

Statistical Models for the Assessment of the Students for Undeveloped Country

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Abstract: In the study, we analyzed and evaluate some characteristics which have a high impact on obstacles in the education of the students and have shown a significant relationship with the obstacles that seriously impede the realization of future goals of schools. Samples are taken from secondary and higher secondary schools in the Dhaka district of Bangladesh. The sample of the study consisted of 300 students who were randomly selected from 52 schools. The data were collected using a questionnaire from randomly selected samples and some questions were developed by using a five-point likert scale. The data collection pertaining to this study involves both primary and secondary methods. A questionnaire for such purpose is designed and some statistical methods are applied to analyze the collected data. Factor analysis is used to find out the significant factors from the data. We then developed some independent variables to show the significant relationship with the students' degree of suffering from the problems encountered in their external readings. The technique of descriptive statistics such as mean and standard deviation are used to determine the variability of various obstacles of the students. We performed the analysis of variance for every independent variable and the results show that all the variables are highly significant with the external readings of the students. Finally the results of logistic regression tells us the offering variables have a positive impact on overall external readings and crucial for the students who are facing problems in education.

Keywords: Obstacles in education, Assessment of the students, Statistical Models.

1. INTRODUCTION

Obstacles in education is increasing rapidly all over the world and especially the country which is undeveloped, facing a great problem on their education system due to the obstacles of external reading. Bangladesh is one of the least developed countries in the world today. It is plagued with multifarious problems encompassing its social, political, and economical structures. The three and half decades since the country gained independence have been traumatic. Recurring political upheavals, natural disasters, dramatic social changes and economic convulsions contributed to the gloomy nature of the life of the common man. The bulk of the people live in abject poverty either in the run-down rural areas or in destitute urban slums. Only a fortunate few in the cities and towns have access to whatever goods and services are provided by the government. Therefore, in Bangladesh, poverty eradication is currently at the top of government agendas. The Constitution of the People's Republic of Bangladesh enjoins upon the Government of Bangladesh the obligation to ensure literacy of all the citizens (GOB, 1972). The Government of Bangladesh has made commitments in the World Education Forum (UNESCO, 2000) towards the achievement of 'Education for All' goals and targets for every citizen by the year 2015. Pursuant to its constitutional obligations and international commitments, the government is determined to ensure 'Education for All' in the shortest possible time. Active measures are taken for accelerating primary education programs in the light of global awareness in the education sector as well as Bangladesh's national goals. However, in a world of global market

competition, secondary level education has also become a part of basic education that should be universally available (Mulford B, 2002a). Secondary schools are vested with the responsibility of imparting knowledge, skills and attitudes essential for individuals to fit into society and be able to contribute fruitfully to its development (H. Silins, S. Zarins, & B. Mulford. 2002). A high school graduate in Bangladesh can expect to earn 200 percent over those with no education.

Therefore, Bangladesh hopes to gain from the secondary education system more effective citizens who can be productive participants, domestically and abroad, in markets and communities. The system of education in Bangladesh has three major stages - primary, secondary and higher education. Primary education is a 5-year cycle while secondary education is a 7-year one with three sub-cycles: 3 years of junior secondary, 2 years of secondary and 2 years of higher secondary. The entry age for the primary is 6 years. The junior secondary, secondary and higher secondary stages are designed for age groups 11-13, 14-15 and 16-17 years. Higher secondary is followed by higher education in general, technical, technology and medical streams requiring 5-6 years to obtain a Master's degree (Bangladesh Bureau of Educational Information and Statistics (July 2011). Post-primary education in the general stream is imparted by junior secondary schools (grade 6-8), secondary schools (grade 6-10) and higher secondary schools, known as Intermediate colleges (grade 11-12). Post-primary level madrasahs are known as Dakhilmadrasah (grades 6-10), Alim madrasah (grades 11-12). In terms of ownership and management of secondary schools, there are two major types; government secondary schools and non-government secondary schools (including Dakhil madrasahs). Nearly 98% of the post-primary (secondary and higher secondary) institutions are owned and managed by the private sector (BANBEIS, 2006). However, these institutions are private only in name because 90% of their salaries and wages, and the costs of their physical infrastructure development, durable educational supplies and equipment are provided by the government. Secondary education level institutions in technical and vocational stream include Polytechnics, VTI, Commercial Institutes, Technical Training Center, Textile Vocational Center, Agriculture Training Institute and others. Bangladesh Open University (BOU) also provides distance education for drop-out students at the secondary education level with the support of a countrywide network of regional and local centers, radio and television programs. Government secondary schools are concentrated mostly in urban centers, resulting in a lack of educational access to the majority of children from rural areas, socio-economically backward families, girls from remote urban periphery areas and ethnic minorities.

