MATHEMATICAL MODEL FOR THE COMPARISON OF BOYS AND GIRLS SCHOOLING AND DROP-OUTS FOR CLASS – I IN PUBLIC SECTOR SCHOOLS OF SINDH, PAKISTAN

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Abstract

Abstract

A number of children of age 4 years, are being admitted in every year in different schools of Sindh Province, in which adequate number of students enrolled in class –I and there after dropped out silently in the next class-II due to various reasons, consequently a tendency of schooling/ Drop-out in both the genders is arising. In this connection a Mathematical Model is being developed to illustrate the effect of Schooling and Drop out trend in the students at initial stage. More over, reasons for Drop-out at early stage are also explored with indicating the remedial action to prevent the leaving of school at Primary level.

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Introduction

The Universal Declaration of Human Rights, adopted by the United Nations in 1948, asserted that "everyone has a right to education" [UNESCO 2010] It is universally recognized that the education play an important role in the socio economic development of every country. In Pakistan majority of population is illiterate and the huge faction of school going population is out of school [UNESCO, 2005]. Illiteracy is one of the major and basic problems of education in Pakistan. High drop-out rates is another major factor obstructing the enhancement of the literacy rate. Drop-out is one of the major and serious problems which affect the ongoing efforts towards Education for All [EFA, 2001] and Millennium Development Goals [MDG]. Especially MDG 2 which recommended that all boys and girls complete a full course of primary schooling by 2015 [Kazmi, 2005]

Literature Review

Pakistan is presently implementing several policies and programmes in line with Education-For-All which constitute the National Education Policy (1998-2010). The policy goals were propose to enhance the retention and completion of primary education cycle up to 90% students (both boys and girls) by the year 2010. According to all recent UNESCO reports Pakistan is not on track and has serious risk to attain the goal by 2015. Unfortunately the Government in the past has been unable to achieve the desired enrollment targets or control the drop out rate. Official estimations show more than 5.5 million primary school children between the ages of 5 and 9 are left-outs and during 2003-04, a total of 40% boys and 28% girls (both rural and urban) of total enrollments in the first year of primary schooling failed to reach middle and secondary schooling levels [SEF] . For rural areas this rate was 58% and 66% for boys and girls respectively,[SEF] The significant levels of Drop-out have hindered optimum utilization of school space and resources and the expected benefits of increased enrollments have also stayed less effective. Improving retention and completion of primary education, this remains one of the major challenges facing the Government, although school Drop-out is a very critical area, Despite all genuine efforts / measure taken by the Govt., the objective could not be achieved in its true letter and spirit.

In the Province of Sindh, Drop-out individuals in Primary Schools are increasing in each class in every year, despite allocation of sufficient funds to the institutions with the implementation of different strategies, policies to retain the students in the classes of Primary Schools upto their finalization of Primary Education Schooling, no fruitful results have been achieved and still we are facing the increase in Drop-out rates. According to the SEMIS data [SEMIS 2000-10] the Drop-out are much more than in the Rural Areas of Sindh in Govt. Sector Primary Schools. However, Govt. provides better facilities to cop up with the problem but position is still alarming. As per the statistics / data available about 30 % children are still out of school during 2009-10 and at an average of 29 % children drop out just after passing Class–I schooling in each year. The proposed Mathematical Model will help to checkout the situation of Schooling, and Drop-out individuals in both genders in a very early stage of education.

