

## INVESTIGATING THE CAUSES OF STUDENTS' DROPOUT FROM THE DIPLOMA ENGINEERING PROGRAMS IN THE POLYTECHNIC INSTITUTES OF BANGLADESH

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### ABSTRACT

*School dropout rates are staggeringly high in developing countries, even for elementary school children (Graeff-Martins, 2006). It is widely recognized that dropped out students often experience difficulty in making the transition from institution to productive activities in adulthood, particularly in training and employment. This paper reports the results of a survey conducted to examine the root causes leading to student dropout at polytechnic institutes of Bangladesh. Data was gathered from 13 polytechnic institutes across the country. This paper presents the results of a survey designed to investigate the relationship between dropout with social, institutional, economic and personal factors based on the opinions of teachers, dropout students and the guardians of dropout students. It also proves female students are more reluctant in the polytechnic environment and they are not encouraged. Finally, the paper presents the reasons provided by the teachers, dropped out students for dropping out, with the main reasons being the frequent students' violence due to political involvement and the perceived difficulty they are facing from the social and economic perspectives.*

**Keywords:** Dropout, polytechnic, Diploma Engineering, Bangladesh.

### INTRODUCTION

It has been observed that every year about 0.6 million students are passing S.S.C. Examination in Bangladesh. According to the recent statistics approximately 60% of those students have chance to go for higher education and about 40% students get job in their own country as well as abroad (Bangladesh Bureau of Statistics, 2012). However, after passing S.S.C. Examination, a small number of students take admission to the polytechnic institutes. But after the admission, a great number of students lose their concentration on their studies and somehow they do not pursue their education up to the end though it has a great demand in our country and abroad as well. This is somehow a universal scenario observed worldwide as every year there are students who fail to meet promotion standards. Roderick (1995) identified poor student achievement as a major indicator of students who are potential dropouts. Smith (1998) found in his research that poor attendance was a key indicator of students leaving school before graduation. Research also indicates students whose parents are not involved in their education are likely to drop out of school before graduation. Students who fail to meet the minimum requirements for promotion more than once are met with negative pressures that will eventually lead to dropping out of school (Smink, 2001; Huang, 2001; Di Maria, 1999). Researchers are not sure whether poor student achievement affects attendance or poor attendance affects student achievement; however, they do agree that students with more than one indicator are potential dropouts.

According to studies conducted by Badittoi (2005), Roderick (1993), Lanham (1999), Farmer & Payne (1992), and Dharmadasa (1995) many students are discouraged by their poor academic performance and eventually drop out of institution. Other researchers such as Fisher (1994) and Smith (1998) present studies on student attendance and how it impacts the student dropout rate. De Carvalho (2001) and the National Center for Education Statistics (2001) discussed the importance of parental involvement in a student's education. It is clear to educators that students who leave school early are not prepared for the challenges presented to them by social demands; therefore, dropout prevention efforts have received much attention (Tanner, Krahn, & Hartnagel, 1995). According to Tanner, Krahn, & Hartnagel (1995), the increasing problem of students leaving college before graduating is a

crisis. One reason for this is that they attribute student dropout to a direct negative impact on lost economic output (Tanner *et al.*, 1995). Consequently, those students who dropped out of institute earned less money, had fewer opportunities to secure a good job, and earned from 12 to 18 % less than graduates (Tanner *et al.*, 1995). Students drop out of their studies for a numerous reasons and factors (Eisenberg & Dowsett, 1990) ranging from academic, to non-academic, to other factors (Jones & Watson, 1990). These findings revealed that low student academic performance was a major factor for students leaving institute early. Other factors leading to dropping out of school were problems in family life, poor attendance, and having a full-time job (Tanner, Krahn, & Hatnagel, 1995). In conclusion, Roderick (1993) determined that the two major factors for students dropping out of institute were poor student achievement and poor attendance.

Income level and socioeconomic status are also related to dropout rates. Results from research indicate that students from low income families and lower socioeconomic status families are more likely to drop out of institute than their higher income and higher socioeconomic status peers (Battin-Pearson *et al.*, 2000; Rumberger, 1983; Steindberg, Blinde, & Chan, 1984). In 1988, James Coleman brought many social factors together to define social capital and how it is related to dropout rates. Coleman (1988) found that as the level of social capital increased, a student's tendency to drop out of school decreased. Recent studies have shown that high parental expectations are associated with a decrease in the tendency to drop out of school (Astone & McLanahan, 1991; Israel & Beaulieu, 2004; Qian & Blair, 1999).