New technology is as important as the library in education and external readings, but in light of the volatility and technical knowledge, there is no richer for these techniques to cope with the age of progress and knowledge of this advanced technology which has its uses and goals that can be achieved. This does not negate the role of the school, the teacher, and the textbook in education. Libraries are considered the vibrant artery in the heart of the educational process as they provide a source of education and access to external readings that learners rely on. Whenever the development of education is increasing, the need for techniques and libraries consistent with the objectives of education which seeks to produce a generation of conscious and unable to connect, communicate and employ information in daily life (Conderman, G. & Katsiyannis. A., 2002). Textbooks are considered the most important sources of knowledge if properly prepared and used with specific functions and can be carried out by a high degree of efficiency than any other publication unless it is closely linked to the curriculum and its objectives did not emerge from this framework and we need the external reading to clarify and enrich the textbook (Ellsworth, N. J. and Zhang, C., 2007). A lot of what are in the textbooks need external readings to clarify them and achieve the desired goals. The teacher cannot assume such responsibility only unless he knows the scientific material that helps him. Good teaching seeks to achieve its objectives and destination without external readings and can't do that without external readings that take care of the school texts (Mer'ee, T. A., 2007). The modern curriculum offers learners experiences and activities under the supervision, direction and guidance including whether inside or outside to acquire a set of attitudes, skills and desired behaviors. That is to provide them with knowledge and information according to their capacities, aptitudes, preferences and desires to assist them on the overall growth physically, mentally and emotionally. Also to prepare them to face life as it should be in accordance with the objectives of education desired (Al- Hamshari and his colleague, 2002).

As long as curriculum nowadays is a set of variables through which to modify the behavior for better education. Hence, it must be taken into account that is integrated and continuous with all other elements. Other inputs interact with and are affected by the student, the teacher, the buildings, the library, the laboratories, equipment and modern techniques. All of them are working in an integrated manner to serve the educational focus on the learning process-the student. The modern students in their readings depend on external libraries, whether school or public libraries. The word library is closely connected with the book. Conditions and facilities should be created to make the student accept the information passion ally and appositely to enrich and enhance the information obtained from the text whether he is a student in a school, university, or in an institute (Ahmad, Fouzia Khursheed, 2014). All of that won't be achieved if the student is not familiar with the knowledge and the overlooking of the existing curriculum and that is to enrich the texts with information and technology to make knowledge more permanent and longer in the mind of the learner, because it is obtained from the approach and prove it, and support the valuable information from other sources through his readings and culture. We want to be educated, interlocutor students and this can be through research, investigation and effort to reach them. Hence, the urgent need to develop collections of these libraries and to overcome all obstacles that hinder all the services they offer, because it encourages self-learning which is a fundamental pillar of the learner being the first to depend on, to develop his knowledge and knowing. Therefore, all of the previous must be taken into consideration to come out educated generations who know when and how to use the information in their daily lives. Not as we see these days the focus on the aspects and issues that affect negatively the student making us get out generations weak scientifically and culturally due to negatively to the community (Bhattacharya, T., 2005). Still, as we are in while the worlds have come a long way in the essence of knowledge and technology. We would like to show the important role of external readings that enrich the curriculum and increase the interaction between students. We are trying to represent the gap that exists between the external readings and the textbooks. Finally want to increase the information, facts, data, and others which must be of interest to learners to enrich their knowledge. So the main purposes of the research are:

1. Identification and assessment of the variables which have a high impact on the obstacles in education.
2. To show the significant relationship between the identified variables and external reading problems.

2. LITERATURE REVIEW

By the literature, the modern education opposes the use of textbooks as a main mean in giving knowledge which ultimately leads to the closure of the mind and the reduction of intellectual. So, the textbook should be directed to the student as an incentive to learn, forcing him to seek the truth, awaking the liking of research and criticism (Sa'adeh,2010). Lindsey (Lindsey, G., 2007) tried to detect the impact of family the environment in the students' attitudes toward reading where the researcher selected a sample of students from environments as family differentiated in terms of culture, level of education, and attention to exercise the skill of reading at home, and provide the right environment and encouragement to read, where the results indicate to the family and their level of education and economics plays a big role in the development of students' attitudes toward reading, and that to encourage family and provided reading materials appropriate a large role in the habits of students and their attitudes toward reading, while trends were students who live within the confines of the families that do not bother reading below the required level. Lang (Lang, Raymond., 2001) studying which aimed to detect the environmental impact of language in the development of students' attitudes and tendencies towards reading, the students coming from rural areas tend to read a degree higher than the others and that the students who come from families educated more inclined to read, either with regard to the level the economic results of the study did not refer to the existence of significant differences in students' attitudes toward reading variable depending on the level of economic. In a study, Parasuram (2006) aimed at detecting tendencies students the middle school in Dubai about reading from the standpoint of their teachers and disclosure of whether gender, educational level and nationality effect on their tendencies, the study tried to also detect an association between the tendency to read all of the collection rates in Arabic language and the overall rate of collection. The results indicate that the average tendency of students towards reading below average, which was agreed-upon arbitrators and revealed the existence of differences in the tendency of students due to the global level of education and nationality and found linked high between the tendency to read all of the collection rates in the language.