Mathematical Model For Schooling And Drop-out In Early Education

Let the number of 4th year population in a particular region be Po(t) at year t=to And the number of schooling children in class –I in the same region be S1(t) at year t=t1 . also the number of schooling children i.e S(t) for $t_o < t < t_1$

Satisfying $S_o(t_o) = S_o$ & $S_1(t_1) = S_1$

Now consider the rate of Schooling of class-I boys children only which is calculated from their respective projected population P(t) and is denoted by RBS. Similarly, the rate of schooling of Girls children is denoted by R_{GS}

Let us consider some factors which were being caused for the increasing or decreasing in the schooling children

in class-I. therefore 'α' is the rate of those Schooling children who were motivated to take admission in class-I due to some monitory incentive initiated in that area during time Δt and 'β' is the rate of those schooling children who were motivated by the education environment in the same region during the same interval of time and 'τ' is the rate of those schooling children motivated by their parents willingness during Δt So, according to the condition

$$S(t+\Delta t) = S(t) + \alpha S(t)\,\Delta t + \beta S(t)\,\Delta t + \tau S(t)\,\Delta t$$

$$S(t+\Delta t) - S(t) = \alpha S(t)\,\Delta t + \beta S(t)\,\Delta t + \tau S(t)\,\Delta t$$

$$= \Delta t\,[\alpha S(t) + \beta S(t) + \tau S(t)]$$

$$\frac{S(t+\Delta t) - S(t)}{\Delta t} = [\alpha S(t) + \beta S(t) + \tau S(t)]$$

by taking limit on both sides

$$\lim_{\Delta t \to 0} \frac{S(t+\Delta t) - S(t)}{\Delta t} = \lim_{\Delta t \to 0} [\alpha S(t) + \beta S(t) + \tau S(t)]$$

$$\frac{dS}{dt} = S(t)\,[\alpha + \beta + \tau]$$

$$= K S(t) \qquad \text{As } [\alpha + \beta + \tau] = K$$

$$\frac{dS}{dt} = K S$$

$$\frac{1}{S} dS = K\,dt \qquad \text{---------- (1)}$$

Variable separable, By integrating

$$\int \frac{1}{S} ds = \int K dt$$

$$\text{Ln } S = K t + c \qquad \text{---------- (2)}$$

Where c is constant of integration

To find constant 'c'

Initial condition $S=S_o \qquad t = t_o$

$$\text{Ln } S_o = K t_o + c$$

$$C = \text{Ln } S_o - K t_o$$

By putting value of C in equation (2)

$$\text{Ln } S = K t + \text{Ln } S_o - K t_o$$

$$\text{Ln } S - \text{Ln } S_o = K t - K t_o$$

$$\text{Ln } (S / S_o) = K (t - t_o)$$

Taking exponential on both sides we have

$$S / S_o = e^{K(t - t_o)}$$

$$S = S_o e^{K(t - t_o)}$$

If $t_o = 0$, then

$$K>0 \qquad S = S_o e^{Kt} \text{ ----------(A)}$$

Similarly

$$K< 0 \qquad S = S_o e^{-Kt} \text{ ----------(B)}$$

These equations shows that the exponential growth and decay rate of schooling, the number of schooling children in class –I is increasing in the region shows exponentially growth trend as eq (A) similarly the number of schooling children is decreasing in the region shows exponentially decay trend as eq (B). The value of K may be obtained from Equation (A) above

$$S / S_o = e^{Kt}$$

Taking Ln on both side

$$\text{We have Ln } (S / S_o) = K t$$

$$K = \frac{\text{Ln } S - \text{Ln } So}{t}$$

Where t= 1,2,3,4,------ for yearly

Table: 1 STATEMENT SHOWING THE NUMBER OF PRIMARY STAGE SCHOOLING
(4TH YEAR AGE CLASS-I)
WITH GENDER WISE OF THE YEARS 2001-2009

