The Determinants of Literacy and Educational Attainment: An Investigation of Regional Patterns of Elementary Education in West Bengal

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By

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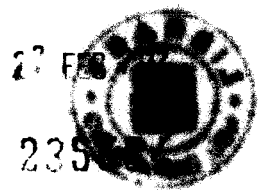

Dissertation Abstract

At the dawn of Indian planning regime (1950), the Government of India was constitutionally committed to ensure education for the children belonging in the age group of 5-14 years within 10 years. Having failed to achieve the goal of education for the children, the Indian parliament amended the Constitution by making education a Fundamental Right of the child between the ages 6-14 years (The 86th Constitutional Amendment Act 2002).

India is the second largest populous country in the world sharing more than 17% of world's total population. Considering this substantial strength in the sheer number of persons, it becomes important to examine the qualitative nature of the population with respect to educational achievement as well as to make an assessment of the failure to achieve the same. For this, the study leads to an enquiry into the nature and causes of not achieving the target of universal elementary education in the country in spite of considerable economic growth.

It is from this background the present research work has been undertaken firstly with a view to make an assessment of progress of India's educational development. Special reference has been made to the state of West Bengal and Uttar Dinajpur district of the state in particular. Thus the study is carried out to identify and measure the nature and extent of educational backwardness in India at various disaggregated level. Literacy development and achievement of elementary education have mainly been emphasized. To carry out the study it has been hypothesized that lower educational attainment may primarily result from higher incidence of poverty/low level of income, female work participation, dependency on agriculture, job opportunity of children and proportion of socially disadvantaged people. While the above factors are mainly hoe hold related, enabling factors incorporated in the study are proportion of female teachers in schools, better coverage of school, pupil-teacher ratio, parental level of education, secured and regular income of the group of population. Apart from this, some micro level issues are also addressed in the study.

The study commences with the relevance and significance of the research, methodology used for collecting and analysing the data, and review of available literature. A historical background of educational development in India has been examined drawing a trend of development between the periods 1950-51 and 2000-2001. In order to comprehend the educational variation within the region of the country, a state level analysis of educational development is briefly discussed. From the review and analysis of the state level literacy trend and educational development, West Bengal has been found as one of the educationally backward states in India. Again, for the purpose of identifying the educationally deprived area of West Bengal, an inter-district analysis has been carried out. This analysis also makes an attempt to correlate the underlying factors of regional variation at district and sub-district level by analyzing the secondary data. Among the 18 districts of the State, Uttar Dinajpur has been identified as the most backward district in respect of literacy development and achievement in elementary schooling. Accordingly, a detailed analysis of the educational pattern (both enabling attributes and achievement attributes) is carried out at sub-district and mouza level. Here an attempt has also been worked out to identify the factors held responsible for such a lower educational performance of the district using the secondary data. Finally, a supportive micro level study is carried out in four villages of the district with a view to identify the major factors for educational backwardness of the study area.

Two specific econometric techniques namely, Multiple Regression Analysis with OLS method and Logistic Regression Analysis with MLE method, that have been applied for the analysis of data at micro level study are also detailed out for understanding of the usefulness

and justification of the specific methodology for the selected study. A comparison of micro level findings with those of the macro level study is also provided for better understanding of the problem of educational backwardness in the state in particular and in the country in general.

The study identifies critical areas of concern based on differential achievement in education in rural India and amongst females. It is thus suggested to formulate a holistic policy for Indian females, especially in the rural area for a balanced educational development in India. The present study advocates for raising the public expenditure on education gradually to 6% of GDP over the 11th plan period (2007-12) for achieving the MDG and EFA Goals within 2015. It raises a severe discrepancy in respect of school availability on the ground that there is an imbalance in the ratio of primary to upper primary schools in India. Acute shortage of stage-integrated school at elementary level and considerably low proportion of female teacher at primary level of education in India have remained as two of the main problems of school education in the country. These twin issues are found to be more prominent in West Bengal. As such establishment of schools having the facility of education from grade-I to at least Grade-VIII (i.e., primary with upper primary schools) especially in remote areas, may be fruitful for completion of eight years of schooling. A comparative study reviewing the educational development of elementary school children belonging to stage-integrated and stage isolated schools may throw light on some better directions.

The district level analysis of literacy trend and analysis of school education system in West Bengal categorically identifies the five districts of northern part along with three other districts of south-western part as the low performed districts that need special attention. The present study has empirically tried to find out the causes of such an educational deprivation in one district only, i.e., Uttar Dinajpur. Similar, micro-level study may be undertaken in future in the other deprived districts too for understanding of the root of the problem. In West Bengal, educational deprivation is mostly found among two sections of population, namely, Scheduled Tribes and Muslims. These critical areas have to be specially handled.

The empirical findings on rural West Bengal show that educational achievement at household level has positive association with the proportion of income spent on children's education rather than merely with level of income. In this respect, providing cash incentives to the households who are sending their children to school may be an attractive policy measure for the guardian living below poverty line (BPL). TLC is suggested in this district as because the success of the programme has been quite satisfactory. Better educational attainment is found to be higher among the cultivators compared to the agricultural labourers. Both secondary and primary data analysis supports the finding. Accordingly, review and re-strengthening of the State Government's popular measure of land reform may bring about shift in the occupational pattern of workers from predominantly agricultural labourers to cultivators. Although a negative effect is observed at district level secondary data analysis, female work participation remains inconclusive at micro level study. By comparing the relative magnitude of regression coefficients, it is found that the educational level of mothers is really doing most of the works in explaining the overall (PLR) and female literacy rate (FLR). Child schooling is found to be low in those households where the children is found to be working. Thus policy against the engagement of child labours needs to be strengthened in the area.

In the process of carrying out this research, several new areas of research came to light which have also been suggested. In a nutshell, the work raises issues that have to be reconsidered, makes some suggestions for policy initiatives and finally opens the scope for further research in the related issues.

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I sincerely hope that the readers of the thesis will find it beneficial and useful for further research.

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ABBREVIATIONS

AIE	Innovative Education
ANOVA	Analysis of Variance
BE	Budget Estimate
BIMARU	Bihar Madhya Pradesh, Rajasthan and Uttar Pradesh
CABE	Central Advisory Board of Education
CD	Community Development
CI	Condition Index
DFID	UK Department for International Development
DHS	Demographic and Health Survey
DPEP	District Primary Education Project
ECCE	Early Childhood Care And Education
EDI	Education Development Index
EFA	Education For All
EFADI	Education For All Development Index
EGS	Education Guarantee Scheme
EPL	Educational Poverty Line'
FLFPR	Female Labour Force Participation Rate
FLR	Female Literacy Rate
FYP	Five Year Plans
GDI	Gender Related Development Index
GDLR	Gender Disparity Index In Literacy Rate
GDP	Gross Domestic Product
GEI	Gender Empowerment Index
GEM	Gender Empowerment Measure
GER	Gross Enrolment Ratio
GGLR	Gender Gap In Literacy Rate
GMR	Global Monitoring Report
GNP	Gross National Product
GNP	Gross National Product
GOI	Government of India
GOWB	Government of West Bengal
GPI	Gender Parity Index
GP	Goalpukhore CD Block
HDI	Human Development Index
ICDS	Integrated Child Development Services
J & K	Jammu & Kashmir
KGBV	Kasturba Gandhi Balika Vidyalaya
LAMP	Literacy Assessment and Monitoring Programme
LDC	Least developed country
LDI	Literacy Development Index

LR	Literacy Rate
LRA	Logistic Regression Analysis
MDG	Millennium Development Goal
MDM	Mid Day Meal
MHRD	Ministry of Human Resource Development
MICS	Multiple Indicator Cluster Survey
ML	Maximum Likelihood
MLR	Male Literacy Rate
MP	Madhya Pradesh
MPCE	Monthly Per Capita Expenditure
NCAER	National Council of Applied Economic Research
NCERT	National Council of Educational Research And Training
NER	Net Enrolment Ratio
NIPCCD	National institute of Public Cooperation and Child Development
NLM	National Literacy Mission
NPE	National Policy on Education
NUEPA	National University of Educational Planning And Administration
OBC	Other Backward Classes
OECD	Organisation For Economic Co-Operation and Development
OLS	Ordinary Least Square
PC	Principal Component
PCA	Principal Component Analysis
PCI	Per-Capita Income
PEI	Parental Empowerment Index
PROBE	Public Report on Basic Education In India
PTR	Pupil-Teacher Ratio
RE	Revised Estimate
RUGLR	Rural Urban Gap In Literacy Rate
S.E.	Standard Error
SC	Schedule Caste
SIDA	Swedish International Development Cooperation Agency
SSA	Sarva Shiksha Abhiyan
SSK	Sishu Siksha Kendra
SSM	Sarva Shiksha Mission
SSR	Student School Ratio
SSR	Studen School Ratio
ST	Schedule Tribe
TLR	Total Literacy Rate
UEE	Universalisation of Elementary Education
UIS	UNESCO Institute for Statistics
UK	United Kingdom
UN	United Nation
UNDP	United Nations Development Programme

UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
UP	Uttar Pradesh
UPE	Universal Primary Education
UTs	Union Territories
VIF	Variance Inflation Factor
WBHDR	West Bengal Human Development Report
WEI	World Education Indicators

Chapter-1

An Introduction to the Study

1. Introduction: Role of Education in Development

The issue of development economics is a recent phenomenon and it emerged as a distinct field of study shortly after the Second World War. In the history of development literature, it was once believed that the rate of growth of per capita income is an index of a country's development and as such the stress was on to raise the national income of the country and in turn the per capita income. However, a high per capita income with severe income inequality raised the question of equitable distribution of wealth and thus the planners adopted the welfare approach towards growth for economic emancipation of the poor and the deprived. It was felt that if the benefits of growth were distributed unequally among the population, it would obstruct the process of development and also prevent a majority of the population from enjoying the welfare benefits of the development process. Accordingly, the equity approach of economic growth has occupied a central part in the literature of development economics. This approach again found extension in the demands for equitable gender development. Although in ideal situations, demographically nearly half of the total population of any country is female, but it has been argued that the males could extract better leverage from development compared to its female counterpart. Gender disparity is stark in developing countries and in this light the theme of development literature necessarily incorporates the issue of equity from the gender viewpoint. The gender approach to development is being popularized through the indices of gender related development index (GDI) and gender empowerment measure (GEM) constructed in the development reports of UNDP.

In keeping with the focus on achieving higher rate of growth, early theories of development emphasize on 'physical capital' as an instrument for development. In the Keynesian income determination model it has been shown that changes in autonomous investment or government expenditure can induce much larger changes in national income or output through the multiplier process. The founder of physical capital accumulation-led growth or more specifically exogenous growth model, Solow, in his paper (Solow, 1956) categorically asserts that long-run growth is exogenous and the components of human capital are not linked with growth process. The Harrod-Domar model also advocated the same with a little variance. On the other hand, the endogenous growth model or the human capital accumulation-led growth model as developed by Romer (1986), Lucas (1988), Rebelo (1991), Barro and Sala-i-Martin (1995), Jones (1995) and Mankiw (1995), generally considers that human capital is not dropped from the sky; rather it is endogenously determined. Traditionally, human capital refers to a range of demographic indicators of which the education and health levels of people are the two main fabricants as they affect economic productivity in an effective way (World Bank, 2008). Thus, the paradigm of development has now been extended and in addition to income, health status and educational achievement have been incorporated to measure the level of development. Beyond being a pillar of HDI, education is such a milieu that fabricates every sphere of social life and of course the overall development process. It operates both as an instrument and as output of the development process. Poverty alienation, symmetric income distribution, improvement in health and nutritional status all are positively associated with educational status and it is negatively related with fertility rate, population growth, rate of social crime, infant mortality rate etc. In a nutshell, education can affect the social, political and economic development and overall quality of life and it is well recognized in the literature of education. It is now widely being recognised "literacy skills are fundamental to informed decision-making, personal empowerment, active and passive participation in local and global social community" (Stromquist, 2005, p. 12). A recent study (David at el. 2006) suggests that increasing levels of education lead to different thinking and decision-making patterns of an individual. Accordingly, policies that affect educational attainment could have a large effect on different demographic variables.

The world has been changing markedly from the physical capital based economy to human capital based economy. The concept of human capital is a complex one and defined broadly in the economics literature to include education, health, training, migration, and other investments that enhance an individual's productivity. However, Knowledge (education) and health are the two major components that are mostly focused by the social science researchers (Gyimah-Brempong and Wilson, 2004). As such in the changing world scenario, education and health may play a critical role in driving the economic growth. A recent report advocates in favour of human capital in the process of growth and development. The report states that investment in capital is much important at early stages of industrialization, but the role of human capital increases with industrial development and in due course grows in relative importance (UNESCO, 2005). This is not only true for the world's most advanced economies, but also in those emerging economies that are currently practicing reflective transformations and periods of rapid growth and development. India is a unique example of such an economy.