Demographic variables have been shown in research to have a strong correlation with student success (VanderStel, 2014). Okapala (2002) showed that the socioeconomic status of students is an important predictor of achievement. Students from low socioeconomic backgrounds struggled to achieve in class. Research indicates that students from low socioeconomic households and communities develop academic skills at a slower pace than students from higher socioeconomic groups (Morgan et al., 2009). The school systems in low socioeconomic communities are often under-resourced, negatively affecting students' academic progress and outcomes (Aikens and Barbarin, 2008). Hodgkinson and Goldberg (2000) found that one can predict 45% of the national assessment scores independent of our knowledge of their race, indicating socioeconomic status is twice as predictive of academic achievement as race. The parent's level of education also has a critical influence on the achievement of students in the classroom. It has been found that students achieve better scores when their parents have a post-high school education (Okapala, 2002). Dubow et al. (2009) provided statistical evidence of the importance of parental education on student success and how parent education affects late adolescent achievement and achievement-related aspirations.

Based on that our curricula started focusing on raising an active and energetic young people who rely on themselves to get knowledge, in which this requires for the students to be conscious and cultured, using modern technologies that are filled with Knowledge. Modern curricula are built upon the activities that provoke the learners to learn by themselves .through external studies and modern technology and that is what modern education focuses on in which it considers external studies as the main companion for equipping the learner with the knowledge that prepares them for a known future (Assartawi, 2005). Collins, Kenway& McLeod (Collins, C., Kenway, J., & McLeod, J., 2000) conducted a study to identify the effect of some variables such as intelligence and the encouragement that a student got from school and family to improve female students' tendency. The researcher found that there was a link that was statistically significant for reading with the variables of the study. The highest correlation was between the tendency to read and the family's encouragement. Ferguson (Ferguson, D. L., 2008) study objective knowledge of trends, including school students Secondary about the readings external concluded that there are statistically significant differences in the trend towards reading among secondary school students due to Nationality and the specialization that the preference reading is low in importance among students in the grade of secondary school.

Unfortunately, the learning environment in many schools does not take this into consideration. This has led to an increasing disconnection between student expectations and the learning environment within the classrooms, contributing to students losing interest in education (Shernoff et al., 2014; Twenge, 2017). An increased focus on assessment outcomes has resulted in teachers teaching for tests and encouraging memorization of facts, which only compounds the problem (Ness et al., 2016). In addition, society instills in students that education should lead to good jobs. As a result, many students have goals focusing on career, money, fame, etc. (Twenge et al., 2012). If the education system does not help connect the curiosity of students to their career goals with technological advances, students will feel that school and education is not worthwhile.

Despite the plethora of literature on finding the correlation between demographic variables and student success, no more data exists relating the relationship between any of the demographic variables and student perception of school worthiness and especially the external reading problems of the students. This paper discusses what demographics are affecting education and how better knowledge of these demographics can be utilized to benefit the students.

3. MATERIALS AND METHODS

In our research, both descriptive and inferential research design was adopted in order to achieve the objectives of the study. The design provides the opportunity for considering different aspects of the problem. The population of the study consisted of the students of secondary and higher secondary schools in the Dhaka district of Bangladesh. All of them were from both Private and Governmental Schools. They were 52 schools which make 68.21% of the schools in the Directorate. They included 9234 students that form 51.45% of all students. Male was 42.4%, while the female was 57.6%. 41 schools had libraries that form 78.85% of all the schools in the area. 31 of them were supervised by specialists in libraries while 10 in which there were libraries but supervised by non-specialists. The rest of the schools, the sample of the study, were 11 schools where there were no independent libraries, but a bookcase in a room shared with the laboratory or in the administrative room supervised by teachers who were not

specialists in the field. The sample of the study consisted of 300 students who were randomly selected from 52 schools. The data collection pertaining to this study involves both primary and secondary methods. The primary data was collected using questionnaires from randomly selected samples and some questions are developed by using a five-point Likert scale (Allen & Seaman, 2007). The secondary data were collected from sources like manuals, school records, magazines and the internet. After collecting the data we processed it and used factor analysis to find out the significant factors from the data. We then developed some independent variables such as Gender, Number of family members, Family's monthly income, Guardian professional status, Guardian educational background and Environmental condition (Culture) to show the significant effect with the dependent variable, hereinafter referred to as the students' degree of suffering from the problems encountered in their external readings. After that, we calculate the descriptive statistics such as mean, variance and standard deviation of the identified variables. We also perform an ANOVA test to identify a significant relationship among the variables and finally a logistic regression to show the impact of all the independent variables on the obstacles of external reading of the students.