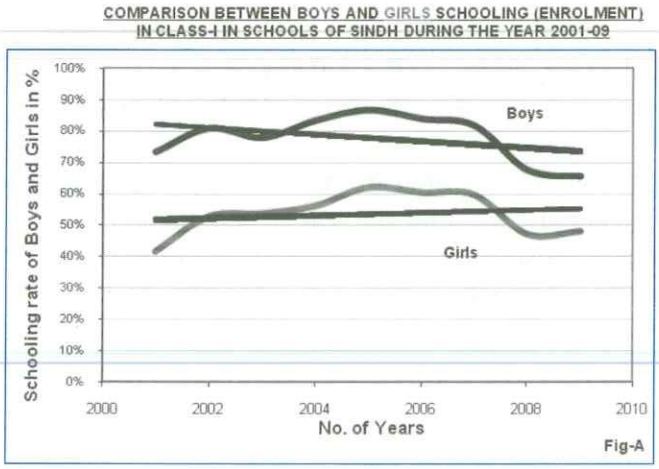
Years	FOR BOYS PRIMARY STAGE CLASS - I			FOR GIRLS PRIMARY STAGE CLASS - I		
	S_{PB}	P_{PB}	R_{BS}	S_{PG}	P_{PG}	R_{GS}
2001	0.436	0.594	73%	0.233	0.557	42%
2002	0.494	0.611	81%	0.303	0.573	53%
2003	0.489	0.628	78%	0.317	0.589	54%
2004	0.538	0.645	83%	0.341	0.605	56%
2005	0.575	0.663	87%	0.387	0.622	62%
2006	0.572	0.682	84%	0.387	0.639	61%
2007	0.573	0.701	82%	0.393	0.657	60%
2008	0.488	0.721	68%	0.320	0.676	47%
2009	0.487	0.741	66%	0.335	0.695	48%
		Average	70%		Average	48%

S_{PB} = Boys Primary Schooling (Enrolment) of Class - I
S_{PG} = Girls Primary Schooling (Enrolment) of Class - I
P_{PB} = Boys' 4TH Year's Age Population (Projected) for Primary Class - I
P_{PG} = Girls' 4TH Year's Age Population (Projected) for Primary Class - I
R_{BS} = Boys' Primary Schooling rate from 4TH year's age population
R_{GS} = Girls' Primary Schooling rate from 4TH year's age population

Source:

- Sindh Education Management Information System, Govt. of Sindh, Pakistan, [SEMIS, Annual Report 2009-10]
- Population Census Report 1998 . Govt. of Pakistan. [Census 1998]
- Sindh Population Growth rate 2.8 % annually

COMPARISION BETWEEN BOYS AND GIRLS SCHOOLING



Class –I schooling of both gender is shown in Fig.A, the trend lines shows the schooling of class –I aged children in public sector primary schools, The boys enrolment indicate decreasing trend and termed as exponentially decay function where as girls enrolment indicate slightly increasing trend and also termed as exponentially growth function. The Model function for both boys and girls are as under:

Model function for Boys Schooling

$$y = 0.834e^{-0.01x}$$

$$R^2 = 0.164$$

Model function for Girls Schooling

$$y = 0.510e^{0.008x}$$

$$R^2 = 0.032$$

The coefficient of determination R2 are 0.164 (decay) and 0.032 (growth) for boys and girls schooling respectively. The slightly increasing trend in girls schooling may be attributed to the different incentives, beneficiary programme such as GPEDP [GPEDP], MSP [MSP], and girls stipend programme through RSU [RSU] launched by the Govt. for the promotion of girls education in Sindh, Pakistan on the other hand boys schooling were being ignored or given less priority and therefore the schooling of boys were not increase in the subsequent years. The Table-1 indicates that at an average, 30% boys and 52% girls are not approaching for the admission in primary class-I. As such a big gap is being developed in schooling of both genders. The bias attitude by the concerned authorities results an adverse effect on boys schooling. To eradicate the bias attitude in early education a balance policy should be developed in early education for the elimination of gender inequality, so that both the gender has equal opportunity to get education.