Following the view that human capital is a complex input and by augmenting both education capital and health capital into the Solow (1956) model, several empirical papers on economic growth have found insignificant or even negative correlations between educational attainment and economic growth. Caselli et al. (1996) by using the panel data of a sample of 97 countries find a negative and significant correlation between output growth and the secondary enrollment ratio. Knowles and Owen (1995) find education as an insignificant in a range of models where life expectancy and base-period output per capita are included. McDonald and Roberts (2002) find a result, which supports the view that in the process of growth, education capital alone is not an adequate proxy of human capital. The contribution of educational attainment on economic growth has been found insignificant or even negative in several recent empirical papers (Pritchett, L. 1996; Barro and Lee, 1997, Bils and Klenow , 2000). A range of extended literature is found in this respect and it brings a proposition to the researchers whether educational attainment does have any positive effect on economic growth.

However, extensive literature is found where the studies have tried to find a link between the educational attainment and process of growth. An inter-country cross section analysis (Barro, 1991) finds that public expenditure allocations for education can improve economic growth while promoting equity. Almost similar arguments have been extended by the more recent studies too (Gupta and Verhoeven, 2001) where it is opined that the size and the efficiency of public education expenditure are important in improving socioeconomic performance.

In most poor countries, education is considered a priority to reduce poverty, and several studies have emphasized its importance. Psacharopoulos (1994) demonstrated empirically that rates of return to primary education are higher in the less developed nations compare to the developed economies. In analyzing the growth behaviour of some developing East Asian countries, Esim (1994) finds the importance of secondary education in the growth of these countries (S. Korea, Malaysia and Thailand).

A cross sectional study (Barro & Lee, 1997) of 98 countries has found enrolment rate as a positive contributor for enhancing the growth process of a country. The study also establishes that when enrolment rate is held constant, the correlation between per capital growth and initial GDP became negative.

Andrain Wood with Michele Calendrino argues in their study (2000) that greater openness would substantially raise employment demand for educated workers in India. They also project that over the next decade or two, the employment demand for illiterate workers would fall by about a fifth and, among literate workers, the increase in demand would be proportionally larger, the higher their level of education.

A cross country analysis (Petrakis and Stamatakis, 2002) in this respect bears an important relevance where a simplified version of Lucas's (1988) production function is assumed to investigate the effect of human capital on growth in three groups of countries depending upon their levels of development. An interesting result has been obtained in this study. It has been suggested that the link between growth and education varies as a result of different levels of economic

development. The role of primary and secondary education seems to be more important in LDC nations, while growth in OECD economies depends mainly on higher education.

By constructing a measure for China's human capital stock over 1952–1999, it has been found that the accumulation of human capital measured by the average years of schooling in population aged 15–64 years, was quite rapid in the country and it significantly contributes to growth and welfare (Wang and Yao, 2002). Comparing the pre and post reform periods, the study adds that the rate of growth of human capital declines in the reform period (1978–1999) and its contribution to GDP growth was smaller compared to the pre-reform period. A similar study has been conducted in Taiwan over the period 1965–2000 (Lin, 2003) by introducing human capital in the aggregate production function to examine the effectiveness of education on economic growth. The results indicate that average number of years of formal education per person for employed people provides a positive and significant effect on output growth. One additional year of average education is estimated to increase real output by approximately 0.15%.

By using the multisector CGE model in two Heavily Indebted Poor Countries (HIPCs), Tanzania and Zambia, it has been shown in an international study (Hong-Sang et. el., 2003) that Significant poverty alleviation can be achieved most effectively through better targeting of educational expenditure to poor households. Under most scenarios, higher public expenditure on education provides higher economic growth and higher incomes for the poor.

In a very recent paper (Masakazu, 2003), it has been tried to establish that if an increase in educational attainment improves a country's productivity, and if higher productivity causes higher economic growth, then the effect of education can be said to be indirect in the sense that it accelerates growth by increasing the output via productivity increase of the inputs. It thus concludes that the effect of education on growth is winding and difficult to measure and concluded that further research in this respect is needed for finding out the exact role of education in the process of growth.

In a case study in India (Self and Richard, 2004) it has been found by analyzing a time series data for the time period 1966–1996 that primary education in this country has a strong causal impact on growth, with more limited evidence of such an impact for secondary education. It is also found that it is the female education at all levels, that has potential for generating economic growth.

Although the impact of educational expansion on economic growth may remain debated, a recent interdisciplinary research (Hannum and Buchmann, 2005) on the implications of educational expansion on socio-economic development tries to summarize an important direction of education. They concluded that countries with better educated citizens indeed have healthier populations, as educated individuals make more informed health choices, live longer and have healthier children. The populations of countries with more educated citizens are likely to grow more slowly, as educated people tend to marry later and have fewer children. Moreover, educational opportunities enhance, but do not necessarily ensure, the future economic security of the world's most vulnerable children.

A very recent alternative methodology (Fuzzy system models) of estimating economic contribution rate of education (Zhu et al., 2007) has been developed to quantify the contribution of education to economic growth. The application of this proposed method to the real data set of 31 provinces and cities in China produced convincible estimate to economic contribution rate of education. It has been found different rate of contribution for different cluster or region of the country when the whole country is divided into three distinct parts according to the level of progress in science and technology. Economic contribution rate of education is found to be higher in the provinces with a sound science and technological progress.

By using a time series data (1950-51 to 2003-04), a recent paper (Haldar, 2008) has tried to examine the context of physical capital accumulation led growth, export led growth and Lucas-type human capital accumulation led growth in the India economy. The paper, while employing the Johansen's cointegration and error correction model, finds the applicability of endogenous growth model in the Indian context and tried to establish that human capital investment plays a

crucial role both in the long run as well as in the short-run. It concludes that investment in physical capital (viz. gross domestic capital formation measured as a percentage of GNP) does not significantly affect the per capita GNP. It also adds that the hypothesis of physical capital accumulation led-growth in Indian context is weak.

Two distinct schools of thought can be discerned from the literature pertaining to the role of education in the process of development. The World Bank proponents have predicated upon their demonstration of the economic returns to education. As such, this approach views education in instrumentalist and functionalist terms. The concept of Globalization also documented the same view. In sharp contrast, the UNDP argues for knowledge and education as key components for the expansion of human capability, as defined within the theoretical framework developed by Amartya Sen. As Sen notes that it would be quite eccentric to value the existence of a 'physical capital' (e.g. machinery) if it did nothing to raise production i.e., if its "instrumental" importance becomes zero; whereas, being educated could be valued (i.e. intrinsic value) even if it were to do nothing to increase production. He also argues that literacy is an essential tool of self-defense, participation and empowerment in a modern society (Dreze and Sen, 2002). The theory of human capital generally assumes the amount of schooling as an important determinant of labour productivity. The higher the level of schooling received, more higher will be the cognitive skill of the labour, which in turn may contribute to economic modernization (Coclough, 1982). Thus the role of education, at least of basic education, in bringing about economic and social change, is clear.

Considering the importance of education in facilitating social and economic progress in India, the Eleventh Plan of India (2007-12) places the highest priority on education as a central instrument for achieving rapid and inclusive growth (Government of India, 2008). In view of such importance of education, especially at elementary level, has widely been recognised as an essential human right and a key to poverty alleviation and sustainable human development and as such Education for All (EFA) has become a social movement at national and international level. Efforts have been seen both at national and international level to achieve universal primary education by 2015.

Thus the relevance of educational expansion in a country like India whose economy has been moving decisively to a higher growth phase needs no further arguments. By educating the people in a society, it is possible to produce a large stock of human capital and it is very simple to understand that a labour with education, knowledge and skill must be viewed as a better resource than an uneducated, unskilled labour. The shortage of the former and surplus of the latter are a common feature of most of the developing countries like India. The vast literature on human capital has clearly indicated that a range of socially desirable outcomes is also associated with the process of educational development. The relation between education and demographic changes has also emerged strongly in numerous studies. While educational attainment is negatively associated with fertility rates, population growth rates, and infant and child mortality rates, it shows a positive association with age at marriage, life expectancy, participation in modern sectors of the economy and above all female enrolment in school (Caldwell, 1979; Sudarsan, 2000; Ramachandran, 2000; Nayer, 2002, Dreze and Sen, 2002). Again, the external effects of literacy are likely to be larger if the source of externality is a female rather than male (Basu et al, 1998; Unni, 1996; Tilak, 1987).

1.1 The Indian Experience

The Five Year Plans initially set India on the path of achieving high economic growth rate while having to deal with the problems of poverty, unemployment, increasing population pressure, resource constraint, etc. The social indicators were viewed as the byproducts of growth process. During the earlier period of Planning in India, our policy makers stressed on the development of industrial infrastructure and consequently, during 1950 to mid of 1960's, the process of development aimed at raising production, reducing population growth, and education was viewed as a byproduct of development. The result of this policy scenario was that the country could hardly manage a little more than one-fourth (29.45 percent) of our population to be literate by 1971. Though the Sergeant Commission, little before the Independence, suggested a period of forty-years for achieving the goal of universalisation of elementary education (henceforth UEE), but the constitution-makers spared only 10 years to achieve the goal. The target however, did not

materialize within the time. The Education Commission (1964-66) again spelt out a period of 20 years implying 1985 as the target year by which the goal of UEE could be achieved. The Commission recommended introducing non-formal system of education along with the formal schooling system. But the Government took no serious steps towards this. Consequently, the goal could not be achieved within the stipulated time period. Meanwhile the Constitutional Amendment made in 1976 placed school education in the Concurrent list and thereby brought the Central Government more directly into the picture. The next major milestone was the National Policy on Education (NPE) 1986, which again set the target year (1990 fixed for achieving universalisation of primary education and 1995 fixed for UEE) for achieving the goal. Failing to achieve the target once again, India signed to have Education For All (henceforth EFA) within the year 2000 at Jometin in the World Conference on Education (1990). At the Global Conference on Education at Dakar in April 2000, the Indian representatives voiced their concern over the failure to achieve education for all.

During the last fifty years, many countries have overtaken India in the field of Basic Education and Adult Literacy Rate. Starting with a very similar problem of mass illiteracy and endemic poverty in the late 1940s, India is now far behind China so far as the level of adult literacy and progress of basic education are concerned. The mean period of schooling in India is about 2.2 years; the same is 5 years in China, over 7 years in Srilanka and 9 years in South Korea (Bolashetty and Girija, 2004). By the year 1991, adult literacy rate for male was 62 percent and the same was 34 per cent for female in India as compared to 87 percent and 68 percent for men and women in China (Dreze and Sen, 2002). A recent UNESCO report stated that the school life expectancy[1] in India was 9.8 years in 2002 almost 4 years below the WEI[2] average. The same was 17.6 years in Argentina, 16.1 years in Brazil and also more than 17 years in almost all the OECD[3] countries (UNESCO-UIS/OECD 2005:).

Many countries, which are poorer than India, have managed a much higher literacy rate. Tazakistan, Kenya, Vietnam with lower per capita income than India, registered higher literacy rate (Haq and Haq, 1998). Dreze and Sen (2002) have noted that the universalisation of basic entitlements to health care, elementary education and social security is perhaps the most significant social achievement of western market economies in the twentieth century. Public expenditure in this sector ranges from 35 to 45 percent of GDP in these countries (Dreze and Sen, 2002). The achievement is not confined to western economies only. Cuba and pre-reformed China, along with some other Southeast Asian countries, also made impressive progress in this direction. India's position at global educational and human development scenario in the recent past is presented in the following table 1.1.