3.1 Logistic Regression (LR)

In statistics, logistic regression, or logit regression, or logit model is a regression model where the dependent variable (DV) is categorical. Logistic regression use in case of binary dependent variables—that is, where it can take only two values and cases with more than two categories are referred to as multinomial logistic regression, or, if the multiple categories are ordered, as ordinal logistic regression. Logistic regression was developed by statistician David Cox in 1958 (Cox, D, 1958). The binary logistic model is used to estimate the probability of a binary response based on one or more predictor (or independent) variables (features). It is also called a qualitative response/discrete choice model in the terminology of economics. Logistic regression measures the relationship between the categorical dependent variable and one or more independent variables by estimating probabilities using a logistic function, which is the cumulative logistic distribution (Palei, S. K. & Das, S. K., 2009). For a single variable, the logistic regression model is of the form

$$\text{Prob (event)} = \frac{\beta_0 + \beta_1 X}{1 + e^{\beta_0 + \beta_1 x}}$$

Or, equivalently

$$\text{Prob (event)} = \frac{1}{1 + e^{-(\beta_0 + \beta_1 x)}}$$

Where β_0 and β_1 are the regression co-efficient estimated from the data, x is the independent variable and e the base of natural logarithm. In case of more than one independent variable, the model assumes the form

$$\begin{aligned} \text{Prob (event)} &= \frac{e^z}{1 + e^z} \\ &= \frac{1}{1 + e^{-z}} \end{aligned}$$

Where, $z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_p X_p$

In linear multiple regression model, the regression co-efficient signifies the amount of change in the dependent variable for a one-unit change in the independent variables. The interpretation of the co-efficient in the logistic regression is somewhat different for which the model is to be written in terms of the log odds of event occurring. This is called logit.

$$\ln \left(\frac{\text{prob(event)}}{\text{prob(noevent)}} \right) = \beta_0 + \beta_1 X_1 + \dots + \beta_p X_p$$

This shows that the logistic co-efficient can be interpreted as the change on the log odds associated with a one-unit change in the independent variables. For easier interpretation, the log odds are to be changed in odds, in which case, the logistic equation stands as:

$$\frac{\text{prob(event)}}{\text{prob(noevent)}} = e^{\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_p X_p}$$

$$= e^{\beta_0} e^{\beta_1 X_1} \dots e^{\beta_p X_p}$$

Then e raised to the power β_i is the factor by which the odds changes when the i 'th independent variable increases by one-unit. If β_i is positive, this factor will be greater than 1, which means that the odds are increased. If β_i is negative, the odds will be less than 1 which means that the odds are decreased. When β_i is 0, the factor equals and odds remains unchanged.

3.2 Factor analysis

Factor analysis is a statistical method used to describe variability among observed, correlated variables in terms of a potentially lower number of unobserved variables called factors (Russell, 2002). For example, it is possible that variations in six observed variables mainly reflect the variations in two unobserved (underlying) variables. Factor analysis searches for such joint variations in response to unobserved latent variables. The observed variables are modelled as linear combinations of the potential factors, plus "error" terms. Factor analysis aims to find independent latent variables. Followers of factor analytic methods believe that the information gained about the interdependencies between observed variables can be used later to reduce the set of variables in a dataset (Harman, 1976). Factor analysis is commonly used in biology, psychometrics personality theories, marketing, product management, operations research and finance. Users of factor analysis believe that it helps to deal with data sets where there are large numbers of observed variables that are thought to reflect a smaller number of underlying/latent variables. It is one of the most commonly used inter-dependency techniques and is used when the relevant set of variables shows a systematic inter-dependence and the objective is to find out the latent factors that create a commonality

3.3 Analysis of Variance (ANOVA)

In the ANOVA setting, the observed variance in a particular variable is partitioned into components attributable to different sources of variation. In its simplest form, ANOVA provides a statistical test of whether or not the means of several groups are equal and therefore generalizes the t-test to more than two groups. It is mainly used to determine the impact of groups of independent variables on the dependent variable (Plackett, R. L., 1960). ANOVAs are useful for comparing (testing) three or more means (groups or variables) for statistical significance. It is conceptually similar to multiple two-sample t-tests, but is more conservative (results in less type I error) and is therefore suited to a wide range of practical problems. It's a statistical analysis tool that separates the total variability found within a data set into two components: random and systematic factors (Eisenhart, C., 1947). The random factors do not have any statistical influence on the given data set, while the systematic factors do.

Analysis of variance (ANOVA) is calculated by the following Fisher's F statistic:

$$F = \frac{\text{Variance between treatments}}{\text{Variance within treatment}}$$

$$F = \frac{SSE/d.f}{SSR/d.f}$$

$$F = \frac{MSSE}{MSSR}$$

Where, $MSSE$ is the mean sum of square of treatment effect
 $MSSR$ is the mean sum of square of residual (error)
 $d.f$ is the degrees of freedom

There are two main strength of association measures (Kirk, R. E., 1982) used in ANOVA contexts, omega squared (ω^2), and eta squared (η^2). Omega squared is generally a more accurate estimate of the true population value of strength of association. Eta squared, however, is simpler to compute. In either case, strength of association measure provides an estimate of the amount of variance in the dependent measure that can be explained or accounted for by the independent measure.