Application of Model on Schooling Data

The data of the Schooling children both for Boys and Girls in class-I in the region of Sindh Province is taken from SEMIS Sindh school census and are being examine with the help of model presented at equation A and B, here we can take rate % of schooling instead of number of schooling, the rate% of schooling is calculated from their respective 4th years age population for the initial entry of student in class -I. so the equation A and B can be written as

$K>0 \quad R^S = R_{So}\, e Kt$ ----------(A-1)

Similarly

$K< 0 \quad R^S = R_{So}\, e\text{-}Kt$ ----------(B-1)

Here t is the number of year

For Model Equation of Boys Schooling

$Y = 0.834_{\ e\text{-}0.01x}$ ----------(1)

$R\bullet = 0.164$

Now From equation (B-1) $RS = R_{So}\, e\text{-}Kt$ --------- (2)

Now we calculate the value of K

$$K = \frac{\text{Ln RSB - Ln } R_{SBO}}{t}$$

$$K = \frac{\text{Ln } 0.730 \text{ - Ln } 0.81}{1}$$

$=- 0.3147 – (-0.2107) =- 0.01$

Now comparing the equation (1)and (2)

Take, RS0=0.73 i,e 73% schooling of their respective 4th year aged population is recorded in class-I in the year 2001 in sindh province. This is the initial Boys Schooling in class-I in the year 2001 (i.e Ist year)

RSB = y % Number of children (4th year aged) admitted of the same aged

projected population

K=-0.01 ,

t = x Number of year

To check the validity of the Model the rate % of Schooling in class-I in Sindh has been calculated as under

For year 2002 $R_{SB} = 0.834^{\ e\text{-}0.01(2)}$

=0.817, that is 82% Boys Schooling

The above Equation shows that the Boys Schooling of class –I in sindh province is the Exponential Decay Rate Function. As per the actual data the boys schooling of class-I in sindh province during the year 2002 were 81%. However, model indicates boys schooling is 82% of their respective age group population, both results are almost same. It confirms that the model is appropriate.

Now, we have calculated the boys schooling for the years 2012, 2013 and 2015 with the help of the same model the results are as follows. We write the equation of exponentially decay rate function of boys schooling of class-I as

$R_{SB} = 0.834\ e^{-0.01x}$

For the year 2012 $R_{SB} = 0.834\ e^{-0.01(12)}$

= 0.739 that is 74% Boys Schooling

For the year 2013 $R_{SB} = 0.834\ e^{-0.01(13)}$

=0.732 that is 73% Boys Schooling

For the year 2015 $R_{SB} = 0.834\ e^{-0.01(15)}$

=0.718 that is 72% Boys Schooling

The above results indicate that the expected Boys Schooling of Class-I for the year 2012, 2013 and 2015 will be approximately 74%, 73% and 72% of the same age year projected population respectively

For Model Equation of Girls Schooling

$R_{SG} = 0.510\ e0.008x$ ----------(1)

$R\bullet = 0.032$

Now From equation (B-1)

$R^{SG} = R_{So}\ e^{Kt}$ ---------- (2)

Now we calculate the value of K

$$K = \frac{Ln\ R_{SG} - Ln\ R_{SG0}}{t}$$

$$K = \frac{Ln\ 0.42 - Ln0.416}{1}$$

$= 0.008$

Now comparing the equation (1)and (2)

Take, R_{SG0}=0.42 i,e 42% schooling of their respective 4th year aged population is recorded in class-I in the year 2001. This is the initial Girls Schooling in class-I in the year 2001 (i.e Ist year)

R_{SG} = y % Number of children (4th year aged) admitted of the same aged

projected population

K=0.008 ,

t = x Number of year

To check the validity of the Model the rate % of Schooling in class-I in Sindh has been calculated as under

For the year 2002 $RSG = 0.510\ e^{0.008(2)}$

=0.552 , that is 55% Girls Schooling

The above Equation shows that the Girls Schooling of class –I in sindh province is the Exponential Growth Rate Function. As per the actual data the girls schooling of class-I during the year 2002 were 53%, However,

Table: 2 STATEMENT SHOWING THE NUMBER OF PRIMARY STAGE DROP-OUT (4TH YEAR AGE CLASS-I) WITH GENDER WISE OF THE YEARS 2001-2009