Table-1.1:Education Development Index(EDI) & Human development Index of Selected countries

Country	Global Rank (HDI 2008)#	Global Rank (EDI 2006)	EDI Score (GMR 2005)	EDI Score (GMR 2006)	Total Primary NER	Adult Literacy Rate	Gender-related EFA index	Survival Rate to Grade 5	EDI Percent Change
Indonesia	107	58	0.912	0.923	0.968	0.879	0.956	0.891	1.1
Mongolia	114	61	0.916	0.916	0.822	0.978	0.946	0.92	0
Viet Nam	105	65	0.914	0.91	0.941	0.903	0.927	0.871	-0.4
Malaysia	63	70	-	0.908	0.931	0.887	0.943	0.871	-
Philippines	90	74	0.904	0.898	0.943	0.926	0.964	0.76	-0.6
Myanmar	132	89	0.805	0.834	0.842	0.897	0.951	0.646	2.9
Cambodia	131	96	0.75	0.761	0.935	0.736	0.765	0.609	1.1
Lao PDR	130	99	0.721	0.745	0.85	0.687	0.801	0.641	2.4
India	128	100	0.7	0.741	0.937	0.61	0.802	0.614	4.1
Bangladesh	140	105	0.692	0.663	0.875	0.411	0.828	0.539	-2.9
Nepal	142	111	0.651	0.652	0.732	0.486	0.741	0.649	0.1

Source: 2006 EFA Global Monitoring Report : www.efareport.unesco.org
http://hdrstats.undp.org/countries/country_fact_sheets/cty_fs_AUS.html

In order to review the Millennium Development Goals (MDGs), especially two of the eight goals which include the achievement of universal primary education and the elimination of gender disparities at all levels of education by 2015, UNESCO annually publish the Education for All Development Index (EDI). UNDP on the other hand annually calculates and publishes the Human Development Index (HDI) for the countries. India's position with respect to HDI has been very dismal. India ranked 124th out of 173 nations in terms of the UNDP's HDI for the year 2000. Still the position of India in this respect has not been developed. Rather it has come down in the list and ranked 128th out of 177 countries in 2008. The Indian economy grew rapidly during the 1990s, averaging 6 per cent a year. However, more than one in four Indians still live in poverty, and there are significant social disparities. Despite a growing economy, India has the second-lowest GDP per capita among WEI countries in 2002 (UNESCO-UIS/OECD 2005). It has been pointed out by Dreze and Sen (2002) that poverty was one of the reasons for India's low HDI, but lower Gender Disparity Index and Gender Empowerment Measure is a clear indications of relatively low status and poor position of women in India (corresponding to the year 2000).

The EDI provides a summary measure of the country's situation vis-à-vis the target of Education for All (EFA). It categorically covers four goals: Universal Primary Education (UPE), adult literacy, gender and quality of education. The index for 2002 has been computed for the 123 countries for which data are available on all four components. As per the 2006 EFA Global Monitoring Report, India could hardly manage 100th rank out of 121 countries for which the standard data set was available. India's net enrolment ratio (NER) at primary level is 0.937 which is compareable with China, Malaysia, Viet Nam or Philippines. But its Adult Literacy Rate, Gender-related EFA index and Survival Rate to Grade 5 are much below compare to these countries. It apparently suggests that, India is becoming capable to enroll the primary age children but could hardly retain them up to the grade 5 in school. Moreover, the literacy rate of the person belonging to the age group 15 and above is also very low (61%). There are as many as 28 Countries with EDI below 0.80, grouped in the low EDI countries, are unlikely to achieve EFA by 2015 without dramatically stepped-up efforts, including international support. India with an EFADI value of 0.741 is such a low EFADI country.

Table- 1.2: Ranking Government Efforts to Achieve Education for All

Country	Marks	Grade	Regional Rank*	Global Rank
Sri Lanka	72	B+	1	12
Iran, Islamic Republic of	60	C+	2	27
Philippines	52	C+	3	50
India	50	C-	4	61
Maldives	47	C-	5	71
Bangladesh	46	C-	6	78
Nepal	41	C-	7	95
Pakistan	32	D+	8	123
Bhutan	29	D-	9	135
Afghanistan	23	D-	-	142
Thailand	73	B+	-	11
Malaysia	68	B-	-	17
China	54	C+	-	42
Vietnam	52	C+	-	50
Indonesia	46	C-	-	78

Source: Global Campaign for Education 2007; *Regional Rank for South and West Asia

An international campaign (2007) on education has recently published an interesting ranking of 156 countries depending upon the performance in primary education in the respective country. Capturing six sets of indicator viz. Achievements of Universal Basic Education, Political Will, Growth in Enrolments, Quality Inputs, Equal Opportunities and Transparency and Accountability, the report prepared a report card for each country separately. In this report card, each country has

been assigned with a final mark obtained based on performances on six indicators. A particular country is then graded and ranked as per the marks obtained by its performance. The performance of some selected Asian countries is shown in Table-1.2.

Among the South and West Asian countries, India is positioned after Srilanka and Iran (Islamic Republic of). However, its global rank (61) is far below than Sri Lanka (12) or Iran (27). The report ranked India in 87th position in respect of Achievements of Universal Basic Education, in 90th position in respect of Quality Inputs and 60th position in respect of Equal Opportunities. It is the Political Will, Transparency and Accountability that makes India to be ranked at 61st position among the 156 country of the world for which the report is prepared. The report adds that the countries lying in the Sub-Saharan region is lowest while it is highest for the countries of Central and Eastern Europe region. Interestingly, the Latin American countries are performing relatively much better than the other part of the world. The South and West Asian region, in which India belongs, has been ranked at sixth position among the eight broad regions of the world.

1.2 Statement of the Problem

"The Convention on the Rights of the Child stands as a universal standard for building a better world – a world in which the best interests of children are a primary concern of all. The challenge for the next 20 years is to build on the progress already achieved, working together to reach those children who are still being denied their rights to survival, development, protection and participation."

- **Ann M. Veneman, Executive Director, UNICEF**

Along with the above perspective on education and its considerable importance, it naturally raises the issue of educational backwardness in India as one of the major problems that presently surrounding it. From the user point of view, the general level of interest in education among the Indian parents is found to be quite high. Even in the economically lagging states covered by the PROBE survey, 98 percent of the parents want their sons to be educated, while 89 percent express their willingness to educate their daughters. The Survey also commented that the gap in educational aspirations between different social groups is narrowing rapidly. Education is 'widely perceived by members of socially and economically disadvantaged groups as the most promising means of upward mobility for their children' (Dreze and Sen 2002). So the relevance and importance of education in fostering the economic and demographic development along with the aspiration of the common people regarding this enabling social variable is documented as an established fact.

Yet, at the turn of the 21st Century, India is still positioned as one of the least literate countries in the world. India has the second largest educational system in the world after China with 131.9 million children enrolled in primary level (I-V), 47.5 million in upper-primary level (V-VIII) of school education (DISE 2006-07: Flash Statistics, NUEPA). In all there are as many as 1196663 recognised Schools/Sections imparting Elementary Education of which 80.83% managed by Government. Out of the total enrolment, girls form 48.09 per cent at the primary level and 46.51 per cent at the elementary level. The net enrolment ratio (NER) at primary level is 92.75, where as the same is only 48.45 at the upper primary level. Several national sample surveys and also DPEP base line studies have attempted to estimate the extent of non-participation of children in the schooling age. These estimates range from a low of 61 million (NFHS, 1993-94) or 77 million (NSS, 1993-94) to a high of 89.64 million children (NSSO, GOI, 1998) (cited in Ramchandran, 2003). A recent UNICEF estimate (India DHS 2005-06) on attendance data, based on household surveys, show that globally the number of children of primary school age who are out of school has declined markedly in recent years, from 115 million in 2002 to 93 million in 2005–2006. Out of this 93 million out of school children, 41 million lived in Sub-Saharan Africa, the region with the world's lowest primary school enrollment rates.

In South Asia, 32 million children were out of school, most of them (21million) are in India, the country with world's largest population of children not in school. That is, India alone constitutes around 23% of the total out of school children in the world. The Report also states that the

attendance rate of girls increased by 9 percent over the 2000-2006 period and the attendance rate of boys by 6 percent. As a result of the increase in primary school attendance, the number of children out of school fell by almost one third from 30 million in 2000 to 21 million in 2006 (Data source: India Demographic and Health Survey 2005-06). Out of these 21 million children, Girls account for 16.4 million (54 percent) although they are only 48 percent in respect their total population (Table-1.3).

Table-1.3: Children of Primary School Age Out of School (million), India 2000 and 2006

Category	2000	2006	Change 2000 to 2006
Male	13.0	9.5	-3.5
Female	16.4	11.2	-5.2
Urban	5.0	3.7	-1.3
Rural	24.5	17.0	-7.5
Poorest 20%	9.4	9.8	0.5
Second 20%	8.5	5.3	-3.2
Middle 20%	5.2	3.1	-2.1
Fourth 20%	4.3	1.7	-2.6
Richest 20%	2.0	0.8	-1.3
Total	29.5	20.7	-8.7

Data sources: India Multiple Indicator Cluster Survey (MICS) 2000, India DHS 2005-06.
(http://www.childinfo.org/mics/mics3/) (http://www.measuredhs.com/)

Again out of the total out of school children in India, more than 80% live in the rural area. Apart from this, the survey also suggests that at macro level Poverty has been arising out as one of the causes of low school attendance rate and high dropout rate of children in India.

At the national level 38 percent boys and 41 percent girls dropout of the school at the primary level of education. The same were 51 per cent for boys and 58 per cent for girls at the middle school level (Selected Educational Statistics, MHRD, GOI, 2005-06). This shows that the dropout rate is higher at Upper-primary (UP) level than primary level of education in the country with of course a substantial gender variation at both the level. This higher dropout rate at UP level compare to primary level may be due to the introduction of some recent popular incentive policy (e. g. no-detention policy, providing midday meal to the students, free text books and school uniforms etc.) at primary level of education. So it appears that the transition rate of children from primary to UP level of education is of much importance.

A more recent data published by the NUEPA states that Average Drop-out Rate at Primary Level have been decreasing considerably. The rate has become 10.64, 9.96 and 8.61 for the academic year 2003-04, 2004-05 and 2005-06 respectively (DISE 2006-07: Flash Statistics, NUEPA). The objective of universalisation of elementary education in India have been addressed during the Tenth Plan period mainly through the Sarva Shiksha Abhiyan which is the flagship programme of Government of India being implemented in partnership with States and UTs. This ongoing programme has brought forward some important development in the field of elementary education in this country. The number of out of school children which was about 320 lakh in 2002-03, had been reduced to 70.5 lakh based on reports of States and UTs in March 2006, the gender gap at the primary stage reduced from 5.5 percentage points in 2002-03 to 4.2 percentage points in 2005-06. The gender gap at the primary stage reduced from 5.5 percentage points in 2002-03 to 4.2 percentage points in 2005-06. At the upper primary stage this gap reduced from 10.7 percentage points to 8.8 percentage points. The gross dropout rate, reflected in the Selected Education Statistics of MHRD declined from 39.03% in 2001-02 to 28.49% in 2004-05. For girls, the decline in dropout rate has been significant. During this period it decline from 39.88% to 24.82% - a decline of more than 15 percentage points. The dropout rate for the entire elementary stage is however declining less rapidly (GOI, 2007).

Against this relatively disadvantaged perspective, the country also suffers from a large variation in respect of educational attainments. As per the Census Report, 2001, the literacy rate of 7+ age group populations in the country varies from a low of 47.5 percent in Bihar to a maximum of 90.9

percent in Kerala. The current school attendance rate also varies from a minimum of 68-percentage points in Bihar to a maximum of 98.9 percent in Himachal Pradesh in case of rural male children aged between 6-10 years. West Bengal having the percentage at 82.8 is lagging moderately behind the national average of 83.2 with of course, a significant variation in female achievement (Kingdon et al, 2004). Besides this low level of achievement in respect of educational outcomes and differential development across the state, district level variation is also seen within a particular state. For example, in West Bengal the literacy rate varies from 47.9 percent in the district of Uttar Dinajpur, 50.3 percent in Maldah to 77 percent in Howrah and 78.1 percent in 24 Parganas North (West Bengal - A Census View, Directorate of Census Operation, West Bengal, 2001). Apart from this district level variation, the C.D. Blocks and villages within a district also suffers from a large extent of educational variation. Following the village level census data (2001) for West Bengal, we have identified some villages in different districts of West Bengal showing the LR absolutely at 0 level for either male or female or both. This differential attainment in respect of educational outcomes, in spite of universal policy measures throughout the country, is the focal concern of the study. The study shall deal with the factors underlying such differential attainments in literacy rates and education since some regions within the country have continued to lag far behind the desirable target throughout the period of study. This will also help to formulate area-based micro planning to achieve the desired goal of Universalisation of Elementary Education (UEE) or Education For All (EFA).

In the broader frame, the study shall mainly focus the problems associated with the universalisation of elementary education and literacy attainment. Elementary education refers to eight years of schooling of which first five years comprise of primary education and further three years as Upper primary education. Educational development in its complete scenario is a broad concept and the development of elementary education is a part of total educational development process. So far the development of school education in india is concerned, the policy of universalisation of education upto the grade-VIII is the immediate target beyond of which does not seem to be a feasible option in near future. International norm also suggests this. Accordingly, the study considers the issue of differential educational outcomes up to the elementary level of education. The study will also make an attempt to capture the issue of illiteracy, because, EFA is actually taken to mean a blend of literacy and education for creating a fully literate young and adult population. But there is very little evidence either in the national programme or in its implementation at the state level that such combined ideas are even reflected upon. For instance, District Primary Education Project (DPEP) makes no reference in any of its documents or programme for dealing with adult literacy and thereby denying the importance of parental education in sending their children to school. The National Literacy Mission (NLM) also does not make any effort to interface with formal schooling. Capturing both the issues and identifying the underlying factors is thus seems to be an effective effort in this ground.