Omega Square measure:

$$\omega^2 = \frac{SSE - (k - 1)MSSR}{SST + MSSR}$$

Ita Square measure:

$$\eta^2 = \frac{SSE}{SST}$$

Where, SST is the sum of square of total. Strength of association measures can be multiplied by 100 and interpreted as the percent of variation explained (PVE).

4. RESULTS

In this section, we discuss our result based on the effects of variables on the external reading problems of the students. At first, we perform factor analysis on all the items and Table 1 represents the final result after reducing some items according to the lower loading factors. We only consider the items which have high loading factors in the analysis.

Table 1: Factor Analysis of the selected Items to the sample's responses on the instrument of the study

No. of questions	Subjects/Items	Factor loadings
1	Lack of cooperation between students and the librarian to provide required books for reading	0.8742
2	Curriculum is not contributed to urge students of external readings.	0.8771
3	Lack of modern technology that help in external readings (internet, T.V, computer)	0.8012
4	Not joining the specialized teacher in training courses that techs them how to employ the technologies and the library while reading	0.8132
5	Not keep up with public libraries for technical and scientific developments that serve the readings foreign	0.8601
6	The closure of the equipped libraries and laboratories in the faces of students	0.8554
7	Students' unwillingness of external readings	0.8812
8	The lack of books and modern technologies which are related to school courses in all stages	0.8651
9	The difficult material conditions that prevent the arrival of some students for public libraries where there readings foreign	0.8597
10	The lack of class library of books basket for each class.	0.8543
11	Students are not provided with plans to show them the references that enrich the curriculum.	0.8218
12	Non urged parents to external readings and the provision of library within the home	0.8453
13	Not assigning students with writing reports and researches using modern technologies	0.8132
14	Weakness of students in the skill of employing modern techniques while reading	0.8002
15	The lack of magazines, technologies, newspapers and its diversity in the school library	0.9123

- **Eigenvalue = 3.129**
- **Cronbach's alpha = 0.893**

From the Eigen value (**3.129**) and Cronbach's alpha (**0.893**), we clearly observe that our factor analysis shows a significant result to identify the items which are closely related to our study. We also conclude that the factor items are with high loadings which indicate that our selected factor items are highly significant to find out the demographic variables which have an effect on the external reading problems of the students.

Now we identify some demographic variables such as Gender, Number of family members, Family's monthly income, Guardian professional status, Guardian educational background and Environmental condition (Culture) from the literature review based on the students of secondary and higher secondary schools, Dhaka district, Bangladesh. Table 2 shows the descriptive statistics of the above demographic variables.

Table 2: Frequency distribution, Percentage distribution, means and Standard deviations for the Subjects' Responses on the Instrument of the study related to Gender, Number of family members, Family's monthly income, Guardian professional status, Guardian educational background and Environmental condition (Culture).

Variables	Frequency	Percentage (%)	Means	Standard Deviation
Gender				
Male	180	60	4.77	0.8827
Female	120	40	3.69	0.8419
Total	300	100	8.64	1.7246
Number of family members				
1-4	173	57.7	4.58	0.8415
4-7	97	32.3	4.35	0.8624
7 and above	30	10	3.77	0.8831
Total	300	100	12.70	2.5870
Family's monthly income				
Below 15000	52	17.3	4.43	0.8321
15000-25000	102	34	4.82	0.8292
25000-35000	78	26	4.28	0.8634
35000-45000	43	14.4	4.11	0.8865
45000 & above	25	8.3	3.51	0.9015
Total	300	100	21.15	4.3127
Guardian professional status				
Govt. Service	42	14	4.13	0.8713
Private service	98	32.7	4.77	0.8203
Business	141	47	4.64	0.8419
Others	19	6.3	3.36	0.9219
Total	300	100	16.9	3.4554
Guardian educational background				
High	49	16.3	3.62	0.8997
Medium	68	22.7	4.17	0.8755
Low	183	61	4.76	0.8521
Total	300	100	12.55	2.6273
Environmental condition (Culture)				
High class	51	17	3.64	0.8923
Medium class	171	57	4.71	0.8319
Poor class	78	26	4.35	0.8612
Total	300	100	12.7	2.5854

Now we apply a t-test (for two categories) and an ANOVA test (more than two categories) for every variable separately to check the significant effect of the external reading problems due to the demographic variables. To perform the ANOVA test, we build up a model between groups of the independent and dependent variables. Figure 1 represents the process of considering model 1.