In the context of Bangladesh, in terms of social status diploma engineers are considered as mid-level technician. The society knows very little about the technicians and their education system i.e. technical and vocational education. Polytechnic Institutes and Technical Training Center (TTC) are the main source of producing diploma engineers in Bangladesh. It is observed that in polytechnic institutes the students generally come from lower class or middle class people. In Bangladesh, many technician jobs are occupied by people who are not formally educated from the technical education sector. The technician job occupied by persons without having requisite formal education and training is definitely required to be reduced to at least 30% at this level of economy of the country to increase the productivity in the production and services sectors. This reduction of non-technical persons occupying technician's job will create opportunities for employment of about 50,000 additional diploma graduates in future employment market (Rafique, 1996).

A study conducted by ILO on the employment of garments industries found that the skilled workers employed in 15 different types of jobs did not have any type of formal or non-formal training (Rafique, 1996). In the present situation, if the garments industries will employ diploma engineers only 2% at their supervisory level of work then the total number of diploma graduates required for their sector would be about 16,000 (Directorate of Technical Education, 2012). There is a great demand of skilled technicians in the job sectors of Bangladesh but still there exist a considerable rate of dropout students in the polytechnic institutes. Therefore it is the demand of time to investigate what are the reasons behind the dropout of the students and to develop potential remedial measure for that. In this regard, the objective of the study is to investigate the causes of dropout of polytechnic students in Bangladesh and find out the necessary steps to reduce it at minimum level. The study will be helpful for planners and educationists in technical education to become aware of the causes of dropouts so that they can take necessary steps to improve the situation. The findings of the study will also help polytechnic authority to overcome the problems and students will be interested to get admission in polytechnic Institutes.

## METHODOLOGY

### First Phase

In this phase the study was involved to collect the drop out student list. Due to the availability and ease of collection only the year 2008 and year 2009 was considered for this study. Out of 49 government polytechnic 13 polytechnic institutes was taken as sample for this study. Some of the polytechnics offer two shifts namely Morning and Evening. In some cases the data were collected from both the shifts where possible. Civil, Electrical, Mechanical, Automobile and Power Department of the sampled

polytechnics are considered for this study only. The drop out list was collected by examining the registered student list of that particular session and by examining their respective classes, examinations and next-year entrance documents. The following are the polytechnics considered for this study-

**Table1. List of the sampled polytechnic**

Name of the Polytechnic	Data obtained From
Dhaka	Two Shifts
Dhaka Mohila (Women)	One Shift
Chittagong	One Shift
Khulna	One Shift
Mymensingh	Two Shifts
Bogra	One Shift
Jessore	One Shift
Faridpur	One Shift
Comilla	One Shift
Pabna	Two Shifts
Dinajpur	One Shift
Tangail	One Shift
Feni	One Shift

It is to be noted that it was possible to collect the data from both the shifts in three polytechnics only named Dhaka, Mymensingh and Pabna.

### Second Phase

This phase involved to investigate the causes behind the students dropout from the polytechnic. For this purpose three structured questionnaires were developed to collect the data from *a)* teachers of different polytechnic institutes, *b)* dropped out students and *c)* dropped out students' guardians. In this regard 60 teachers, 30 dropped out students, 30 Guardians of dropped out students from different polytechnics were considered for this study to collect the data. In total there were 120 respondents.

The questionnaire was in simple language and was easy to understand. The questionnaire consisted of four parts- *a)* Institutional problems, *b)* Social problems, *c)* Economical and *d)* personal problems. Data was collected through the following, process:

- I. Personal visit were made to different polytechnics to collect the data from guardians and dropout students from the locality adjacent to the respective Polytechnic Institutes.
- II. Opinions from Teachers were also collected at that time.

The nonparametric Chi-Square test on the basis of hypothesis of equal probability is used to determine whether the opinions of the respondents are significant or not. The following formula is used in this regard-

$$\text{Chi-square, } \chi^2 = \sum \left[ \frac{(f_o - f_e)^2}{f_e} \right];$$

Where,  $f_o$  = Observed frequency and

$f_e$  = Expected frequency considered with equal probabilities.

Degree of freedom,  $df = (C - 1) * (R - 1)$ ;

Where, C = Number of columns, R = Number of rows.

After obtaining the value of Chi-square from the above formula it was compared with the critical value of Chi-square at 0.01 level of significance. Finally interference was made whether the difference is significant or not to reject or retain the null hypothesis. If,  $\chi_{observed}^2 > \chi_{critical}^2$ , the response will be taken as significant in favor of the statement.

## ANALYSIS AND INTERPRETATION OF DATA

After collecting the questionnaires the data was tabulated in terms of frequency distribution. Tables were prepared and percentage was calculated and presented in the respective cells. Chi Square test is used to analyze the questionnaire at 0.01 level of significance.