It is in this respect that some important issues may arise. Though different policies have been launched as governmental development programmmes to achieve mass literacy and universal elementary education, the goal is yet to be achieved. The introduction and implementation of several policies at both central and state level in the country have certainly brought about a developmental path, but the spillover effect of this development process has not been distributed symmetrically across the country. The country thus shows a strong variation with respect to its educational development with some regions having near-absolute literacy irrespective of gender, along with some regions where literacy had hardly been achieved. The study will primarily capture this regional pattern and provide some insight into the nature and causes of the concerned problem. It will categorically try to identify the regions lying mostly in disadvantaged scenario. The study will also bring forth the necessity of formulating area-based micro planning instead of universal common policy measures in order to break out of the lingering shame of being one of the poorest performers among the developing nations in promoting elementary education in the country. In the ultimate analysis identification of the factors that can significantly reduce educational inequity and the comparative situations of educationally advanced states will be undertaken. It is also hoped that the study will enable the formulation of an integrated programme in order to reduce the gender

inequity in Basic Education and Literacy Rates and also to fulfill the goal of UEE in broader concepts.

The success achieved in India over the last 51 years suffers from the problem of gender discrimination, which has limited the impact of educational development. Nearly half of the billion plus population are females and it is a matter of fact that there is a gender gap in educational attainment. In June 2007, the UNESCO Institute for Statistics (UIS) released new statistics on adult literacy and youth literacy for 135 countries in the world (Source: UNESCO Institute for Statistics, Data Centre, June 2007). In 18 countries, the male-female gap is between 20 and 30 percent. These countries are, in descending order of the size of the gap: Mozambique (difference in male-female literacy rate is 29.9 percent), Pakistan, Angola, Chad, Niger, Nepal, Ethiopia, Democratic Republic of the Congo, Morocco, India, Benin, Guinea, Egypt, Sierra Leone, Cote d'Ivoire, Senegal, Malawi, and Cambodia (difference is 20.6 percent). So it is necessary to enhance the level of educational achievements of women since by raising the educational achievements of women, one can raise the awareness levels of women and empower them, which in turn can positively influence the lives of both men and women and of the future generations. About the importance of female education, it is rightly believed that 'to educate a boy is to educate an individual but to educate a girl is to educate a family'. Consequently the study will also give some focus to the gender disparity and discrimination in educational outcomes and will attempt to identify the factors that can reduce the gap of educational attainment between the males and females.

As will be evident from literature review, the primary indicators of school educational development are enrolment rate in school, extent of out-of-school children and educational transition rate of children from primary to upper primary stage. But, universal enrolment of children and universal retention are the two prerequisites that supposed to be assured in order to achieve the target of UEE. The study will lead to the identification of factors associated with the above two issues and measure the differential impact of these factors.

On 20 November 2009, the global community celebrated the 20th anniversary of the Convention on the Rights of the Child, the most widely ratified international human rights treaty in history. Within this international frame, it is evident from the earlier discussion that India's position does not reflect any commendable scenario and the continuous half-century long neglect and failure to go in line with the other comparable countries in the world is quite apparent in spite of our constitutional commitment regarding the issue. The problem of educational backwardness is an international problem and this cannot be assigned for India alone. But it becomes more acute in the country, because, with billion plus population of which nearly 35 percent are illiterate and the figure is a staggering 296 million (Census, 2001). Again out of these illiterates, 253 million live in rural areas. This figure of rural illiterates in India is greater than the population of any country of the world, except for China and USA (Sing, 2002). It is really not an easy task to make such a bulk of population literate within a specified time frame. The new millennium begins with new promises. In 2001, India launched a national initiative called Sarva Shiksha Abhiyan (SSA) intended to universalize elementary education across the country. The Sarvya Siksha Abhiyan (henceforth SSA), the flagship programme of the national Government, promises to achieve the goal of Universalisation of Primary Education (henceforth UPE) by the year 2005 and Universalisation of Elementary Education (UEE) by 2010. The revised framework of the National Literacy Mission (henceforth NLM) promises to reach a literacy target of 75 per cent by the year 2007. Along with this, the 86th Constitutional Amendment Act 2002 made education a Fundamental Right for children in the age group of 6-14 years by providing that "the State shall provide free and compulsory education to all children of the age of six to fourteen years in such manner as the State may, by law, determine". Recently the central government through its union budget has imposed an educational cess for better funding of the sector. This constitutional amendment, promises and budgetary provisions, however, is only the beginning - not the end – of the struggle to universalize elementary education. Legislation alone cannot make up for half a century of neglect. A massive effort in a series of programs is required to bring the schooling

system in line with the goal. However, given the dimension and gravity of the issue to universalise education, it is expected that education will receive some focused attention in the recent future.

Under such challenging educational background, the study of the factors that have been responsible for the relatively poor educational performance of the country in general and the differential rate of progress with respect to educational attainment in particular, are, therefore, of considerable interest.

1.3 Study Objectives

In view of the above, the main objectives of this study are -

1. To assess the educational progress in India since 1951, with special reference to the post-globalization period
2. To identify and measure the nature and extent of educational variation in India
3. To identify the major socio-economic and infrastructural factors responsible for the differential growth with regard to educational development at various disaggregated level.
4. To examine the necessity of micro planning instead of universal policy measures to achieve the goal of UEE and EFA.
5. To make a quantitative assessment of the nature and impact of the factors on gender inequity in basic education and adult literacy rates.
6. To analyze whether it is the economic constraint or the access to schooling that lie, as the main reason, behind the poor educational scenario in the country.

1.4 Review of Related Literature

The general purpose of the literature review is to give a background on the results of other earlier studies that are closely related to the study being reported. It also provides a framework for establishing the importance of the present study, as well as a benchmark for comparing the results of the present proposed study with earlier findings. Apart from this, the section provides direction for framing the research question or hypothesis that will be tested in the present study. Keeping in view the purposes in mind, a brief review of the related literature is presented below in an integrated manner. A summary of the review is also included that highlights the most important studies and captures the major themes in the review.

i) Education and Income level

It is commonly accepted in the literature of economics of education that there is a positive association between educational backwardness and level of poverty. The main explanation offered is that the opportunity cost of sending the children to school, instead of using them as household help or wage earner, is not an economically feasible option (Bhatty, 1998). Moreover, aggregating the direct cost of education (e.g. expenses for uniforms, tuition fees, costs of stationary goods etc), makes schooling particularly expensive and hence out of reach of the poor (PROBE Team, 1998).

A study conducted in two rural districts of Orissa (Devi, 2001) has specified that the parents frequently cited financial difficulties as the main cause for not sending the children (both male and female) to school. She also referred Panchamukhi (1991) who indicated opportunity cost of schooling rather than returns from schooling as the basic determinant of parental decision in a country like India.

By using the Indian regional data, Dholakia (2003) has examined the direction of causality between economic development and human development. He has found a two-way causality between human and economic developmental indicators. The structure of relationship varies over time when human development indicators (HDIs) are the cause and per-capita income (PCI) is the effect. His study shows that when literacy rate (LR) rises by 1 per cent, the PCI would increase by 1.27 per cent after a lag of eight years on average. On the other hand, when PCI grows by 1 per

cent, the LR would increase by 0.42 per cent after a lag of two years only. This clearly suggests that the economic variables are much more powerful in raising the human development in general and LR in particular.

Working with disaggregated district level data, Krishanji (2001) has analyzed the inter district variation in literacy rate in Andhra Pradesh. He has identified that economic backwardness is indeed a significant factor in explaining the low literacy rates among all categories of the population. It should be noted that he has used value of agricultural production per rural person as a rough measure of economic prosperity.

In constructing the Human Development Profile of India, NCAER (1996) has enumerated the relative importance of different factors influencing schooling in the Indian states. The report of the study suggests that supply related factors appear less important than demand related factors such as financial constraints, child's involvement in domestic and economic work etc. In a largescale survey by NSSO (1989), it was reported that 45 percent children gave economic factors as compared to 22 per cent giving school related factors as reason for their non-participation in schooling.

In a field based survey in the slum-dominated area of Kolkata, West Bengal, it has been found that retaining the students in a formal school is far more difficult than mere enrolment (Khasnabis and Chatterjee, 2007). The task becomes harder if the students come from poor economic background.

Various inter-state analyses for India have found a high correlation between the PCI and literacy rate and a higher correlation between PCI and enrolment in higher education. Some micro level studies also suggest that gender inequity in education can be highly income and price responsive. Sipahimalani (1994) by using the Indian data found that a one percent increase in household income could increase the probability of boys' enrolment in school by 7 percent, but girls' by 9-13 percent. This held true for states like Rajasthan as analyzed by Basu (1997), which shows that one per cent increase in per capita household income raised boys' probability of enrolment in middle school by 0.9 per cent and girls' by 3.7 per cent. N. Krishanji (2001) in his village level study in Andhra Pradesh has tried to examine the relationship among poverty, gender and schooling. His analysis concludes that poverty rating of the family (0 for the poor and 1 for the non-poor) is significant at 1 per cent level for explaining the probability of enrolment. However, household's monthly expenditure does not appear to be significant at even 20 per cent level. Yadav (1991) in analyzing the educational status of schedule cast children stated that economic factors, such as poverty and work participation rate of children are largely contributing for dropping out of school.

Weiner Myron (1996) in a study in "Child Labour in India" noted that culture is not the barrier to the elimination of child labour, but economics. NSSO data (1993-94) did show that the proportion of children who do not attend school sharply increases in lower monthly per capita expenditure classes (cited in Nambissan and Sedwal, 2002). Some other researchers also found the financial constraint as the single most important cause for non-enrolment and drop out (Premi, 1990; Pal and Pant, 1995).

An interesting result has been found in Reddy and Rao's (2003) household level survey, while analyzing the reasons for dropout/non-enrolment in Tamil Nadu. They found that poverty appears to have greater influence in the backward areas; economic activities seem to play a greater role in the developed regions. Other studies also suggest that household income is a significant determinant of enrolment where higher levels of income being associated with higher demand for schooling (Lave et al, 1981; Psacharpoulos et al, 1989; King and Lillard, 1987; Knodel and Wongsith, 1990; Tansel, 1997).

In contrast, the relationship between poverty and educational achievements has been tested negative in certain cases as is evident from studies and data. There are notable exceptions of this relationship both among the countries and within India. Countries like Kenya, Vietnam, and Tajikistan with lower PCI than India are show substantially higher literacy rates than India (Haq and Haq, 1998). Within India, the literacy rate of Kerala and Uttar Pradesh also defy the claim. The two states with almost equal level of poverty show differential literacy rates with Kerala being

much ahead of Uttar Pradesh (Dreze and Sen, 1995). Micro level field studies also do not support the relation. In a study in Mehsana district in Gujarat, it is found that income status of household does not show a statistically significant positive relation with the completed grade schooling for children in the age group 6-14 years (Unni, 1998). A study in Uttar Pradesh by Giri Institute of Development Studies also found that dropout rates do not bear a clear relationship with PCI levels of the household (Asraf, 1989, cited in Bhatty, 1998).

EPW Research Foundation (1994) finds no clear linkages emerging among the human, social and economic development indicators in case of Indian states. It also concludes that literacy and health indicators are necessary but not sufficient conditions for economic growth. A compilation of field report (from Bihar, Uttar Pradesh and Rajasthan) by Sinha and Sinha (1995) provides insights into the states of education system in some of the remote and poorer parts of the country. They found that in several villages despite high levels of poverty there was practically no dependence on child labour. One such village was Kanji in Purina district of Bihar, where even the poorest scheduled caste community, the Musahars, were found not to put their children in work. Interestingly, they did not send their children to school either. In Salana and Saikat villages of Chamoli district in UP, on the other hand, while no child labour was recorded, almost all the children were enrolled. They conclude that, "Dependence on child labour varies even at similar levels of poverty depending on the nature of the local economy".

Nidhi Mehrotra (1995) who has collected field- based information from Kerala, Uttar Pradesh and Himachal Pradesh, notes that parents are often found to use the labour of their children ex post, following their dropping out of school, for reasons totally unconnected with opportunities for work. Hence, evidence of their working does not by itself establish that poverty is the prime reason for their not attending school (cited in Bhatty, 1998). Santha Sinha (2000) in her article noted that "—what is found is that not only are literacy rates similar between groups having dissimilar income levels but also vary widely between groups with same income levels. In other words, situations where better off families have engaged their children in work while parents with lower incomes have retained their children in school are not uncommon." She also noted that there are factors other than the purely economic compulsions arising out of poverty, which dictate whether a child is sent to work or to school.