Years	FOR BOYS PRIMARY STAGE CLASS – I			FOR GIRLS PRIMARY STAGE CLASS - I		
	S_{PB}	D_{PB}	R_{BD}	S_{PG}	P_{PG}	R_{GD}
2001	0.436	0.124	28%	0.233	0.065	28%
2002	0.494	0.162	33%	0.303	0.107	35%
2003	0.489	0.134	27%	0.317	0.099	31%
2004	0.538	0.131	24%	0.341	0.090	26%
2005	0.575	0.171	30%	0.387	0.132	34%
2006	0.572	0.182	32%	0.387	0.144	37%
2007	0.573	0.185	32%	0.393	0.148	38%
2008	0.488	0.112	23%	0.320	0.076	24%
2009	0.487	0.117	24%	0.335	0.089	27%
		Average	25%		Average	28%

D_{PB} = Boys Primary Drop-out (Enrolment) of Class - I
D_{PG} = Girls Primary Drop-out (Enrolment) of Class - I
P_{PB} = Boys' 4TH Year's Age Population (Projected) for Primary Class - I
P_{PG} = Girls' 4TH Year's Age Population (Projected) for Primary Class - I
R_{BD} = Boys' Primary Drop-out rate from 4TH year's age population
R_{GD} = Girls' Primary Drop-out rate from 4TH year's age population

Source:

- Sindh Education Management Information System, Govt. of Sindh, Pakistan, [SEMIS, Annual Report 2009-10]
- Population Census Report 1998 . Govt. of Pakistan. [Census 1998]
- Population Growth rate 2.8 % annually

model indicates girls schooling is 55% of their respective age group population, both results are almost same. It confirms that the model is appropriate. Now, we have calculated the girls schooling for the years 2012, 2013 and 2015 with the help of the same model the results are as follows.

We write the equation of exponentially growth rate function of girls schooling of class-I as

$$RSG = 0.510\ e\ 0.008x$$

For the year 2012 $RSG = 0.510\ e^{0.008(12)}$

$=0.561$ that is 56% girls Schooling

For the year 2013 $RSG = 0.510\ e^{0.008(13)}$

$=0.565$ that is 57% girls Schooling

For the year 2015 $RSG = 0.510\ e^{0.1008(15)}$

$=0.575$ that is 58% girls Schooling

The above results indicate that the expected girls Schooling of Class-I for the year 2012, 2013 and 2015 will be approximately 56% 57% and 58% of the same age year projected population respectively

COMPARISION BETWEEN BOYS AND GIRLS DROP-OUT

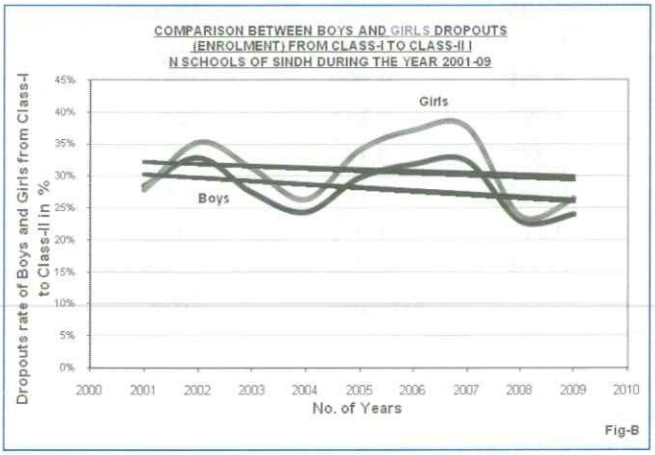


Fig-B

Class –I Drop-out of both genders is shown in Fig.B, the trend lines show the Drop-out enrolment from class –I to class-II in public sector primary schools of Sindh Province . Both boys and girls Drop-out indicates decreasing trend and termed as exponentially decay function. The Model function for both boys and girls are as under:

Model function for Boys Drop-out of Class-I to Class-II

$y = 0.307e-0.01x$

$R2 = 0.148$

Model function for Girls Drop-out of Class-I to Class-II

$y = 0.325e-0.01x$

$R2 = 0.032$

The coefficients of determination R2 are 0.148 (decay) and 0.032 (decay) for boys and girls Drop-out respectively. From the Fig-B the negative trend are in both boys and girls drop-out from class–I to class-II. And the table-2 indicates that at an average, 25% boys and 28% girls have been dropped-out respectively in every subsequent year.

Application of Model on Drop-out Data

The data of the Drop-out children both for Boys and Girls from class-I to class-II in the region of Sindh Province compiled through SEMIS Sindh school census and are being examine with the help of model presented at equation A and B, here we can take rate of Drop-out instead of number of Drop-out, the rate of Drop-out is calculated from their respective year of schooling. So the equation A and B can be written as in terms to find the trends in Drop-out rate.

$$K>0 \quad R_D = R_{DO}\ e^{Kt} \text{ ----------(A-2)}$$

Similarly

$$K<0 \quad R^D = R_{DO}\ e^{-Kt} \text{ ----------(B-2)}$$

Here t is the number of year

For Model Equation of Boys Drop-out

$$R_{DB} = 0.307\ e^{-0.01x} \text{ ----------(3)}$$

$$R^2 = 0.148$$

Now From equation (B-2) $R_{DB} = R_{DBO}\ e^{-Kt}$ ---------- (4)

Now we calculate the value of K

$$K = \frac{Ln\ R_{SB} - Ln\ R_{SBO}}{t}$$

$$K = \frac{Ln\ 0.28 - Ln 0.31}{1}$$

$$= -1.273-(-1.172) = -0.01$$

Now comparing the equation (3)and (4)
Take, RS0=0.28 i,e 28% Drop-out children from class-I to class-II in the year 2001. This is the initial Boys Drop-out from class-I to class-II in the year 2001 (i.e Ist year)
RDB = y % Number of children Drop-out in t year from class-I to class-II
K=-0.01
t = x Number of year
To check the validity of the Model the rate % of Drop-out from class-I to class-II has been calculated as under
For the year 2002 $RDB = 0.307\ e^{-0.01(2)}$
$=0.30$, that is 30% Boys Drop-out

The above Equation shows that the Boys Drop-out of class –I to Class-II is the Exponential Decay Rate Function. As per the actual data the boys' Drop-out of class-I to class-II during the year 2002 were 33%. However, model indicates boys' Drop-out is 30%, both results are almost same. It confirms that the model is appropriate. Now, we have calculated the boys' Drop-out for the years 2012, 2013 and 2015 with the help of the same model the results are as follows.

We write the equation of exponentially decay rate function of boys Drop-out of class-I to class-II as

$$R_{DB} = 0.307\ e^{-0.01x}$$

For the year 2012 $R_{SB} = 0.307\ e^{-0.01(12)}$
$=0.272$ **that is 27% Boys Drop-out**

For the year 2013 $R_{SB} = 0.307\ e^{-0.01(13)}$
$=0.269$ **that is 27% Boys Drop-out**

For the year 2015 $R_{DB} = 0.307\ e^{-0.01(15)}$
$=0.264$ **that is 26% Boys Drop-out**

The above results indicate that the expected Boys Drop-out of Class-I to class-II for the year 2012, 2013 and 2015 will be approximately 27% and 26% of the schooling population respectively

For Model Equation of Girls Drop-out

$$R_{DG} = 0.325\ e^{-0.01x} \quad \text{----------(3)}$$

$R^2 = 0.032$

Now From equation (B-2) $R_{DG} = R_{DGO}\ e^{-Kt}$ ---------- (4)