**Table 2. Dropout Percentage of two shifts from three Polytechnic Institutes**

Name of Polytechnic	Dhaka Polytechnic		Pabna Polytechnic		Mymensingh Polytechnic		
	1 <sup>st</sup> Shift	2 <sup>nd</sup> Shift	1 <sup>st</sup> Shift	2 <sup>nd</sup> Shift	1 <sup>st</sup> Shift	2 <sup>nd</sup> Shift	
Academic Year 2008	Enrolled Students	432	432	240	240	288	288
	Students After 1st Semester	353	350	201	193	241	239
	Dropout %	18.28	18.98	16.25	19.58	16.32	17.01
Academic Year 2009	Enrolled Students	432	432	240	240	288	288
	Students After 1st Semester	352	364	200	199	242	233
	Dropout %	18.51	15.74	16.67	17.1	15.97	19.1
Mean Dropout %		17.88		17.4		17.1	

### The dropout percentage of different polytechnic institute

The following table indicates the different dropout percentages in three double shifted polytechnic institutes of Bangladesh.

The table indicates that the Dhaka polytechnic has the highest dropout rate considering two academic sessions. The data shows that there exist no significant differences among these three polytechnics as the ranges of percentages in students' dropout are almost same. In case of the rest of the polytechnic institutes the following table shows the dropout rate-

**Table 3. Dropout percentage of other ten Polytechnic institutes (Considering single shift)**

Session 2008-2009			
Name of Polytechnic Institute	Enrolled Students	Students After 1st Semester	Dropout %
Comilla Polytechnic	288	232	19.44
Chittagong Polytechnic	384	289	24.74
Khulna Polytechnic	384	287	25.26
Jessore Polytechnic	240	180	25
Dinajpur Polytechnic	192	148	22.92
Faridpur Polytechnic	192	141	26.56
Bogra Polytechnic	240	197	18.75
Feni Polytechnic	192	146	23.95
Dhaka Mohila Polytechnic	240	186	22.5
Tangail Polytechnic	144	116	19.44
Mean Dropout %			22.86

After analyzing the dropout rate of different Polytechnics it has been observed that dropout rate was very high and alarming which interrupted the overall technical education system. Bangladesh Technical education Board gives the overall dropout situation and maximum dropout rate is 19.5 at 2009. This dropout rate is though acceptable however the figure is considerably much higher than the

other developed countries of the world. Our best estimates indicate that somewhere between 16 and 26 percent of students fail to graduate from polytechnic with a regular high and that the incidence of such dropout problems has not diminished over the past years. These dropout problems tend to be more severe to the nation and in every district of the country. These dropout problems also vary across districts however their range is almost same as observed from the above table.

Several questions were asked to the teachers, dropout students and their guardians regarding the causes of dropout they feel as an important issue to be considered. There were four areas where the reasons of dropout were mentioned. The following table summarized and interpreted the opinions of the respondents.

**Table 4. Opinion of the respondents regarding different problems related to students' dropout**

	Description of Question	No. of respondents in favor of Yes (%)	No. of respondents in favor of No (%)	$\chi_{ob}^2$
<b>Institutional problems</b>	Lack of sufficient modern instrument	14 (12)	106 (88)	70.53
	Scope of higher education is limited	42 (35)	78 (65)	10.8
	Frequent students violence	71 (59)	49 (41)	4.03
	Unqualified and inadequate teacher	29 (24)	91 (76)	32.033
	Increased course duration (from 3 years to 4 years)	21 (18)	99 (82)	50.7
	Lack of motivation	8 (7)	112 (93)	90.13
	Polytechnic is situated far away from the place of residence	22 (18)	98 (92)	32.03
<b>Social Problems</b>	Low Social status of Diploma Engineers	37 (31)	83 (69)	17.633
	Unemployment after passing	37 (28)	83 (69)	17.633
	Female students are not encouraged	1 (13)	7 (87)	04.50
<b>Economic Problems</b>	Polytechnic education is expensive	21 (21)	99 (82)	50.7
	Guardians inability to bear the expenses	21 (21)	99 (82)	50.7
<b>Personal Problems</b>	Diploma Engineering courses are tough	6 (5)	114 (95)	97.2
	Did not get the subject as expected	42 (35)	78 (65)	10.8
	Get job such as in army, police or private farm etc.	14 (12)	106 (88)	70.53

$\chi_c^2$  at 0.01 level of significance = 6.635; Degrees of freedom,  $df = 1$

If,  $\chi_c^2 > \chi_{ob}^2$  then the opinion given by the responds are considered to be significant.

If,  $\chi_c^2 < \chi_{ob}^2$  then the opinion given by the responds are considered to be insignificant.