Model 1 : Dependent variable = External readings problems
Independent variable = Number of family members
Group of independent variable = 1-4, 4-7, 7& above

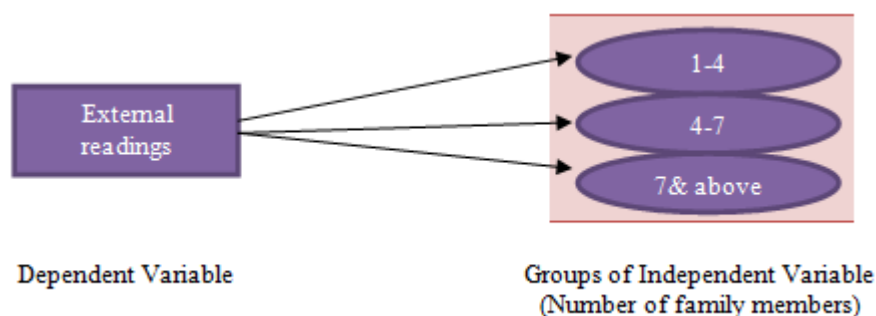


Fig.1: Flow chart of model 1

Similarly, we generate other ANOVA models (Model 2, Model 3, Model 4 and Model 5) for the remaining four variables.

Our null hypotheses for the tests are:

- H₀₁ : There is no significant effect of the external reading problems according to gender (t-test)
- H₀₂ : There is no significant effect of the external reading problems on the family members.
- H₀₃ : There is no significant effect of the external reading problems on family income
- H₀₄ : There is no significant effect of the external reading problems on Guardian professional status
- H₀₅ : There is no significant effect of the external reading problems on Guardian educational background
- H₀₆ : There is no significant effect of the external reading problems on Environmental condition (Culture)

The first hypothesis is considered for the t-test and table 3 shows the output of the test.

Table 3: results of t-test for the first hypothesis

Test	Value
t-test	17.451
d.f	298
p- value	0.001

The table indicates that t - value is 17.451 with a degree of freedom 298 which is statistically significant at p value 0.001. So there are differences between the males and the female's responses in the suffering degree of external reading problems and the female's conditions differ from the ones that the male faced.

The other hypotheses are considered for the ANOVA test and table 4 shows the results of the ANOVA.

Table 4: ANOVA for the different models

Model	Source of variation	d.f	Sum of squares	Mean sum of squares	F-stat	significance
Model 1	Between groups	2	2.341	1.1705	41.953	0.000
	Within groups	297	8.286	0.0279		
	Total	299	14.764			
Model 2	Between groups	4	3.673	0.9183	23.914	0.001
	Within groups	295	11.322	0.0384		
	Total	299	17.453			
Model 3	Between groups	3	1.892	0.6307	32.510	0.000
	Within groups	296	5.742	0.0194		
	Total	299	9.912			
Model 4	Between groups	2	4.234	0.974	46.124	0.000
	Within groups	297	8.672	0.0456		
	Total	299	14.247			
Model 5	Between groups	2	3.782	1.891	70.298	0.001
	Within groups	297	7.981	0.0269		
	Total	299	13.987			

All the result of the table shows that there are a statistically significant effect of the external reading problems due to the number of family members, Family's monthly income, Guardian professional status, Guardian educational background and Environmental conditions. The table represents the values of F-stat are 41.953, 23.914, 32.510, 46.124 and 70.298 respectively and significant as the p value is less than 1% ($p < 0.01$). This indicates a significant association between external readings and all other groups of independent variables.

Table 5 indicates the strength of model 1, model 2, model 3, model 4 and model 5 by representing ω^2 and η^2 . The ω^2 and η^2 shows the strength of the association measures which provides an estimate of the amount of variance in the dependent measure that can be explained or accounted for by the independent measure.

Table 5: The Strength (Effect Size) of the ANOVA models

Model Number	ω^2	η^2
Model 1	0.7715	0.8221
Model 2	0.7229	0.7835
Model 3	0.7413	0.8181
Model 4	0.7864	0.8421
Model 5	0.7039	0.7643

The ω^2 value 0.7715 indicates that 77% variation of the dependent variable is explained by the group of the independent variables of model 1. Similarly, the η^2 value 0.8221 indicates that 82% variation of the dependent variable is explained by the group of the independent variables of model 1. In the same way, we can explain the ω^2 value for the other models as follows:

Model 2: 72% variation of the dependent variable is explained by the group of the independent variables.

Model 3: 74% variation of the dependent variable is explained by the group of the independent variables.

Model 4: 78% variation of the dependent variable is explained by the group of the independent variables.

Model 5: 70% variation of the dependent variable is explained by the group of the independent variables.

Similarly, we can also explain the η^2 in terms of variation of the dependent and independent variables for all the models. From the above result, we clearly conclude that all the groups of independent variables for all the models are highly significant with the external reading problems (dependent variable) of the students.

Finally, we perform the logistic regression analysis to show the effect of the independent variables on the external reading problems of the students and table 6 shows the results of the logistic regression.

Table 6: Logistic regression between independent and dependent variables.