Now we calculate the value of K

$$K = \frac{\text{Ln } R_{DG} - \text{Ln } R_{DGO}}{t}$$

$$K = \frac{\text{Ln } 0.28 - \text{Ln} 0.31}{1}$$

$= -1.273-(-1.172) = -0.01$

Now comparing the equation (3)and (4)

Take, RDG0=0.28 i,e 28% Drop-out children from class-I to class-II in the year 2001 in sindh province. This is the initial Girls Drop-out from class-I to class-II in the year 2001 (i.e Ist year)

RDG = y % Number of children Drop-out in t year from class-I to class-II

K=-0.01
t = x Number of year
To check the validity of the Model the rate % of Drop-out from class-I to class-II has been calculated as under

For the year 2002 $RDG = 0.325\ e^{-0.01(2)}$
$=0.318$, that is 32% Girls Drop-out

The above Equation shows that the Girls Drop-out of class –I to Class-II is the Exponential Decay Rate Function. As per the actual data the girls Drop-out of class-I to class-II during the year 2002 were 35%. However, model indicates girls Drop-out is 32%, both results are almost same. It confirms that the model is appropriate.

Now, we have calculated the boys' Drop-out for the years 2012, 2013 and 2015 with the help of the same model the results are as follows.

We write the equation of exponentially decay rate function of boys Drop-out of class-I to class-II as

$R_{DG} = 0.325\ e^{-0.01x}$

For the year 2012 $R_{SG} = 0.307\ e^{-0.01(12)}$

$=0.288$ that is 29% Girls Drop-out

For the year 2013 $R_{SG} = 0.307\ e^{-0.01(13)}$

$=0.285$ that is 29% Girls Drop-out

For the year 2015 $R_{DG} = 0.325\ e^{-0.01(15)}$

$=0.279$ that is 28% Girls Drop-out

The above results indicate that the expected Girls Drop-out of Class-I to class-II for the year 2012, 2013 and 2015 will be approximately 29% and 28% of the schooling population respectively

RESULTS AND DISCUSSION

According to the above studies following Model function for Boys and Girls of Schooling as well as Drop-out are obtained

Model function for Boys Schooling
y = 0.834e-0.01x
R2 = 0.164

Model function for Girls Schooling
y = 0.510e0.008x
R• = 0.032

Model function for Boys Drop-out of Class-I to Class-II
y = 0.307e-0.01x
R2 = 0.148

Model function for Girls Drop-out of Class-I to Class-II
y = 0.325e-0.01x
R2 = 0.032

The coefficient of determination R2 shows 16% decay variability in boys schooling whereas 3% growth variability in girls schooling, on the other hand the approximately 15% and 3% decay variability in Drop-out of boys and girls respectively.

The above studies shows that main factor of low schooling in girls education is the social structure of rural areas this may be termed as social factor in the schooling of both the genders. The situation becomes alarming when approximately half of the enrolments of girls left their schools in class-II (Table-1 and 2)

Beside social factor there are also some other main factors like poverty (out of school factor) and low learning achievement & Physical Punishment (In school factor), which affect on the Schooling and Drop-out in both the genders as under:

(a) Social factor of Drop-out:

The 27% (average) Drop-out rate at initial stage of primary education indicates that the parents have interested in the education of their children but the in-school environment has not attracting the children due to the poor quality of class curriculum, the physical punishment at initial classes, the poverty situation in their family lives, all of these have forced the children to discontinue their education. The another hidden factor is the social structure of the rural areas of Sindh, in which there is clear difference in feudal who is the land owner and the farmer who with their family works on feudalist land and take interest bear capital from the feudal and face always social pressure which ultimately affect the education of farmers' children. Feudal need workers for miscellaneous jobs, the farmers' families are the manpower and meet all the requirements of the land lord. The feudal always intend to refrain the farmers' children to get education. Because, the feudal knows that if the farmers' children got education, then they have opportunity for better jobs, out side and may exit from the grab circles of feudal.