(Here, N=120; and figure in the parenthesis indicate the percentage)

The above table reveals that in most of the cases the opinions of the respondents are very much significant. However regarding *frequent student violence* and *Female students are not encouraged*, it has been observed that the opinions of the respondents were insignificant and against their opinion.

## FINDINGS AND DISCUSSIONS

The findings of this study are classified in four major areas namely- Institutional, Social, Financial and Personal. Surprisingly in majority cases, the research findings indicate that the respondents considered the problems mentioned in this study as the causes of student's dropout are not the actual causes. It seems there are some other problems correlate with these problems and causes the increase in dropout. The following is the brief explanation in the four selected areas-

### Institutional Problem

In this area only the *frequent violence* made by the students considered as the top causes for the students drop out after first semester. As the polytechnic institutes are very much involved with the student politics, therefore it is a common scenario of most of the polytechnics that there is political violence occurred throughout the year and hamper heavily the continuation of academic environment. Even some times it has been observed that some *Mastan* (politically or locally powerful) students demanded money for admission to the new students. However the other points raised in this study were not considered that much significant for the student dropout by the respondents. But still the *scope of higher education is limited* after passing the polytechnic- in this point a considerable portion (35%) of the respondents were agreed as a cause of students dropout.

### Social Problems

It has been observed that among the dropout student a considerable portion is female students. The findings of this study indicate that the reason behind the female student dropout is that they are not socially encouraged to go for diploma engineering. Sometimes their parents prefer marriage over the study in diploma engineering for their female child. In case of the *status of diploma engineer* which seems to be comparatively low in the society and *the unemployment rate* after their passing, majority of the respondents did not agree with these thoughts though a significant portion of them were agreed.

### Economic Problems

Majority of the respondents considered that the following economic problems are not the causes of student's dropout from diploma engineering courses which are - *Polytechnic education is expensive* and *Guardian's inability to bear the expenses* for their child. And the statically analysis indicate that the respondents views were statistically significant. Therefore we could safely conclude that there exists no financial problem for the students as well as to the parents.

### Personal Problem

In case of personal problems majority of the respondents considered that there exist no significant causes of student's dropout from diploma engineering courses. Our analysis also indicates that their opinion is statistically significant. However a considerable portion of the respondents (35%) were in view that – sometimes the students did not get the desirable subject for their study. It may consider as an important factor for the students dropout.

## CONCLUSIONS AND RECOMMENDATIONS

On the basis of the findings it was clear that student's dropout from diploma engineering courses of Bangladesh is not due to a single cause. Dropouts are in general caused by reasons such as parents preferring to send their children to work rather than study due to the inability of families to secure study expenses, social reasons such as early marriage, and security reasons such as hazardous roads or instability, all in all representing a grave social crisis. Based on the findings the following conclusions can be drawn about the students' dropout in polytechnic institutes of Bangladesh. The most likely causes are:

- a. Frequent students violence due to political influence
- b. Female students are not encouraged for diploma engineering study
- c. Students did not get the subject as expected for their study
- d. Students think that there is lack of provision for higher study after passing from polytechnic institution.
- e. Guardian's inability to bear the expenses

Based on the above discussion it is very clear that to reduce the dropout rate of the students a multidirectional system approach should be taken. In this regard the following recommendation could play an important role to reduce the dropout rate of the students-

1. The environment of the institution must be free from political influence and the administration must ensure a sound and secure environment to the students.
2. Female students' opportunities should be increased and the infrastructures of the polytechnic should be developed accordingly.
3. There should be a guidance and counseling office for the students. The main purpose of this office is to guide and motivate the students during their study. It can also guide the students for their higher education opportunities.
4. The curriculum should be revised and adopted according to the demand of the employers to generate more employment opportunities at home and abroad.
5. Train up the teachers for operation of modern tools and equipment and to ensure the availability of instruments for Practical classes so that students can acquire sufficient practical knowledge.
6. The administrators & all the teachers of Polytechnics should be alert in the time of admission so that nobody can make any undue demand (i.e. demand money for admission). Even if required authority can take help from police author during admission time.
7. Modern instruments may be procured in Polytechnics and Teacher's Industrial Training should be arranged on compulsory basis, so that they can train the students in such a way that if the graduates do not get any job still they can perform self-supporting job efficiently. In that case the students will become interested to get admission in the Polytechnics and the dropout rate will reduce.

Obviously all polytechnic institutes cannot implement all of these practices. But, some of them would definitely help reduce the student dropout rates. At the same time the institutions should consider what they can do to increase enrollments and reduce dropout rates as the continued success of our country depends on it.

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