Effects of Socio-economic, Demographic and Internet Exposure Factors on School Performance among Selected Students of Nilkhet High School.

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Abstract:

A cross sectional study was carried out to investigate the effects of socio-economic, demographic and internet exposure factors on school performance among 10 grade students of Nilkhet High School. All of the eighty seven students were selected for this study. In this study school performance was measured by class roll number. The lower the class roll number the better the school performance. During Chi-square test grade (A+, A, A-, B, C, D) achieved in the class 9 final examination was taken as dependent variable. An upper grade indicates better school performance than lower grade. Class roll number were highly negatively correlated with the factors-actual income of the family, actual monthly tuition cost, number of rooms in the house, number of earning persons in the family, and this correlation was significant ($p<0.01$) at 1% level of significance. Chi-square test was used to check for association between the category of these factors and the school performance measured by grade. Chi-square test also found highly significant. In Chi-square test some of the other factors namely highest education of mothers ($p<0.05$), highest education of fathers ($p<0.05$), occupation of fathers ($p<0.01$), and occupation of mothers ($p<0.05$) were significant. Maximum 80.7% change in school performance was found when we studied the aggregate effects of fourteen factors. The school performance measured by grade of the students was significantly related with the work on internet and number of friends in Facebook because the Chi-square test shows the P-value<0.01. Maximum 43.5 % changes occurred in school performance when number of friends in Facebook was significant at 1% level of significance and both work on internet and Facebook account were significant at 10% level of significance.

Key Words: Socio-economic, Demographic, Internet Exposure and School Performance.

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1. Introduction:

Academic performance is the ability to study and remember facts and being able to communicate the acquired knowledge verbally or down on paper. A person's education is closely linked to their life chances, income, and well being [1]. The school performance of children is also heavily influenced by socio-economic and demographic factors. Sex has an influence on school performance, although it's a matter of dispute. The environment at home is a primary socialization agent and influences a child's interest in school and aspirations for the future. The socio-economic status (SES) of a child is most commonly determined by combining parent's educational level, occupational status, and income level[2]. It is believed that low SES negatively affects academic achievement because low SES prevents access to vital resources and creates additional stress at home[3, 4, 2]. Research shows that supportive and attentive parenting practices positively affect academic achievement[3]. Maternal characteristics are another key factor that affect academic achievement [5, 3, 4] . Mothers who are more educated and have higher self-esteem have children who receive higher test scores [5, 3]. Smaller family size has been linked with higher academic achievement[3, 4] .

Facility of internet use, time spent on internet and activities on internet plays a great role in the performance of school children. Research has examined the general impact of technology on academic achievement and development of children and teens. Positive and negative effects of technology achievement have been documented. Espinosa, Laffey, Whittaker, and Sheng (2006) investigated the role of technology in early childhood development using data from the Early Childhood Longitudinal Study. The results indicated that access contributed to the learning potential of the students.

2. Materials and Methods:

2.1. Type of Study:

A cross sectional sample survey was carried out among 10 grade students of Nilkhet High School in Dhaka city.

2.2. Basis for Selection of Study Place:

Well communicated.
Assurance from the school authority for full co-operation.

2.3. Study Population and Sample Size :

The study population was the 10 grade students of Nilkhet High School. There were 87 students in grade 10. Among them 14 are assigned to science group, 64 assigned to commerce group and 9 are assigned to arts group. As because there were only 87 students, that's why all of them were included in this study. So sample size (N) was also 87.

2.4. Research Instruments:

Development of the questionnaire: A questionnaire was developed containing both close and open ended questions to obtain relevant information on internet exposure, socio-economic and demographic condition.

2.5. Data Collection:

Questionnaire was asked passively and cautiously not to influence the respondents.

Collection of socio-economic, demographic and internet exposure information:

The part of the questionnaire that was designed to obtain socio-economic information was collected by interviewing the respondents. All of the respondents were interviewed about demographic and internet exposure information. All of the information's were recorded in the respective places of the questionnaire.

2.6. Data Verification:

Questionnaires were checked each day after interviewing and again these were carefully checked after completion of all data collection and coded before entering into the computer. The data was edited if there was any discrepancy (doubt entry, wrong entry etc).

2.7. Statistical Analysis:

All of the statistical analysis and all other data processing were done by using SPSS 16.0 windows program. For tabular, charts and graphical representation Microsoft Word and Microsoft Excel were used.

Descriptive statistics: Descriptive statistics quantitatively describe the main features of a collection of data.

Frequency distribution: A frequency distribution is an arrangement of the values that one or more variables take in a sample. Each entry in the table contains the frequency or count of the occurrences of values within a particular group or interval, and in this way, the table summarizes the distribution of values in the sample.