A common proposition that poverty alleviation is a prerequisite for achieving the goal of UEE has been falsified by several country experiences. Many countries have successfully made primary education compulsory and universal when per-capita income in those countries was low and poverty was wide spread. Japan introduced compulsory education in 1872, North and South Korea, Taiwan and People Republic of China all of which made education compulsory shortly after the Second World War. In the West too, many countries have introduced the same before the industrial revolution. These countries have successfully ensured the universalisation of primary and elementary education in their country and they have regarded mass education as an instrument for the reduction of poverty (Weiner, 1996), justifying the need for education for poverty reduction.

Summing up the evidences of demand for schooling with poor economic status, what emerges is that the correlation between poverty and schooling is more complex than the general proposition of a simple inverse relationship between them. The issue is, therefore, far from settled and hence there is much need for further empirical evidence on the subject.

ii) Occupational Diversification and Literacy

Different studies on child schooling clearly show that it is not only the level of income, but also the source of income or the composition of income which has significant influence on child schooling. Sarthi Acharya (2001) while investigating into the inter-district and inter-tehsil variation in literacy rates in rural Maharastra and Madhya Pradesh has found some interesting results. She has measured the occupational diversification as the percentage of workers in non-agricultural activities and tested it on literacy rates. This percentage is found positively significant in raising both the male and female literacy rates in the two states. But the variable appears to be

more enhancing (i.e. assuming larger magnitude) in raising female literacy rates than male literacy rates. This trend is however, not found in Madhya Pradesh.

Jabbi and Rajyalakshmi's (2001) study for Bihar show that children of parents employed in service jobs, were more likely to be enrolled, followed by those whose parents were cultivators. Children of non-agricultural workers were least likely to be enrolled, although those of agricultural workers had only marginally better enrolment rate. Similar findings are observed in Jeemol Unni's (1998) study in rural Gujarat where a higher proportion of girls and boys from predominantly non-agricultural households attend school as compared to those from agricultural households. Among the agricultural households, children from agricultural Labour households are less likely to attend school. In her regression analysis, she studied the completed grades of schooling under the categories of boys, girls and all children in the age group of 6-14 years. The author found that the percentage of non-agricultural income in the total net household income, and the value of assets as a proxy for wealth, though did not influence the completion of grades for boys, yet they had a significant positive impact on the education of girl children in the age group of 6-14 years. It reveals that the economic status of the household is crucial determinant of girls' schooling.

Notable evidences of differential impact of occupation on educational achievements for other countries are suggested. For example, the study of Psacharpoulos et al. (1989) in Brazil suggests that the opportunity cost of schooling is high for children from agricultural sector and so they typically had low enrolment rates, high dropout and poor performance in school. Hamid Shahnaz (1993) in a study in urban Pakistan has observed that children from white families had consistently better schooling outcomes. This finding has been supported in our country along with some other country's studies (Pandey, 1990; Knodel et al, 1990).

Sajitha Basir (1994) in her field based study in Tamil Nadu reports that no pupil are reported as child labour, whose father/guardian were employed in the organized sector or abroad as a skilled Labour, clerical or professional paid Labour at any time. She found that unpaid household work Sailabala Devi in her village level study in Orissa (2001) found it clearly that non-enrolment and discontinuance are highest among agricultural Labour household followed by casual non-agricultural Labour cultivating households. The exception to this pattern is schedule caste and schedule tribe households among non-agricultural labour who send more children children to schools and retain them longer than the cultivating households.

In a village level survey based study in rural UP, Ravi Srivastava (2001) found that enrolment rates in selected villages were the highest where the head of the family was a salaried worker, professional or businessman followed by small traders, cultivators and laborers. Majumdar's study of Kanyakumary district in Tamilnadu (2001) shows that "almost all the never enrolled .... come from households with marginal (land) holdings." Among household with land, it notes, "there is a positive though weak, relationship between land size and educational participation of children (cited in Bhatty, 1998). In analyzing the gender inequality and educational transition, Vaid (2004) has found an interesting result. By classifying the occupational pattern into four classes, she found that father's class has a consistently high parameter at all stages of transitions (illiteracy to primary, primary to upper primary and so on). But interestingly, in her study, she has fond that interaction between gender and class is insignificant at each stage of transition.

iii) Female Labour force Participation and Child Schooling

The impact of Female Labour Force Participation Rate (FLFPR) on child schooling is still a matter of debate. From the studies of Pandey (1990), Jeejeebhoy (1993), and Mukhopadhaya (1994) it is found that in general, FLFPR has a depressing effect on child schooling. This is partly because the daughters have to shoulder the responsibilities of household chores and sibling care and partly because the lack of maternal attention and supervision discourages children's, particularly girls' schooling. An important result has been found in the village level study of Sengupta et al (2002) for West Bengal. While they find mothers' work participation has a significant negative effect on daughters' school enrolment, negative but not significant impact on grade completion. However, the factor does not appear to have a significant impact on the probability of dropout or retention in school. This has also been confirmed by Jaychandran (2001). The positive relationship between

FLFPR and schooling of children, especially of girls, is however not found in Andhra Pradesh where high rates of FLFPR coexist with a high incidence of child labour (highest in India) and relatively low level of school attendance rates (Jaychandran, 2001 cited in Dreze and Sen, 2002; Rao and Reddy, 2003).

N. Krishnaji (2001) in his inter-district analysis based on census data for Andhra Pradesh found the following-

1. Categorizing the LRs for male SC/ST, whole population and female SC/ST, whole population, work participation rates are inversely related to LRs in all categories except the male population as a whole.

2. Work participation rates among women have been found to be insignificant in explaining the inter-district variation in enrolment rates.

The study concludes that these variations can be resolved only through a more elaborate analysis than is possible on the basis of inter-district variation.

A recent Study (Reddy and Rao, 2003) in this area also does not find any significant impact of female work participation on the enrolment ratio of both male and female. They have concluded the result by using household level data for 12 villages in three districts of Andhra Pradesh. The studies of Psacharpoulos et al (1989) and Tansel (1997) also note that the positive effect of addition to resources from mothers' earnings can overshadow the negative impact of mothers' absence from home. Similarly, Dreze and Sen (2002), while discussing the schooling revolution in Himachal Pradesh, opined that a high level of female Labour force participation raises the economic returns to female education and it is also revealed that status of women, including their educational status, will improve as a consequence of their increasing participation in Labour market and development process (Rekha Wazir, 2000).

Early studies of the determinants of pupil achievements in developed countries suggested that school-related factors were not significant in explaining the variations in pupil achievements. Household-related factors were found to be more important. However, more recent studies based on improved statistical methods conclude that school-related factors too have a strong influence on pupil achievements (contribution of N.V.Varghese, quoted in PROBE Survey, 1999). In the analysis of Reddy and Rao (2003) based on the data collected from all the 3000 households in 12 villages of Andhra Pradesh it has been concluded that while demand factors (poverty, economic activity, irrigation, work participation rate etc.) show a significant impact on literacy and dropout rates, supply or access factors (coverage of school, pupil-teacher ratio, % of female teacher etc.) exert influences on enrolment rates. It is for this reason that the present study undertakes to review the literatures pertaining to school-related factors that explain the educational variations.

iv) Access to School and Public Policies

Public programmes and polices affect child schooling by reducing the direct and indirect cost of schooling. For instances, availability of primary school within the village reduces the travel cost and time thereby enhancing the probability of getting enrolled in school. NCAER (2003) noted that geographical proximity of primary schools and enrolment ratio together explains more than 60 per cent variation in literacy rates (North India Human Development Report 2003, NCAER, New Delhi). The lack of access to 'relevant and quality' education is one of the factors causing prevalence of child labour (Canagarjah and Coulombe, 1997). In analyzing the attitude of rural parents of Punjab, Thind and Jaswal (2004) reported the non-availability of school as an important cause for not sending the girl child to school. Moreover, the parents believed that status of the family was judged by the area of land a family possesses, not by the level of education of the family members.

The contribution of Varghese in PROBE report (1999) noted that the positive association between school facilities and pupil achievements is stronger in the educationally backward region (e.g. MP, Orissa). It is however, not significant in Kerala and weak in other educationally advanced states. The pupil-teacher ratio also matters in case of pupil attainments. It has been found that pupil

achievements drop if the ratio exceeds 50. In this respect, P.Duraisamy (2001) in his analysis in Tamil Nadu depict that –

1. Presence of public school within the village exerts statistically significant positive affect on girls' probability of enrolment and grade attainment at the primary level. However, the same is not significant for boys' enrolment and grade attainment.

2. Distance to primary schools has a significant negative influence child school enrolment.

Vimala Ramchandran and Aarti Saihjee (2002) on the basis of desk review of DPEP and qualitative micro studies in six states of India (Madhya Pradesh, Chhattisgarh, Andhra Pradesh, Haryana, Karnataka and Tamil Nadu), focused on the issue that the presence of a functional upper-primary and secondary schools exert a significant influence on childrens' and parents' motivation to continue their education. This is of great importance for girls and children from very poor families. The micro studies also reinforce these very significant findings of desk review.

The necessity of getting proper access to school to enhance schooling outcomes and adult literacy rates, especially for girls, was supported by a number of studies (Devi Salabala, 2001; Bhatty, 1998). But some recent findings (Krisnaji, 2001; Rao and Reddy, 2003) did not conform to the earlier findings of a positive relationship between access and educational development. Thus it becomes imperative to investigate further into the matter and to identify factors that exerted greater influences on schooling and adult literacy rates.

Using the census data at the district level analysis in Andhra Pradesh, Rao and Reddy (2003) found that as far as access is concerned, proportion of habitations with primary schools turned out to be a significant variable during 1980-81, but not so in 1990-91. In case of school enrolment, the variable schooling access appears to be positively significant in the regression analyses. However for the household level survey the study found that school problems seemed to be secondary as far as dropout and non-enrolment of children were concerned. The study concluded that increasing the density of schools, especially in remote areas is a better alternative than merely fixing the targets for enrolment. In contrast, N. Krishnaji (2001) in a study in Andhra Pradesh has found that proportion of villages having schools within a distance of 5 Kms is not statistically significant in analyzing the district level variation in enrolment ratios for male and female. Access was also found to be insignificant in explaining the variation in literacy rates (LRs) of SC/ST population at the district level. However the variable appears to be significant in analyzing the district level variation in overall LRs of the population.

Research studies reveal that while there is a rising demand for primary education across the country and a sharp reduction in the number of children who have never enrolled, there has been a steady growth in the number of private schools in both rural and urban areas (Srivastava 2001, Krishnaji 2001). In a case study in Uttar Pradesh it was found that the poor functioning or non-functioning of the government-run village school had appeared as a common response from parents who prefer to send their sons to study in other villages or in private schools. But the same response was less common in the case of girls, because parents were often reluctant to allow their daughters to wander outside the village or to pay the fees that would be necessary to secure their admission in a private school (Dreze and Gazdar, 1996; PROBE 1999). Singh's study (1998) in two districts of UP found that the enrolment rate was higher in government-run school (class-I) than in private schools. However performance was found to be better in private schools.

It thus appears that while access to school plays an important role in the process of educational development, it does not assist significantly in settling the issue of educational backwardness. It is difficult to conclusively state that there exists a positive relation between access to school and educational development.

v) Percentage of Female Teachers and Child Schooling

While teacher-pupil ratio is seen to be important in deciding on the enrolment in school, the sex of a teacher also plays a decisive role in sending a child to school. In our country the acute shortage of female teachers has been an area of concern and debate. Srilanka with 82 percent of female

teachers shows 87 percent FLR in 1995; while in India, only 23.45 percent and 24.66 percent teachers are female at the primary and secondary stages for rural area respectively (Sixth All India Educational Survey, NCERT, 1998, Haq and Haq, 1998). Naturally, we are lagging far behind the Srilanka in respect of overall literacy in general and female literacy in particular. Some micro level studies clearly indicate that female teachers represent better teacher attendance and better quality of education (Bhatty, 1998; Pratichi Education Report, 2002).

Rao and Reddy (2003) in a study in Andhra Pradesh by using the secondary data at the district level observe that proportion of female teacher has a strong positive impact on overall FLRs. Sailabala Devi (2001) in her village level study in Orissa observes that proportion of female teacher significantly increases the probability of school enrolment for girls than boys. Thind and Jaswal (2004) find the similar results in rural Punjab.