Independent variables	β	Exp(β)	Sig.	95% Confidence Interval
Gender				
Male	0.607	0.336	0.001**	0.252-0.671
Female (RC)	----	1.00	----	----
Family members				
1-4				
4-7	0.462	1.869	0.000*	0.442-1.891
7 and above (RC)	0.584	1.281	0.002*	0.361-1.777
Family's monthly income	----	1.00	----	----
Below 15000				
15000-25000				
25000-35000	0.808	2.336	0.000*	1.267-2.681
35000-45000	0.655	1.925	0.001*	1.471-2.791
45000 and above (RC)	0.575	1.678	0.002*	1.342-2.573
Guardian professional status	0.411	1.213	0.011**	0.748-1.791
Business (RC)	----	1.00	----	----
Govt. service				
Private service	----		----	----
Others	0.614	1.00	0.008*	1.522-3.887
Guardian educational background	0.460	1.746	0.031**	0.142-0.563
High (RC)	0.798	1.062	0.000*	1.567-2.888
Medium		2.100		
Low				
Environmental condition (Culture)	----		----	----
High class (RC)	0.705	1.00	0.000*	1.378-2.872
Medium class	0.942	2.463	0.000**	1.997-2.975
Poor class		3.186		
	----	1.00	----	----
	0.164	1.178	0.002*	1.678-3.912
	0.801	2.230	0.000**	1.833-2.677

RC = Reference Category

*Significant with p-value < 0.01

**Significant with p-value < 0.05

The present of external reading problem coded as 1

The absence of external reading problem coded as 0

Logistic regression co-efficient = β and odds ratios = Exp (β)

From the results, it appears that gender category has an influence on the external reading problems of the students. The students who are male, are less likely to face the obstacles of external reading problems than the female students and it's significant with a p-value < 0.01 and 0.05. The odds ratio of family members indicates that the students whose family members are small (Broken or single family) are 1.869 times more likely to face external reading problems than the students whose family members are big (Joint Family) and the coefficients are highly significant with 1% level of significance (p-value < 0.01). Results of logistic regression show a highly significant effect of a Family's monthly income on the external reading problems (p-value < 0.01). The students who come

from very lower-income families are 2.336 times more likely to face the obstacles of external reading compared with the students who come from higher-income families. Guardian professional status is also significant with the external reading problem at $p\text{-value} < 0.01$. The students whose guardian professional statuses are govt. service and private service, they are 1.746 and 1.062 times more likely to face the external reading problem respectively than the students whose guardian professional status is business. The result also shows that Guardian educational background is highly significant with the external reading problem. The students whose guardian educational backgrounds are high are less likely to face external reading problems than the students whose guardian educational background is medium and low. The odds ratio of the environmental condition also represents a relationship with the external reading problem. The students who get a poor environment for the study are 2.230 times more likely to face the obstacles of external reading compared with the student who gets a high environment for the study and it's highly significant with $p\text{-value} < 0.01$.

5. DISCUSSION

Individuals are constantly shaped by the environment and the variables from which they surround themselves. The same can be true for the students. Each student's life is composed and stimulated by different features whether it is a low-income family, family traditions, their parent's education, community involvement, or gender. In the study, gender role socialization is noted as a barrier with respect to the educational and career attainment of females. The culture is frequently characterized as adhering too rigidly defined gender roles and gender role behavior. Vasquez (1982) includes gender role socialization among barriers to Mexican-American women's participation in higher education and also notes the lack of financial support and the internalization of society's negative messages toward minorities (or triple minorities) as women, persons of color, and often as members of a lower socioeconomic class. Swanson and Tokar (1991a, 1991b) found that while the types of career barriers perceived by Euro-American male and female college students were essentially the same, there were gender differences in the salience of some of these barriers. For example, female respondents perceived discrimination and child-rearing as greater barriers than did males (Swanson & Tokar, 1991b). In another study, perceived barriers to management careers reported among a sample of college women included family/social concerns, femininity concerns, and limited education or experience (Russell & Rush, 1987). Given the variation in gender role expectations across cultures (e.g., Bingham & Ward, 1992; Davenport & Yurich, 1991) and the influence of gender role socialization on career-related behaviors (e.g., Betz & Fitzgerald, 1987; Sundal-Hansen, 1985), the relationships among gender, ethnicity, and perceived barriers for adolescents warrant examination.

Number of family members (Broken or Single or Joint) shows a significant variable in our study for the obstacles of the external reading of the students. Single parents struggle more to keep a solid income for their students. Teachers must be receptive to this as it may influence the way a student learns. They bring their family life into the classroom walls each day they walk in and it is the teacher's job to knowingly understand this and to then act on it. It has been found that one-half of American students will spend at least part of their lives in a family with a single-parent (Krein, 1986). The concern about single-parent families is that they do not have all of the resources that a dual-parent family possesses, such as time and money (Krein, 1986). If a student is not receiving as much attention from their own family at home that could answer questions about his/her behavior in the classroom. In a long-term study was done by Sun and Li (2011) evidence was found that family structure type matters to a student's educational progress, and when students came from a disrupted family a negative academic effect was caused by a lack of family resources. If the parent does not have time to sit and go through homework that the teacher assigns, then it is the teacher's responsibility to become that second parent and to put in the time and effort to make sure the student achieves. In a long-term study done by Krein (1986), educational completion was found to be about half a year less for men who lived in single-parent families. Students who spent even a short period of time within a single-parent family completed fewer years of school on average than students who were raised in unbroken families (Krein, 1986). It is up to teachers to bridge the disrupted gap and fill the lack of resources available to a student at home. Students that grow up in a single-parent home typically result in a lower academic level of achievement (Sun and Li, 2011). These studies demonstrate the need for teachers to understand the students' family background. All students should be able to achieve and if the family cannot get them there then the teacher must.