Bivariate analysis: Bivariate analysis is one of the simplest forms of the quantitative (statistical) analysis. It involves the analysis of two variables (often denoted as X, Y), for the purpose of determining the empirical relationship between them. In order to see if the variables are related to one another, it is common to measure how those two variables simultaneously change together.

Multivariate analysis: Multivariate analysis is based on the statistical principle of multivariate statistics, which involves observation and analysis of more than one statistical variable at a time. In design and analysis, the technique is used to perform

trade studies across multiple dimensions while taking into account the effects of all variables on the responses of interest.

General expression of linear model is given in Equation 1

$$Y= \beta_0 + \beta_1X_1+ \beta_2X_2+\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots +\beta_iX_i + Є \quad (1)$$

Here,

Y= Dependent variable

$X_i = i^{th}$ Factor

3. Results:

3.1. Effects of Socio-Economic and Demographic Factors on School Performance

Descriptive statistics:

Table 1: Descriptive statistics of Socio-economic and demographic factors of school performance (n=87).

Variable	(Mean±S.E.)	S.D.	Minimum	Maximum
Age	15.15±0.07	0.64	14.00	16.00
Total siblings	2.69±0.14	1.21	0.00	5.00
Actual income of the family	28379±714.06	6660.35	18000.00	43000.00
Actual monthly tuition cost	2908±109.83	1024.49	1500.00	5000.00
No of rooms in the house	3.08±0.09	0.73	2.00	5.00
No of earning person	1.78±0.05	0.49	1.00	3.00

Table 1 depicts the mean, standard deviation, minimum and maximum value for socio-economic and demographic factors that affects school performance. The age of the students ranges from 14 to 16 years with a mean value of 15.15 years. Maximum value for sibling was 5. The mean for actual income of the family was 28379 TK, where maximum value was 43000 TK and minimum value was 18000 TK. There were maximum 5 rooms in their house. The mean for number of earning person in the family was 1.78 with a minimum value of 1 and maximum value of 3.

Frequency distribution:

Table 2: Frequency distribution of socio-economic and demographic factors of school performance (n=87).

Variable	Category	Frequency	Percent (%)
Religion	Muslim	77	88.5
	Hindu	10	11.5
Highest education of mother	Class 1-10 & SSC	74	85.1
	Class 11-12 & HSC	12	13.8
	Graduate	1	1.1
Highest education of father	Class 1-10 & SSC	2	2.3
	Class 11-12 & HSC	54	62.1
	Graduate	29	33.3
	Master degree & above	2	2.3
Occupation of mother	Housewife	76	87.4
	Govt. job	7	8.0
	Private job	4	4.6
Type of house	Building	65	74.7
	Building with roof of tin	22	25.3
Monthly tuition cost	1000-2000	26	29.9
	2000-3000	33	37.9
	3000-4000	16	18.4
	4000-5000	22	13.8
Parents are good friend	Yes	63	72.4
	No	24	27.6
Takes care about nutrition	Mother	69	79.3
	Both mother & father	17	19.5
	None	1	1.1

Table 2 shows the percent distribution of the socio-economic and demographic factors that affects the school performance of the students. 88.5% of the respondents were Muslim and 11.5% were Hindu. For 85.1% of the mothers the highest education was either SSC or below SSC. Only 2.3% of the fathers pursue master degree. 87.4% of the mothers were housewife. Remaining 8% engaged with government job and 4.6% with private job. 74.7% students lived in a building house and another 25.3% lived in a building with roof of tin. Monthly tuition cost of the students was divided into four categories, among the groups 2000-3000 TK group retained highest percentage (37.9%). 72.4% students thought that their parents are good friend. For 79.3% cases mothers take care about nutrition.

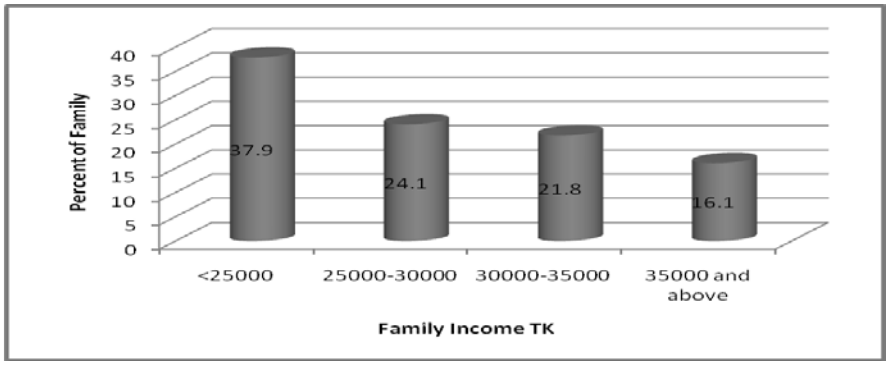

FIG. 1: Category of family income with percent distribution

Figure 1 shows the category of family income with percent distribution. Most of the families (37.9%) income was below 25000 TK. 24.1% families had monthly 25000-30000 TK. Monthly 30000-35000 TK was earned by 21.8% families. Only 16.1% family's monthly income was above 35000 TK.