There is a general feeling that the female teachers, especially at post-primary stage, can enhance the self-confidence of girls through systematic counseling besides being good role models (Nayar, 1995-96). The proportion of female teachers is no doubt an enhancing factor so far the research works in this field is concerned, but the significantly poor proportion of female teachers in Indian scenario lead us to find the empirical evidences in this respect again at a different planning regions as designed in our study and thereby put a stress before the policy makers to consider the problem in an immediate need.

vi) Incentives for School Enrolment

The effectiveness of incentives on school enrolment, grade attainment etc. is a recent phenomenon in the literature of child schooling. A few attempts have been made by some notable researchers, which suggest that incentives (e.g. mid-day meal, free text-book, uniforms etc) enhance school participation rates, especially among the girls (see Duraisamy, 2001; Dreze and Kingdon, 2001; Retika Khera, 2002; Brahman, 2003). Babu and Hallam (1989) in a study in Tamil Nadu have observed that the school nutrition programme has a significant result in reducing the household poverty and inequality thereby showing a positive result in enrolment and continuation of education beyond primary levels (cited in Bhatty,1998).

P. Duraisamy (2001) in his village level study in Tamil Nadu found that an increase in the value of subsidies to children increases the probability of being enrolled in primary school. Nambissan's study (2001) in remote villages in Udaipur district of Rajasthan also found that parents and teachers were strongly in favour of cooked mid-day meal being provided daily to children as they usually went hungry to school. In a survey of 63 schools in Barmar district, Retika Khera (2002) found that female enrolment at the primary level was 36 percent higher in September 2002 than in September 2001. One recent study of Dreze and Kingdon (2001), estimates that the provision of mid-day meal in the local school is associated with a 50 percent reduction in the proportion of girls who were out of schools.

vii) Parental Education and Child Schooling

Parental education emerges as a significant determinant in household education decisions. All the field studies done under the UNDP programme confirm this results (Bhatty, 1998). It is found in rural Punjab that illiteracy of the decision-making members in the family is an important reason for continued perpetuation of illiteracy among women (Thind and Jaswal, 2004). They also noted ' the resistance was very much based on the out-dated beliefs that a woman's place was inside the house and education was of no use to her'. Jeemol Unni (1998) in her study in rural Gujarat found that the education of both parents is positively associated with the schooling of the child. However, the gender differential that she observed was very interesting. While the fathers' education positively influences boys' schooling, the education of the mother has a strong positive influence on the education of the girl child only.

In a village level survey-based study in Orissa, Sailabala Devi (2001) observed that both father and mothers' education have a positive significant influence on the probability of enrolment in primary and upper-primary levels for boys and girls. But mothers' education has a strong influence than that of fathers on girls' enrolment. Parental level of education was also found to be significant in

lowering the dropout rates. Sengupta et al. (2002) found similar result in their study in West Bengal. Malathy Duraisamy (2000) in her micro level study in two selected districts of Tamil Nadu found that a 10 percent increase in fathers' education leads to a 1 to 3 per cent increase in the probability of being enrolled and 0.1 to 0.2 percent increase in the educational attainment. A similar trend was also found in case mothers' level of education.

The study of Anuradha Pande (2000) in the rural hill areas of Uttar Pradesh revealed that the literacy level of the community as a whole has a significant impact on children's education- higher the literacy level, lower is the number of dropouts and non-enrolled children. The author also found it remarkable that fathers' education had a much greater influence on a child's chances of enrolment in school, especially of a girl child. Interestingly, it was found that the relationship between mothers' literacy level and educational status of a child is not significant unlike most other studies. An interesting result in this respect has also been emerged in a recent study (Vaid, 2004) where it has been found that gender and parental level of education is only significant for father's literacy at the stage of child's transition from illiteracy to some primary school. She thus concluded that unlike the other study, a more educated mother would lead to a higher education for the daughter does not hold. It should be noted that she used the National Election Study data set (1996) of the Centre for the Development Societies, New Delhi.

However, Thomas (2000) in his study in selected backward villages in Kerala also found that across the villages, the proportion of never-enrolled children in the school going age-group (5-14 years) did not bear any systematic relation to overall literacy level. The study of Llyod and Brandon (1994) in Ghana has emphasized that mothers favour the education of sons over daughters because of their greater dependence on children in their old age and their expectation of greater monetary returns from investment in sons.

Kiran Bhatty (1998) in her article 'Educational Deprivation in India - A Survey of Field Investigations' has concluded that parental motivation is generally high (PROBE Survey also supported this proposition) particularly for male children but, for female children, however, it is still an obstacle. Job aspiration and improvement status is the main determinants of parental motivation for male education; in the case of female education, these motives have less influence. Jabbi and Rajyalakshmi (1997) found in Bihar that the reasons for non-enrolment of children were more economic and home related in the case of girls and more school related in case of boys.

An analysis in Tamilnadu (Duraisamy, 2004) has found that the educational level of both parents exerts a positive effect on the probability of enrolment of child. But the results do not show any evidence of sex preference by the parents in this respect. However, father's education has a much higher effect than mother's education on grade attainment of their sons and daughters.

viii) Family Work and Child Schooling

School enrolment and attainment also bears a significant relationship with the size and composition of the family. It has been noted by several studies that there exists a negative relation between the number of children and child schooling, because the additional burden of children may put a restriction on family resources hampering child schooling. In this respect, there are many studies relating to Indian states. Jejeebhoy (1993) in rural Maharastra found that an older girl child with many younger siblings has a corresponding lower chance of her schooling. The same results were found in the study of Psacharpolous et al, 1989 and Pandey, 1990. The lower chance of schooling of a girl child is particularly true, if there are younger male children in the family. Studies from other countries also support the result. Knodel and Wongsith (1990) in their study in Thailand found the similar negative impact of a girl child belonging to a larger family. Debi's study (2001) in rural Orissa observed that larger the number of infants and old persons, lower would be the enrolment rate and grade attainment of female children. By using the state level Indian data Reddy (1995) found the similar negative impact of the variable at the state level for the year 1991.

Krishanji (2001), by using the secondary level data in his inter district analysis in Andhra Pradesh, has used child-woman ratio as an explanatory variable to predict child enrolment at primary and

elementary level. He has found that the variable has an adverse effect on enrolment of female children in the age group of 5-9 years. But the same was not found significant in explaining the enrolment ratios of both male and female children belonging to the age group of 9-14 years. This analysis thus, suggests that enrolment at primary level is more responsive to the number of siblings in the family. On the other hand, Jeemol Unni (1998) found some different result in rural Gujarat. Her paper, focusing on the schooling decision, observes the determinants of schooling and estimates the least square equations separately for boys, girls and all children. On estimation, it was found that the number of children per household did not show any significant result upon any of the three categories of children. Similarly, Duraisamy (2001) by using the village level data in Tamil Nadu found that the number of children in the household did not exert a statistically significant effect on school enrolment and grade attainment of both boys and girls at the primary level. But the variable was found to be significant and did exert a negative influence on enrolment and grade attainment at the secondary level.

While Child Labour and poor educational outcomes are not literally two sides of the same coin, the inverse relationship between them is understandable. There is, for instance, a weak negative correlation between the state-wise incidence of child labour in India and percentage of children aged 5-9 attending school, together with a strong positive correlation between incidence of child labour and dropout rates at primary and secondary school levels (Kumar, 1993). In Bangladesh, it was also found that 89 percent of working children had no education suggesting that work and education were seen to be antithetical options (Bissell and Sobhan, 1996). As far as analysis is concerned, the higher the correlation between child labour and educational outcomes, the more likely it is that the same set of factors can simultaneously explain a high demand for one (namely educational outcomes) and a low supply of other (for example Child Labour).

ix) Education and Mean-Age at Marriage

Malavika Karlekar (2000) in her article "Girls' Access to Schooling" rightly noted that the easy assumption that girls are natural caregivers combined with fears of the sexual vulnerability of girls means that early marriage is still a preferred option among a large percentage of country's population. She also noted that according to official statistics, of the 4.5 million marriages that take place annually, at least 3 million brides are in the age group of 15-19 years. Geeta Ramaseshan (1993) in her article 'Child Marriage in India' had observed that coupled with other factors, the compulsion of early marriage make schooling a poor option (cited in Karlekar, 2000).

Caldwell et al (1985) found in Karnataka that 34 percent of girls continue with schooling till the age of 12, while by the age of 15, only 11 percent continue with schooling. This is against 47 percent and 34 percent for boys, respectively. Further, they found that one-fifth of all females are removed from school at puberty, usually to be married as soon as possible. (cited Kiran Bhatty, 1998) Bashir (1992) in her baseline survey of three districts in UP has also noted that while the educational plan for a child was dependent on the child's performance and ability, "in case of girls, however, early marriage was an issue, independent of the child's interest". Chanana (1990) also cited early marriage as a major constraint in the educational life of a female. The study of Sharma (1980) and Minturn (1993) suggested that female becomes an asset rather than a liability if the society is endowed with a sufficient literacy level of male population as most young men aspire to marry a literate bride. (cited Kiran Bhatty, 1998) Sailabala Devi (2001) in her study based on rural Orissa found that even the economically better off parents were reluctant to send their daughters to school after a certain level, stating that they were required at home to share domestic work. Moreover, it was believed that marriage would be a problem for them because the dowry increased for more educated girls.

x) Social Backwardness and Education

There is a need for much closer study of Human Development indicators pertaining to Muslims, the largest minority in India (Bhatty, 1998). Shariff (1995) in his paper observed that in India, girls from Muslim families have a lower probability of entering schools and higher chances to be dropped out of school. The Lok Jumbish Project (1993-94) in two Muslim dominated districts in Rajasthan observed that by introducing Urdu as an additional subject from class-I, the participation

rate for Muslim Meo boys increased from 42.19 percent to 82.21 percent and from 11.05 percent to 57 percent for girls, within a period of three years. Usha Nayar (2000) has pointed out that education of Muslim girls and women needs urgent attention as this section is absent even in statistics and is perhaps more backward than other disadvantaged sections (SC, ST, OBC) which at least enjoy protective discrimination.

Nambissan (2001) in her study in rural Rajasthan concluded that language, as a medium of instruction is an important issue in schooling in the tribal area where there is a difference between the local language and Hindi as medium of instruction. However, language as a subject to be taught in school is also an issue in areas in which minority communities consider the teaching of a particular language to be of religious significance. Srivastava's study (2001) in the villages of Rampur of UP, found that the recruitment of Urdu teachers in the school failed to draw students away from 'Madrasas', because it is the Islamic education which is valued more by the community, not Urdu education as such.

In a study of 1991 district level census data, Saldanha (1996) had noted that district with higher than average urban population will tend to have higher than average literacy rates; while districts with higher than average SC/ST population will tend to have lower than average literacy rates. Anuradha Pande (2001) in her analysis has noted that among the SC children, a girl child is more likely to attend to young siblings and take care of old members in the family than a boy child.

In a village level study in rural Orissa, Devi (2001) found that serious inequalities existed in respect of school enrolment and dropout rates among the social groups (between general and SCs) and the inequalities appeared to be prominent in case of the female children of these social groups (Sarthi Acharya, 2001). In the study of Sengupta et al. (2002) it was found that belonging to a Muslim or Schedule Tribe family had a negative association with girls' education. However they concluded that in their sample, Muslim and Schedule Tribe family were characterised by low incomes, low levels of parental education and these may be the factors for educational backwardness of girl children rather than the impact of belonging to a particular class or caste. A recent study (Vaid, 2004) in this respect analyzed educational transition at different stages in the light of gender issue. The author found no significant variation in educational transition of boys and girls from Muslim communities. But it emerged that girls from other religious communities (other than Hindu and Muslim) do stand a better relative chance.

A dropout focused survey based study in Assam (Choudhury, 2006) indicates that the odds of a Muslim student discontinuing school is 1.9 times higher than that of a Hindu/Sikh student. This higher trend of dropping out of school by the muslim student is also noted in some other studies (Shariff, 1995; Borooah, 2003; Bhatt and Zavier) too.

By using the NSSO data of 1986-87 for the State Tamil Nadu, Duraisamy (2004) has found the coefficient of the dummy variable cast is not statistically significant at 10 per cent level and thus suggesting no significant variation in the probability of enrolment decision of child between the caste groups.

xi) Early Childhood Care and education (ECCE)

The importance of pre-school education and early childhood stimulation has been felt for a long time but has acquired a critical dimension as a necessary pre-condition for improving children's school performance and progress by National Policy for Education. The following studies show the importance of ECCE and establish the positive linkage between ECCE and learning achievements in primary and post-primary schools. A study (Mustard, 1999) from the field of neuroscience suggests that the period from conception to six years is very important for brain development. During these critical periods, a young child must receive the required stimulation from his/her environment, which would help to establish the neural path-ways for the optimal development of binocular vision, emotional control, habitual ways of responding, language and literacy, symbols and quality, all of which can impact school learning and achievements (cited in Kaul, 2002). In terms of psycho-social variables related to school readiness, research in the area of ECCE has consistently shown that a large percentage of children entering primary schools are first

generation learners and from poverty settings that do not provide them with the required stimulation in terms of quality adult-child interaction, wide sensory exposure, and provision for play and learning (see Chakraborty and Kundu, 1986).