In our study, one large impact on a student is the family's income or socioeconomic status. Previous research has found that the socioeconomic status of the student is an important predictor of achievement and that the percentage of students on the free and reduced lunch program can serve as a proxy for socioeconomic status (Okpala, 2002). Without adequate nutrition at home students could have a harder time focusing in class. A teacher may be more receptive to low income and inadequate nutrition by looking closely at which students are on the free and reduced lunch program. Demographic research was done at a low wealth school district in North Carolina on students who were on the free or reduced lunch program found a positive correlation between the numbers of students in the program and reading achievement scores (Okpala, 2002). A lower family income left students struggling to achieve in class. Factors that a school is able to control, such as educational level and teaching experience of the staff, have little to do with student performance; but socioeconomic factors present in schools seem to significantly influence a student's ability to succeed (Okpala, 2002). If a student is in a low income family, they may need more attention than others in order to reach success. According to Harold Hodgkinson, a renowned demographer, if you know the household income and the parent's level of education in America, then you can predict 45% of the national assessment scores without knowing anything about race, meaning socioeconomic status is twice as predictive as race (Hodgkinson and Goldberg, 2000).

The parent's level of education has an influence on the achievement of students in the classroom. It has been found that students achieve higher scores in reading when their parents have a post-high school education (Okpala, 2002). The level of help that students are receiving once they leave school is significant. Stevenson and Baker (1987) have shown that educated mothers who invest time and are involved with the school have students with higher academic achievement. If the student is from a home where his/her parents never completed high school this could leave the student without help. Knowledge of this could dictate the way homework is constructed. The teacher should also be accessible to a student who might not get help at home. This different family characteristic alters the ways in which a student will interact and achieve in class. The teacher must be aware of the surrounding family structure and understand how this influences them.

A student's environmental condition or culture and family ties will impact the way they will learn. Americans constantly live in the future and often this is how we motivate students. There are clear advantages to use modern technology but all the students are not coming from the high-status environment and that's why the students who come from the low and medium culture, do not get enough resources to solve their external reading problems. In our study, it shows that the students who get a poor environment for the study, are more likely to face the obstacles of external reading compared with the student who gets a high environment for the study and it's highly significant. Students who use the internet more have been found to score higher on standardized tests in reading as well as earn higher GPA's (Jackson et. al., 2006). For a long time, our society has pushed that we are a cultural melting pot and our educational system has further supported that; but now teachers engage in more socialization for their students than ever before (Elkind, 2001). It is important to demonstrate that in the classroom cultural diversity is recognized. Students are not just one part of the melting pot. They are individual and different. It is important that teachers demonstrate that differences do not make an individual better or worse: "Individuals can be right or wrong, good or evil, kind or cruel-but races, cultures, religions, and ethnic groups are not" (Elkind, 2001). Culturally understanding the actions of students allows the teacher to form a deeper connection. Through this deeper connection, a sense of security and community will develop between students and the teacher within the classroom. Teachers need to understand that every student has been influenced by these demographic characteristics in order to be effective.

6. CONCLUSION

The study indicates that there is an impact of the level of studying management on the problems associated with external reading and to the employment of modern technologies. There are a lot of obstacles that have been showing in the study sample through answering the questioner completely which is highly significant. The measures of the strength such as ω^2 and η^2 are high for all the models which indicate the high effect of all the groups of the independent variable on the external reading problem. The whole results give us an indication of a clear and evident

interest of families in education and overcome the difficulties face their children to get education from everywhere regardless of the number of their families to cope with the scientific age and explosion witnessed by this age. Demographics influence a student's everyday life. A student's socioeconomic status, family structure, parent level of education, culture, technology usage, transience, race, spirituality, and crime rate near the home all impact them on a daily basis. These are the factors that are imprinted on the student and characterize them in their own way. They develop the student outside of the classroom, and it is a teacher's responsibility to understand this so that they may teach in a way that a student can learn at their highest potential and thus develop further within the classroom. It is true that the financial condition is very important for external readings in specific. The lack of money plays a role in getting the books easily as there are things that have priorities and special arrangements. In the classroom, children discover and develop much of their sense of who they fail is extremely important to their self-esteem and have more positive attitudes towards future professions.

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