Bivariate analysis:

Table 3: Cross table with Chi-square test.

Dependent variable	Independent variable	P-value
Grade achieved in class 9 final exam	Highest education of mother	0.048
	Highest education of father	0.015
	Occupation of father	0.036
	Occupation of mother	0.031
	Category of rooms in the house	0.000
	Type of house	0.000
	Grouped earning person in the family	0.000
	Grouped family income	0.000
	Monthly tuition cost grouped	0.000
	Parents are good friend	0.000
	Takes care about nutrition	0.061

Table 3 shows that the school performance measured by grade of the students was significantly related with the highest education of mother, highest education of father, occupation of father, occupation of mother, category of rooms in the house, type of house, grouped earning person in the family, grouped family income, monthly tuition cost grouped, parents are good friend, takes care about nutrition because the Chi-square test shows the P-value<0.01 (for highest education of mother, highest education of father, occupation of father, occupation of mother, takes care about nutrition $p<0.05$). This indicates that their performances are not same due the different categories of the mentioned socio-economic and demographic variables.

Table 4: Correlation between socio-economic and demographic factors and school performance.

Dependent variable	Independent variable	Correlation coefficient	P-value
Class Roll No	Actual income of the family	-0.826	0.000
	Actual monthly tuition cost	-0.689	0.000
	No of rooms in the house	-0.535	0.000
	No of earning person	-0.538	0.000

Table 4 shows that the school performance measured by class roll number of the students is significantly related with the income of the family, monthly tuition cost, number of rooms in the house, number of earning person because the Chi-square test shows the P-value <0.01.

Multivariate analysis:

Table 5: Comparison of linear models to study the effect of factors on school performance (Class Roll No).

Model	Variable(s)	p-value	B	R Square	Adjusted R Square
Model-1 Constant (0.000)	Actual income of the family	0.000	-0.002	0.683	0.679
Model-2 Constant (0.000)	Actual income of the family	0.000	-0.003	0.700	0.689
	Actual monthly tuition cost	0.040	0.006		
	No of earning person	0.504	-2.062		
Model-3 Constant (0.001)	Actual income of the family	0.000	-0.005	0.807	0.769
	Actual monthly tuition cost	0.002	0.016		
	No of earning person	0.008	-12.400		
	Highest education of mother	0.182	5.278		
	Highest education of father	0.643	1.125		
	Occupation of father	0.058	-2.477		
	Occupation of mother	0.041	-5.904		
	Category of rooms in the house	0.831	0.391		
	Type of house	0.076	10.386		
	Grouped earning person in the family	0.001	22.968		
	Grouped family income	0.001	11.090		
	Monthly tuition cost grouped	0.018	-10.503		
	Parents are good friend	0.011	7.418		
	Takes care about nutrition	0.069	4.662		

Model-1 studies only the effects of actual income of the family on school performance. Here all other factors assumed to be constant. Then actual income of the family was found to be significant for class roll no. For model-1 the value of R-square and adjusted R-square were 0.683 and 0.679 respectively.

Model-2 studies the combined effect of actual income of the family, actual monthly tuition cost and number of earning person on school performance. Here two factors (actual income of the family (p=0.000), actual monthly tuition cost (p=0.040)) were found to be significant. For model-2 the value of R-square and adjusted R-square were 0.700 and 0.689 respectively.

Model-3 studies the aggregate effects of fourteen factors. When we consider all of these factors simultaneously then actual income of the family, actual monthly tuition cost, number of earning person, grouped earning person in the family, grouped family income, monthly tuition cost grouped, parents are good friend were found to be significant at 1% level of significance and occupation of father, type of house, takes care about nutrition were found to be significant at 10% level of significance and occupation of mother at 5% level of significance. For model-3 the value of R-square and adjusted R-square were 0.807 and 0.769 respectively.

3.2. Effects of Internet Exposure on School Performance

Descriptive statistics:

Table 6: Descriptive statistics of internet exposure factors of school performance (n=87).