A recent study conducted by the NCERT in four regions of the country on a sample of 1495 children admitted in Grade-I found that the children who came directly to primary schools from their homes do not exhibit the desired level of readiness (Upadhyay et al 1997). The NCERT's study of the follow up of cohorts in eight states of the country covering as many as 31,483 children showed that ECCE had a significant impact on retention in primary grades, with children who had been through ECCE demonstrating up to 20.5 per cent better rates of retention (see Kaul et al. 1993). An evaluation of the major ECCE progamme in the country, namely the Integrated Child Development Services (ICDS) by the NIPCCD in 1992 has also indicated the positive impact of ECCE on enrolment and retention of children in primary schools. A micro level, longitudinal study by the NCERT, which studied the cohorts from the ECCE stage through five Grades of primary education, has shown that a quality ECCE programme has a significantly favorable and long-term impact on children's learning, specifically in the area of mathematics (Kaul et al 1993).

Studies by Khosla (1996) and Sood (1987) showed that in comparison to children who had not attended the ICDS programme, those children who attended the centers scored higher in language and cognitive development and also performed better in first and second stages of primary school. Ratna M Sudarsan (2000) has noted in her article that - 'Experience has shown that universalising elementary education is difficult without a good system of preschool care, which both prepares the child for school and releases the older girls from having to take care of younger siblings'. The Education Commission (1964-66), while recognizing the significance of preschool education in child development and its critical linkage with enrolment, retention and learning outcomes at primary, continued to reiterate the earlier stand that preschool education should be left to voluntary agencies. It however, did recommend that the government should take on the responsibility for supervision, guidance, and setting up of model schools, training and research. In 1968, the Committee for the Preparation of Programme for Children (Ganga Saran Sinha Committee) recommended for the first time that the Government invest heavily in education, including preschool education, thereby inversing the earlier trend of leaving it to private agencies. The action taken in this recommendation was, however, limited.

A framework for universal preschool facilities started in 1975, known as Integrated Child Development System (ICDS), a national programme for preschool childcare and the same has been functioning since then. But the coverage of ICDS along with some other agencies is still very dismal. Sixth All India Educational Survey showed that the percentage of villages without any preprimary educational facilities ranged from 25 percent in Maharashtra and 29 percent in Kerala to as high as 87 percent in UP and 90 percent in Assam. Owing to the large gap in coverage, uncontrolled mushrooming of ECCE centers in the form of Nursery Schools under private management has emerged throughout the country. With no licensing requirement, these schools are generally run with inadequate facilities and by untrained personnel, thereby developing an unscientific education in the name of ECCE (Venita Kaul, 2002).

xii) Female Schooling and Fertility Change

Female education is a great concern in a country like India where deprivations against the females are seen in different social spheres. Its role as a positive attribute in enhancing the basic socio-demographic indicators (e.g. fertility, infant mortality, safe delivery, education of future generation etc) is well accepted in the literature (Sathar, 1996; Cleland et al., 1996; World Bank 1997). However, the casual link between female schooling and fertility change has had a high profile in policy making circles but a weak theoretical and empirical basis (Cochrance, 1983; UN, 1987 noted in Cleland and Jejeebhoy, 1996). Jejeebhoy (1995) has pointed out that the relationship between women's schooling and fertility – and particularly the effect of a modest amount of schooling – is highly context-specific, varying by region of the world, level of development and time. Cleland and Jejeebhoy (1996) have pointed out that East-Asian countries show a linear decline in fertility with ascending exposure to schooling. While in Africa and parts of Asia,

fertility initially rises as exposure to formal schooling lengthens, but subsequently falls. But in India, there is indeed a strong relationship between level of fertility and the level of adult female literacy. The study by Srinivason (1991) demonstrated that female literacy correlates more highly with fertility at state level and by repeating the analysis in the states of Kerala and Uttar Pradesh he also got the similar result.

Agnihotri (2002) examines the relationship between rural female literacy and the size of the child population (0-6 year) using block level data from the Population Census 1991 for W.B. He finds that among the social groups general and SC, a threshold level of female literacy is there associated with a continuous decline in child population (0-6 year) as the female literacy levels go up. A study in Ghana by Llyod and Brandon (1994) has emphasized the complementary inhibiting effect of sustained high fertility on girls' educational progress. They conclude that high fertility appears to have a negative impact on education of girls.

xiii) Other related Literature

In the context of the global challenge of Education for All (EFA), the study of Barbara Bruns et al has tried to identify the determinants of progress in EFA in 44 countries. They have used five variables for their regression analysis of which percentage of GDP spent on primary education has been emerged as the most significant determinants followed by the average teacher salary in explaining the progress in EFA. Interestingly the variable pupil-teacher ratio has been found to statistically insignificant and the value of the coefficient also turned out to be very small. By using the NSSO data (42 nd Round in 1986-87) Duraisamy (2004) has tasted the hypothesis that there is no difference in the parameter estimates of boys and girls in the school enrolment equations. He found that the effects of the determinants of schooling differ by sex in the rural and urban areas. Hence it implies that estimating a single equation for both boys and girls enrolment is not appropriate. He also found that the household consumption expenditure is found statistically significant with a positive impact on the probability of child enrolment. The coefficient of dummy variable for caste is not statistically significant at 10 per cent level which suggests that there is no difference between caste groups in the probability of child school enrolment. The proximity to schools is exerts a much stronger effect on the likelihood of girls rather than boys being enrolled. An increase in education level of both the parents has stronger effect on girls enrolment than the boys and thereby implying to reduce gender gap in education.

1.5 Major Research Hypothesis

The above review of literature reveals certain the major research hypothesis that will be tested by analyzing the primary survey based data, as well as the secondary (state, district and block-level data) data.

1. Higher incidence of poverty/low level of income will result in lower educational achievements and higher gender disparity in literacy rates and basic education.
2. Higher female work participation, lower will be the educational outcomes.
3. Higher dependency on agriculture, lower will be the overall educational development.
4. Proportion of female teachers in schools has an edge over reducing the gender disparity in literacy rate, educational transition rate and enrolment rate.
5. The more the coverage of school, the lower will be the gender disparity in overall educational outcomes.
6. Greater the rural-urban disparity in pupil-teacher ratio in primary school, the higher will be the gender disparity in educational achievements.
7. Higher the facility of school amenities, higher will be the success in elementary schooling.
8. Parental level of education will have a positive impact on girls' education than boys.

9. Higher the proportion of socially disadvantaged people, lower will be educational outcomes.

10. Higher fertility rate is associated with higher gender disparity in educational achievements and lower literacy rate.

11. Micro planning as opposed to universal policy in basic education will bring about the desired help to reach the national goal of UEE.

12. Expenditure on education as opposed to monthly per capita expenditure is the basic determinant of child's schooling.

1.6 Research Methodology, Area of Study and Database

The focal concern of the present study is the identification of the determinants of educational backwardness in general and in particular, to identify the specific causes of differential educational development in the process. The total research work is based partly on an analysis of secondary data but primary survey of selected villages in West Bengal a particular state of the country has also been undertaken. The result of analyses of both primary and secondary data has been compared to obtain concrete solutions to the problem.

The design of the proposed study is done in two phases. Phase- I comprises the analysis of secondary data at different disaggregated levels and Phase- II is the analysis of data based exclusively on intensive village level survey.

In phase-I, for better understanding of the root of differential educational outcomes, different successive steps at state, district, sub district and village level study have been undertaken and the results of the macro findings have been compared with that of micro level findings. For the state level analysis, India has been taken as the planning region while the 35 Indian states having have been considered as planning units. But for the reason that the problems connected with the educational backwardness vary between regions and between different groups of people (Sengupta et al, 2001) the district level analysis has also been carried out in the state of West Bengal. This particular state has been chosen since it has been maintaining its stable middle rank in respect of overall literacy rates since 1951. Accordingly, the state is expected to be the representative of the country. Again the studies so far carried out have concentrated either on the most developed states (e.g. Kerala, Tamil Nadu, Himachal Pradesh) or to the least developed ones (e.g. BIMARU states; P.Duraisamy, 1992 in Tamil Nadu; Dreze and Gazdar, 1996 in UP; Jeemol Unni in Gujarat; Geetha, B, Nambissan, 2001 in Rajsthan; Jabbi and Rajyalakshmi, 2001, in Bihar; Sailabala Devi, 2001, in Orissa). Attention has not been much extended to this particular state. Besides this, the state shows a large variation in respect of educational outcomes. District level literacy rate varies from a lowest of 47.9% in Uttar Dinajpur to a highest of 78.1% in North 24 Parganas (excluding the metropolitan district Kolkata) with of course a large extent of literacy variation at village level too. All the 17 districts of the state (excluding the metropolitan district Kolkata) are to be considered as the planning unit in this district level analysis. It may be noted here that the analysis of secondary data at sub district level (at block or even at mouza level) has also been carried out in this particular State.

In phase-II, for the village level study, a multi-staged stratified, purposive random sampling procedure has been applied to collect the data. At the first stage of stratification one district in West Bengal has been selected. The selection of district has been done following the decennial census literacy data of the districts. For this the districts according to the literacy rates has been arranged as depicted in the Census Report of 2001 and calculated district-wise rural urban gap in literacy rate (RUGLR). Following this gap the district of Uttar Dinajpur has been found as the district with highest RUGLR (37.6 percent). Again as per the Census 2001, there are as many as 37, 956 inhabited villages/census mouzas in West bengal. The villages under 17 districts have been arranged by their literacy rates and by calculating the literacy rate (person) of each of the villages in West Bengal, villages with a literacy rate below 25% have been identified. The identified villages have been named as educationally deprived villages in the State. As such 843 villages in

the State have been found with having this minimum cut off literacy rate (25%). Uttar Dinajpur with 207 villages in this category has been topping the list, which apparently suggests that the educational deprivation is mostly concentrated in this particular district. Thus for carrying out the village level survey, this district has got the focus and finally selected for the purpose.

At the second stage of stratification, the literacy data has been calculated for two subdivisions, namely, Islampur and Raiganj of Uttar Dinajpur district. Between the two subdivisions, Islampur has been found with sufficiently low literacy rate (38.5%) than its counterpart Raiganj (58.1%). Being such a low literate area Islampur is chosen as the subdivision for the survey. Two blocks are chosen purposively from this subdivision of Uttar Dinajpur district - one with low literacy rate and another with a comparatively high literacy rate. For this, block level literacy rate is again calculated and arranged in ascending order. Goalpokhar-I with 31.6% literacy rate and Chopra with 43.29% literacy rate have been found as least and highest literate blocks of the subdivision. So it is expected that the selection of the above mentioned two blocks would rightly represent the diverse level of educational development in question.

The third stage of stratification consists of selection of villages from the blocks. Considering the nature and extent of variation in the LR at the village level, two villages from each of the selected block with substantially low and high literacy rate have been selected.

At the forth stage, a listing of all the households in each of four villages has been done from the field survey. The household listing thus obtained from the survey has again been purposively stratified as follows –

Sub-stratum-I consisting households with having one or more children in the age group 5-14 years old.
Sub-stratum-II consisting households without having any children in the age group 5-14 years old.

And finally, the sample size of 30 households from each village has been drawn randomly from among the Sub-stratum-I. The extensive survey is undertaken in the selected households.

Data relevant for the study is based on both secondary and primary sources. Reliance on secondary data is necessary for the country and inter-state analysis. These data are collected from Census for all the available years, Annual Reports of Department of School Education, Selected Educational Statistics, All-India Educational Survey, NSSO, NUEPA, DISE, WBHDR and other allied official statistics of national and international agencies. Primary data has been collected from the survey of the selected villages in the study region. Questionnaire is framed to collect information that is both quantitative and qualitative by nature.

Standard statistical tools and econometric methods have been applied to cross-analyse and study the relationship between the different variables. The variables identified from literature comprise of three distinct categories – economic, demographic or intervening factors, school related and infra-structural factors. Dummy variable regression technique (ACOV) has been applied for the initial analyses with both qualitative and quantitative variables as the explanatory variables. However, advanced dummy dependent variable technique has also been applied in case of qualitative dependent variable like the decision to enroll in school, educational attainment, etc.

1.7 A Brief Introduction of the Study Region

The district of Dinajpur has been divided into two parts following the partition of the province Bengal with the independence of India in 1947. One part being named West Dinajpur has been included in the province of West Bengal in India and the other part as Dinajpur in East Bengal of Pakistan. Since then, the district was a unified district until 1992. In order to facilitate the administrative viewpoint, the West Dinajpur district has been again divided into two districts, namely, Uttar Dinajpur and Dakshin Dinajpur w.e.f. 1st day of April, 1992. Though both the districts are purely agrarian in nature, yet, so far the administrative division of West Dinajpur is concerned, the areas that lie within the district Dakshin Dinajpur have been showing an edge of development in respect of educational outcomes compare to the other parts of the undivided West Dinajpur district. For a better understanding of the problem, we have presented here a comparative

tabulation of some selected educational and social indicators in connection with the district along with the state of West Bengal (Table-1.4).