(b)Poverty:

The main out-of-school reason for leaving primary school is financial. The above studies show that poverty be the main reason forcing children out of school, almost 79% of drop out are from low income house hold. In these families, children also play the role of wage earner. Children must work to support their families or their families can no longer afford to send

them to school.

(c)Low learning achievement and Physical Punishment:

The main in-school factor contributing to drop out is low learning achievement. Some children repeatedly fail and repeated their class year after year, which reduces the benefits of schooling and the lengthening of the school cycle that increases the costs of education. Physical punishment gives the students by the teachers is another reason for the drop out. In 1989, 52% of Pakistani teachers were found to use physical punishment with their students.[www.yespakistan.com]. In the long run reducing drop out rates results in a decrease in both the direct and opportunity costs of primary schooling. This in turn increases enrolments and is an important step in achieving universal primary education in Pakistan.

While studying the situation of schooling children admitted in class-I it is noticed that the Class-I enrolment is not reasonable with respect to the specific 4th year aged population. According to the Data of SEMIS, Sindh, Just about 65% children from the 4th year aged population are being admitted in their First session of schooling, alternatively 35% of the same age group population is out of school in each year in sindh province. The situation is become alarming when 27% of 65% schooling children left their school or dropped out during or after completing their class-I schooling.

It is obvious, that the situation in primary education revealed that a large number of children left their schooling even in or after first year of their schooling, and thus a big difference created between number of children admitted in Class –I with the number of children who passed Class-V after completing their five years of schooling period.

CONCLUSION:

It is evident from the above studies that girls student in their initial classes having approximately half drop-out rate as 28% dropout from 48% Schooling (table-1) which is not comparable with boys having 25% dropout from 70% schooling (table-2) as it still 52% and 30% of 4th year aged girls and boys population is out of school respectively (Table-1). Hence, in the subsequent years 2012,2013 and 2015, the situation for schooling and drop-out in both genders in class-I to Class-II are not seems to be changed, tabulated as under:

	Boys (in %)			Girls (in %)		
Year:	2012	2013	2015	2012	2013	2015
Schooling	74%	73%	72%	56%	56%	57%
Drop-out	27%	27%	26%	29%	29%	28%

In this study and with the help of different model equations we can calculated and forecasted the number of Drop-outs' in any particular areas of schools in a given particular year and the same may be minimized upto zero drop-outs by controlling the reason of affect on drop-out rate, the reason comprising poverty, illiteracy, lack of motivation among children, learning difficulties, child labour, corporal punishment, teachers attitude, lack of co-curricular activities, formal and traditional way of teaching , school environment, lack of basic physical facilities, lack of monitoring and accountability are the major causes for drop out. Thus the Drop-out problem is a community, economic and social problem. The Drop-out problem is rooted in rampant poverty and dearth of resources in the rural areas. Disregard of economic activities would mean a threat to survival and since education does not come with promise of future jobs, there will be little

meaning in preferring schooling for the child. Thus, heavy dependence on family labor for livelihood is crucial.

Consequence of Drop out is that it reduces the enrolment rate and obstructs the enhancement of adult literacy rate. Beside illiteracy and reducing enrolments rates, high rates of Drop-out also lead to internal inefficiency in educational system and also increased the unit cost of producing school graduates.

RECOMMENDATIONS:

Following are the recommendations which can help in reducing the Drop-out rates of initial classes of primary education,

- Develop child bearing curriculum in initial classes (i.e one book curriculum)
- Appoint female teachers for initial classes (female teachers are much polite and tolerant than male teacher for nascent children.)
- Teachers' absenteeism should be strictly monitored.
- The school and class room atmosphere must support the child interest
- The less financial burden should be on the shoulders of parent (i.e one book curriculum, without uniform dress, and use of slate for written practice)
- Initial classes must be in mother tongue only
- Community of the area must be motivated for the children education
- Educational culture should be spread through media

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