Variable	(Mean ± S.E.)	S.D.	Minimum (hrs)	Maximum (hrs)
Actual time spent on internet	1.12±0.09	0.81	0.00	3.50

Table 6 depicts the mean, standard deviation, minimum and maximum value for internet exposure factor (actual time spent on internet) that affects school performance. The mean of actual time spent on internet was 1.12 hours. For actual time spent on internet the minimum value was 0.00 hour and the highest value was 3.50 hours.

Frequency distribution:

Table 7: Frequency distribution of internet exposure factors of school performance (n=87).

Variable	Category	Frequency	Percent (%)
Internet use	Yes	70	80.5
	No	17	19.5
Work on internet	Don't use	17	19.5
	Educational materials	18	20.7
	Read newspaper	5	5.7
	Browse	3	3.4
	Entertainment	44	50.6
Facebook account	Yes	69	79.3
	No	18	20.7

Table 7 shows the percent distribution of the internet exposure factors that affects the school performance. 80.5% of the students were exposed to internet. 20.7% students used internet for educational purposes. Majority of the students (50.6%) used internet for entertainment. Among the internet users 79.3% have Facebook account.

FIG. 2: Percent distribution of daily time spent on internet.

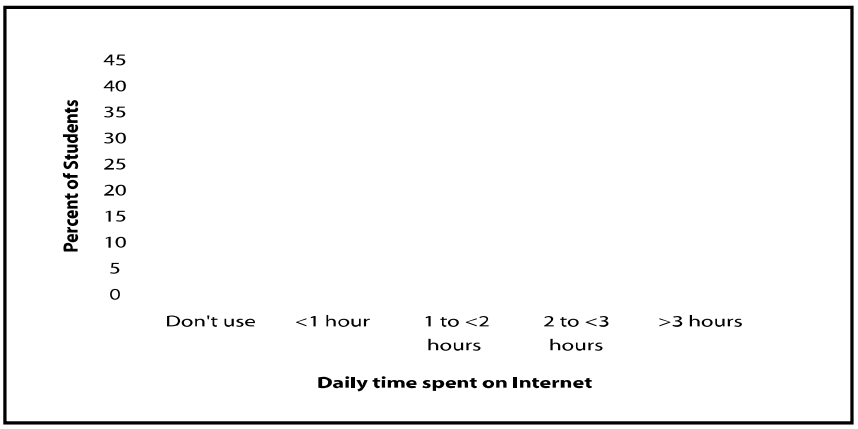

Figure 2 shows the percent distribution of daily time spent on internet. Here 13.8% students spent less than one hour per day. 41.4% students spent 1 hour to less than 2 hours, 24.1% students spent 2 hour to less than 3 hours. Only 1.1% students spent more than 3 hours. 19.5% students did not have internet accessibility.

FIG. 3: Percent distribution of number of friends in Facebook.

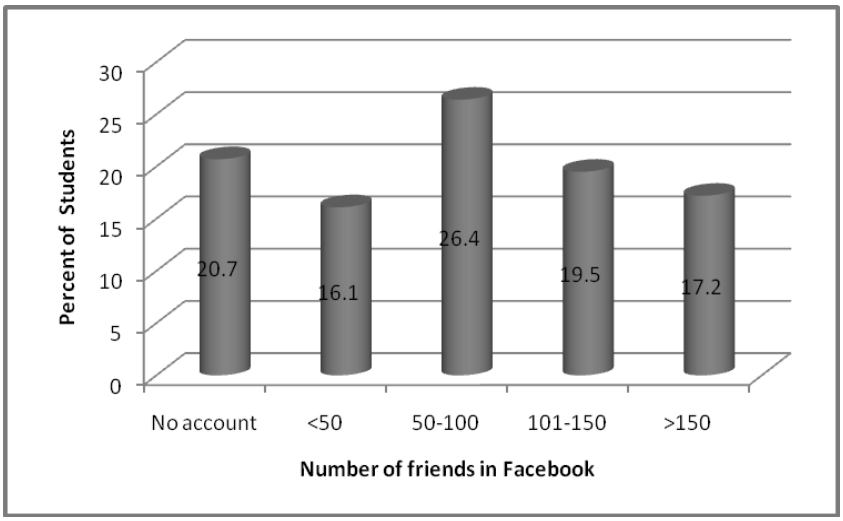

Figure 3 shows the percent distribution of number of friends in Facebook. 20.7% students did not have Facebook account. 16.1% students had less than 50 friends. 50-100 and 101-150 category possessed 26.4% and 19.5% Facebook users. 17.2% students had more than 150 friends.

Bivariate analysis:

Table 8: Cross table with Chi-square test.

