Not much	63 (13.10)	22 (8.56)	41 (18.31)	
	Never	124 (25.78)	46 (17.9)	78 (34.82)	

Internet usage for entertainment by gender is given in Table 5. About 33% of the students used internet most of the time for chatting. Majority of the students who use internet for chatting regularly were boys. In contrast, majority of the students who used internet for chatting occasionally or just once in a month were girls. Thus, significant gender difference was found in internet for chatting. It is observed that boys used internet most of the time for entertainment such as chatting, Twitter/Facebook, web browsing and downloading than girls. Boys used internet for entertainment more often than girls did; however, no significant difference between boys and girls was observed in internet usage for enjoying music/movie and watching YouTube.

Table 5: Gender gap in internet use for entertainment

		Total (%)	Gender		p-value for test of association
			Boys (%)	Girls (%)	
Internet usage for chatting	Most of the time	135 (33.09)	98 (39.84)	37 (22.84)	< 0.001
	Once in a day	140 (34.31)	88 (35.77)	52 (32.1)	
	Once in a week	34 (8.33)	13 (5.28)	21 (12.96)	
	Once in a month	21 (5.15)	9 (3.66)	12 (7.41)	
	Occasionally	78 (19.12)	38 (15.45)	40 (24.69)	
Internet usage for Twitter/ Facebook	Most of the time	109 (21.29)	86 (36.6)	23 (14.94)	< 0.001
	Once in a day	122 (23.83)	79 (33.62)	43 (27.92)	
	Once in a week	44 (8.59)	20 (8.51)	24 (15.58)	
	Once in a month	30 (5.86)	10 (4.26)	20 (12.99)	
	Occasionally	84 (16.41)	40 (17.02)	44 (28.57)	
Internet usage for web browsing	Most of the time	89 (26.02)	65 (29.68)	24 (19.51)	< 0.001
	Once in a day	78 (22.81)	63 (28.77)	15 (12.2)	
	Once in a week	75 (21.93)	50 (22.83)	25 (20.33)	
	Once in a month	23 (6.73)	11 (5.02)	12 (9.76)	
	Occasionally	77 (22.51)	30 (13.7)	47 (38.21)	
Internet usage for enjoying music/ movies	Most of the time	178 (40.00)	103 (42.74)	75 (36.76)	0.092
	Once in a day	90 (20.22)	48 (19.92)	42 (20.59)	
	Once in a week	97 (21.81)	53 (21.99)	44 (21.57)	
	Once in a month	41 (9.21)	14 (5.81)	27 (13.24)	
	Occasionally	39 (8.76)	23 (9.54)	16 (7.84)	
Internet usage for playing games	Most of the time	153 (35.83)	98 (40.0)	55 (30.22)	< 0.001
	Once in a day	106 (24.82)	73 (29.8)	33 (18.13)	
	Once in a week	51 (11.94)	22 (8.98)	29 (15.93)	
	Once in a month	37 (8.67)	15 (6.12)	22 (12.09)	
	Occasionally	80 (18.74)	37 (15.1)	43 (23.63)	
Internet usage for download	Most of the time	141 (32.56)	73 (26.94)	68 (27.91)	< 0.001
	Once in a day	72 (16.63)	80 (29.52)	22 (12.79)	
	Once in a week	98 (22.63)	65 (23.99)	33 (19.19)	
	Once in a month	64 (14.78)	23 (8.49)	41 (23.84)	
	Occasionally	58 (13.39)	30 (11.07)	28 (16.28)	
Internet usage for watching YouTube	Most of the time	175 (37.88)	101 (40.56)	74 (34.74)	0.097
	Once in a day	88 (19.05)	51 (20.48)	37 (17.37)	
	Once in a week	94 (20.35)	52 (20.89)	42 (19.72)	
	Once in a month	55 (11.90)	21 (8.43)	34 (15.96)	
	Occasionally	50 (10.82)	24 (9.64)	26 (12.21)	

DISCUSSION

Findings of the study supported our postulated research hypotheses. Gender gap was evident in prevalence, pattern and purpose of internet use among high school students of Rajshahi City. It was found that with greater proportion boys used internet more often than girls did. Similar reports were also available in studies on internet usage among high school students in different countries like Canada, UK and Israel (Dufour, 2016; Madell and Muncer, 2004, Nachmias et al., 2000). The difference between boys and girls in their internet activities may be due to the fact that girls are more self-organized than boys. Findings of the study suggest that girls are more functional than boys in internet use for academic reason. On the other hand, activities in internet other than study could result internet addiction in boys with greater proportion. This finding also found in a previous study (Dufour et al., 2016).

Significant variation was found in time slot preference of internet usage due to gender among high school student in Rajshahi city. In contrast, Nachmias et al. (2000) found no significant differences in time slot preference of internet use due to gender among Israeli high school students. This dissimilar result was due to the difference in cultural and social norms between countries. Unlike Israel, parents are more concerns about teenage girls than boys in Bangladesh (Sarkar et al., 2014).

It was observed that boys are more advanced internet user than girls. Our finding was in line with number of studies like Ahmad et al. (2018), Deechuay et al. (2016), Vekiri & Chronaki (2008) Madell and Muncer (2004) and Cone (2001) in other population, which argued that usually boys gain more experience than girls of using computer and internet because parents as well as the society encourage them to use technology.

It was also found that boys spend more money per month for mobile and internet usage than girls. Result closed to our finding was reported by Marshall (2010) who found that boys spent money for internet and sport activities, while girls spent for make-up, clothes and books.

It was further observed from the present study that the proportions of girls were greater than boys to use internet most of the time for study purpose. Our result goes with the study on English secondary high school students (Madell and Muncer, 2004). They found that girls used internet more than boys for finding information related to education. Some studies also indicated that females might be more likely to use the internet for education research than males (Tsai & Tsai. 2010; Odell et al., 2000; Weiser, 2000; Durndell & Haag, 2002), although Wesier

(2000) argued that this difference might only exist in younger age groups. Although greater proportion of boys had online group for study than girls had, greater proportion of girls fulfilled their study using internet than boys did. It is thus presumed that boys used this online group other than study purposes such as chatting and facebooking or they were less self-disciplined than girls.

This study further found that boys used internet more often for entertainment such as chatting, Facebooking, playing games, web browsing and downloading than girls did. This finding is aligned with earlier literature. Madell and Muncer (2004) revealed that boys used internet most of the time for entertainment than girls did. Several studies indicated that boys were more likely to play and download games and used internet for searching entertainment topics (Tsai and Tsai, 2010; LaFerle et al., 2000; Nachmias et al., 2000; Odell, et al., 2000; Wesier, 2000).

CONCLUSION

This present study demonstrated the gender gap in internet use amongst high school students in Rajshahi, Bangladesh. Gender difference in prevalence, pattern and purpose of internet use among high school students was evident from this study. Interests of students on various streams of internet were found to be differing significantly between boys and girls, and greater proportions of boys preferred using internet for chatting, Facebooking and playing games, more of girls were using internet for study purpose. Further research on internet use in more detail and in wide population can unveil the reasons for gender gap and its detrimental effect on either sex. Moreover, still a fraction of (about 19%) students in Rajshahi City are non-internet user. The proportion of this group of students may be higher in rural areas, which is a matter of concern for the policy maker and Government of Bangladesh to achieve the target regarding use of ICT for education.

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