Dependent variable	Independent variable	P-value
Grade achieved in class 9 final exam	Work on internet	0.000
	No of friends in Facebook	0.000

Table 8 shows that the school performance measured by grade of the students was significantly related with the work on internet, number of friends in Facebook because the Chi-square test shows the P-value<0.01. This indicates that their performances are not same due to the different categories of the mentioned internet exposure related variables.

Multivariate analysis:

Table 9: Comparison of linear models to study the effect of factors on school performance (Class Roll No).

Model	Variable(s)	p-value	B	R Square	Adjusted R Square
Model-1 Constant (0.000)	Work on internet	0.000	4.635	0.158	0.148
Model-2 Constant (0.000)	Work on internet	0.649	0.999	0.195	0.176
	No of friends in Facebook	0.055	5.254		
Model-3 Constant (0.008)	Internet use	0.117	29.221	0.435	0.392
	Actual time spent on internet	0.465	-6.093		
	Daily time spent on internet	0.711	2.774		
	Work on internet	0.052	4.001		
	Facebook account	0.072	5.931		
	No of friends in Facebook	0.000	10.329		

Model-1 studies only the effects of work on internet on school performance. Here all other factors assumed to be constant. Then works on internet was found to be significant for class roll no. For model-1 the value of R-square and adjusted R-square were 0.158 and 0.148 respectively.

Model-2 studies the combined effects of works on internet and number of friends in Facebook on school performance. Number of friends in Facebook was found to be significant. For model-2 the value of R-square and adjusted R-square were 0.195 and 0.176 respectively.

Model-3 studies the aggregate effects of six factors. When we consider all of these factors simultaneously then number of friends in Facebook was found to be significant at 1% level of significance, and work on internet and Facebook account at 10% level of significance. For model-3 the value of R-square and adjusted R-square were 0.435 and 0.392 respectively.

4. Discussion:

4.1. Effects of Socio-Economic & Demographic Factors on School Performance:

Class roll number were highly negatively correlated with the factors-actual income of the family, actual monthly tuition cost, number of rooms in the house, number of earning persons in the family, and this correlation was significant ($p<0.01$) at 1% level of significance (Table 4). We have made a cross check by using Chi-square

test for association between the category of these factors and the school performance measured by grade. Chi-square test also found highly significant (Table 3). In Chi-square test some of the other factors namely highest education of mothers ($p<0.05$), highest education of fathers ($p<0.05$), occupation of fathers ($p<0.01$), and occupation of mothers ($p<0.05$) were significant.

The associations (between school performance and socio-economic and demographic factors) that were found in this study are strongly supported by the following previous studies:

- Family background is key to a students' life and outside of school, is the most important influence on student learning [4].
- Studies have repeatedly found that socio-economic status (SES) affects student outcomes [5, 2, 3, 4, 7, 8, 9].
- Students who have a low SES earn lower test scores and are more likely to drop out of school [3, 7].
- Research shows that supportive and attentive parenting practices positively affect academic achievement [3].
- Maternal characteristics are another key factor that affect academic achievement [5, 3, 4].

Finally from the model-1 of table 5 we found that as actual income of the family increases by 1 unit class roll no decreased (improvement of school performance) by less than 1 unit at 1% level of significance. Here actual income of the family was responsible for 68.3% change in school performance. Maximum 80.7% change was found from the model-3. In this model we studied the aggregate effects of fourteen factors. When we consider all of these factors simultaneously then actual income of the family, actual monthly tuition cost, number of earning person, grouped earning person in the family, grouped family income, monthly tuition cost grouped, parents are good friend were found to be significant at 1% level of significance and occupation of father, type of house, takes care about nutrition were found to be significant at 10% level of significance and occupation of mother at 5% level of significance.

4.2. Effects of Internet Exposure on School Performance:

The school performance measured by grade of the students was significantly related with the work on internet, number of friends in Facebook because the Chi-square test shows the P-value<0.01 (Table 8).

The associations (between school performance and internet exposure factors) that were found in this study are strongly supported by the following previous studies:

- In an unpublished Master's thesis [10] found that heavy Facebook use (i.e., more time spent on Facebook) is observed among students with lower GPAs.

- More recently an exploratory survey study reported a negative relationship between Facebook use and academic achievement as measured by self reported GPA and hours spent studying per week [11].

Finally in model-1 of table 9 work on internet was highly significant (p= 0.00) and this factor had an effect on school performance by 15.8% change. Model-2 exerted 19.5% changes when two factors (work on internet and no of friends in Facebook) included. Maximum 43.5 % changes occurred in model-3, where number of friends in Facebook was significant at 1% level of significance and both work on internet and Facebook account were significant at 10% level of significance.

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