Table-1.4: Some Selected Educational and Social Indicators of Uttar Dinajpur and West Bengal, 2001

Indicators	West Bengal	Uttar Dinajpur
Total Literacy Rate (TLR)	68.6	47.9
Male Literacy Rate (MLR)	77.0	58.5
Female Literacy Rate (FLR)	59.6	36.5
Male-female literacy gap	17.41	22.0
% Of villages having primary school within the village	74.26	70.68
Area in Sq. Km.	88752	3140
Population	80221171	2441824
Percentage of Rural Population.	71.97	87.94
Density of population (/sq.km.)	904	778
Per- capita income at Current price (in Rs) #	16072.26	11182.86
Percentage of Hindu population.*	74.72	54.21
Percentage of Muslim population.*	23.61	45.55
Percentage of SC population.	23.02	28.78
Percentage of ST population.	5.5	5.1
Percentage of Child Population (0-5 yrs)	13.88	20.68

*= Corresponding to 1991; #= Quick estimate, 2000-01(in RS).
SOURCE: - West Bengal – A Census View, Office of the Director, Census Operation, West Bengal

1.8 Chapterisation

The proposed study has been designed in the following chapters-

Chapter - 1: Introduction to the Study

This chapter has introduced the problem under study. The relevance and the scope along with the specific objectives of the study have also been discussed in this chapter. Critical review of the literature has also been dealt with in this chapter. A detail of the Research Methodology stating the area and universe of the study along with the process of data collection and processing of data is discussed in this chapter.

Chapter - 2: An Overview of the Educational Progress in India since 1951

Analysis of development pattern with regard to the educational attributes usually commences from a historical perspective and accordingly, in this chapter a brief assessment of the educational development process in pre and post independent period has been delineated. The chapter also attempts to portray the literacy trends in India during the period 1950-51 to 2000-01. Social expenditure on education with special reference to elementary education in India is undertaken to elucidate the stress of policies on elementary education. Finally, recent issues, polices, and trends in educational achievement in India are outlined and key areas of concern summarized.

Chapter - 3: Educational Backwardness in India: An Inter-State Comparison

In this chapter, inter-state variation in educational development has been assessed in order to select a State among the major Indian States in terms of educational disadvantages especially in connection with the achievement of literacy rate and elementary education. By using the UNDP's Range Equalisation Methodology and with the help of Principal Component Analysis (PCA), a detail of regional issues in respect of literacy development and elementary education at State level has been outlined in this chapter.

Chapter - 4: District Level Variation in Elementary Schooling and Literacy Rate in West Bengal

On finding some special paradoxical characteristics of West Bengal in respect literacy attainment and elementary schooling, the focus of the study moves to this particular state. Chapter-4 gives

special emphasis on this State with a view to see the nature and causes of educational attainment at various disaggregated level. Applying the simple regression technique, an attempt has been made to capture the related socio-economic factors. All the 17 (incorporating Purba and Paschim Medinipur into one district and excluding the metropolitan district Kolkata) districts of the state are considered as planning units in the district level analysis. The regression analysis is also extended where all the 341 CD blocks in the state are included. The chapter also provides an explanation of educational deprivation in the state at elementary level with reference to the Educational Development Index developed by the NUEPA. Finally it makes an attempt to identify the educationally deprived regions within the state.

Chapter - 5: Differential Educational Attainment of the Blocks of Uttar Dinajpur District

This chapter presents and analyses the educational drawbacks of Uttar Dinajpur district and assesses the socio-economic and enabling attributes related with the educational development. In particular it investigates the nature and causes of educational deprivation in this particular district. a multiple regression analysis is carried out at district and block level (for each blocks separately) taking mouzas as unit of observation in both the cases. As such, a district level view is observed first and after that the result derived from each of the blocks are compared with the district result and also an intra-block comparison has been developed in order to capture the more specific socio-educational characteristics of each bock separately.

Chapter - 6: Factors Determining Educational Deprivation in Rural Uttar Dinajpur District: An Empirical Exercise - I

This Chapter along with the next one is designed to analyse and represent the extent of educational poverty in terms of the quantum of deprivation in the educational attainment stressing on literacy attainment and elementary education. The whole analysis is carried out on the basis of primary field survey in Uttar Dinajpur, an educationally deprived district of West Bengal. Specifically, chapter- 5 deals with the investigation of literacy rate at household level. Multiple regression analysis is applied for observing explanatory power of household related factors on literacy rate. An attempt is also made to convey the technical issues related with the application of multiple regression method in survey based primary data and also how the technique may be extended to compare the relative magnitude of regression coefficients. This comparison may help us to find the factor/s that plays/play the vital role in explaining the literacy rate at household level.

Chapter - 7: Problems Related to Elementary Schooling in Rural Uttar Dinajpur District: An Empirical Exercise - II

This chapter of the research empirically deals with two schooling aspects, namely problem of never enrolment in school and dropout of school. While doing it, the logistic regression technique is applied with a presumption that the result may improve upon the earlier empirical works in the related literature. Two central concepts have been conveyed that have a closer link with the process of such empirical investigation. First is to convey the concepts of logistic regression as simply as possible and the second is to demonstrate how the logistic regression technique has been applied in the present data set. Apart from this econometric investigation, a qualitative search on the issue of school enrolment is also being discussed with a view to compare the econometric result with the qualitative observation of data set.

Chapter- 8: Summary, Conclusion and Policy Recommendation

This chapter brings the present dissertation to an end by giving a summary of the findings of all chapters. Based on the findings, a number of concluding remarks have been outlined about the investigation that was undertaken. In continuation of the conclusions, several implications for further research are subsequently delineated in the closing section of this dissertation.

Note

1. School life expectancy is defined as the total number of years of schooling that a child at age 5 can expect to receive in the future, assuming current probabilities of enrolment in school by age.

2. Argentina, Brazil, Chile,China, India, Indonesia, Jordan, Malaysia, the Philippines, the Russian Federation and Thailand. In addition to the original 11 countries, eight new countries, Egypt, Jamaica, Paraguay, Peru, Sri Lanka,Tunisia, Uruguay and Zimbabwe

3. Organisation for Economic Co-operation and Development

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Chapter-2

An Overview of the Educational Progress in India since 1951

2. Introduction

Elementary education has to be made free and compulsory and it has to be made available for all the children in all nations. This was affirmed in 1948 after the Universal Declaration of Human Rights[1] (United Nation, 1948). This basic right of the children as well as the critical social need has also been reiterated several times at different platforms and conferences at international level. The World Declaration on Education for All (EFA) adopted at the World Conference on Education for All held in Jomtien, Thailand, 1990, and the six Education for All (EFA) goals as set out in the 2000 Dakar Framework for Action in September 2000, encapsulated the commitment to achieve universal provision and access to primary schooling. These included the World Declaration on Education for All (EFA) adopted at the World Conference on Education for All held in Jomtien, Thailand in 1990 and the Dakar Millennium Declarations in September 2000 (UNESCO, 2008). In the latter, over 160 countries adopted the six goals aimed at providing quality basic education to all children, youth, and adults by 2015. The "Education for All" movement gained particular prominence in the same year when world leaders of nearly every country, unanimously adopted the Millennium Development Goals (MDG) set out in 2000. To address the issues of abject poverty and hunger and to realize human life with dignity while ensuring human rights to all sections of the people, political commitments were made by world leaders from the forum of United Nations in the form of Millennium Declarations in September 2000. The 2nd and 3rd goal of the Millennium Development Goals (MDGs) is to achieve Universal Primary Education (UPE) and promote Gender Equality and Empowering Women by 2015. So, how far the international community has come in meeting these two goals is a relevant international agenda and a quick look of India's position in this respect will be very much important. Various research studies have noted that many countries of the world such as China, Sri Lanka, Japan, South Korea and Indonesia which had a similar educational record as India had in 1950, have already achieved universal elementary education. But India is still missing the goal to even achieve universal primary education.

Education policy in India was initiated after Independence in 1947 and the year 1960 was initially targeted towards achieving universal education for children belonging to the age group 5-14 years. Thereafter, several commissions (University Grant Commission of 1948 chaired by Dr. S. Radhakrishnan, Secondary Education Commission of 1952 chaired by Dr. L Muddaliar, Education Commission of 1966 chaired by D.S. Kothari, Teacher education Commission of 1985 chaired by D.P. Chattopadhyay and Dr. Rais Ahmed etc. are some of the noteworthy examples) and Committees expressed their concern over the non-achievement of this goal and provided recommendations for achieving the goal of UEE. In spite of the recommendations, the target remained illusive and external funding was introduced to ensure the fulfilment of the vision. In recent times programmes, funded through District Primary Education Programme (DPEP) and thereafter Sarva Siksha Aviyan/Mission (SSA/SSM), have been introduced to universalize Elementary Education within a given time frame. To achieve UPE (Goal 2 of MDG) by 2015, it is expected that children everywhere, boys and girls alike, will be able to complete a full course of primary schooling by then. To accomplish the 3rd goal of MDG, it would be necessary to eliminate gender disparity in primary & secondary education, preferably by 2005 and at all levels of education no later than 2015 (A Mid-Term Status Report on Progress of Millennium Development Goals of West Bengal, Wada Na Todo Abhiyan, West Bengal).

Providing education to all is a constitutional commitment in India. The 86th Constitutional Amendment Act 2002 made education a Fundamental Right for children in the age group of 6-14 years by providing that "the State shall provide free and compulsory education to all children of the age of six to fourteen years in such manner as the State may, by law, determine". In reality, this goal is yet to be realised. A recent UNESCO Reports (India DHS 2005-06) stated that "India is the country with the largest number of children out of school."

The reasons behind the failure to achieve the goal of universal education for the children, has thus remained a subject of research for years. In order to understand the dynamics of present day educational development it is necessary to look into the progress of education in India since the British rulers who actually laid the foundation of modern educational system in our country. This chapter briefly addresses the developmental trend of various educational policies in India over the last century in order to identify the basic problems related with Indian education especially, with Elementary Education (eight years of schooling). A brief history of the progress of education in India is thus outlined below.

Since the focus of the study is on elementary education, the history of elementary education during the British rule along with the some major policies taken by the government for universalising elementary education is also briefly traced. Social expenditure on education with special reference to elementary education in India is undertaken to elucidate the stress of policies on elementary education. Thereafter, the developmental trend of elementary schooling in India has been dealt with within the reference period. The chapter also attempts to portray the literacy trends in India during the period 1950-51 to 2000-01. Finally, recent issues, polices, and trends in educational achievement in India are outlined and key areas of concern summarized.

2.1 Progress in Education in pre-Independent India

India has a long tradition of both formal and non-formal system of education. In the ancient days, education was imparted orally to the sages and scholars. The teachers were addressed as Gurus and the scholars were addressed as shishyas. This guru-shishya system of imparting education was popularly known as Gurukul. Gurukuls were traditional Hindu residential schools of learning. Education was free, but students from well-to-do families paid Gurudakshina, a voluntary contribution after the completion of their studies. At the Gurukuls, the teacher imparted knowledge on Religion, Scriptures, Philosophy, Literature, Warfare, Statecraft, Mathematics, Medicine, Astrology and "History" ("Itihaas"). Only students belonging to Brahmin and Kshatriya communities were taught in these Gurukuls, thus limiting education to higher castes (Source: http://en.wikipedia.org/wiki/ History_of_education_in_India).

Another barrier existed for the common people to receive knowledge in the form of language, i.e. Sanskrit was the medium used to impart knowledge which was beyond reach of the commoners. Mass education was proclaimed only during the age of Buddha (563-483 B.C.) who successfully imparted education in the language of the masses known as 'Prakrit' spoken by them, and not in 'Sanskrit' which was the language of the elite. The dawn of Buddhism and Jainism brought fundamental changes in access to education with their democratic character. With the spread of Buddhism in India, education became available to everyone and this led to the establishment of some internationally renowned educational institutions like Nalanda, Vikramshila and Takshashila (Sharma, 2006). These institutions also received scholars from various countries and education was in its zenith.

In the medieval times (11th Century onwards), the Muslim rulers replaced the existing systems of education by introducing their own education to meet the growing needs of a Muslim administration and of a Muslim Community. They established elementary and secondary schools (Ghosh, 2007). This led to the forming of few universities too at cities like Delhi, Lucknow and Allahabad. Medieval period saw the proliferation of Islamic education and institutions leading to interaction between Indian and Islamic traditions in all fields of knowledge like theology, religion, philosophy, fine arts, painting, architecture, mathematics, medicine and astronomy.

The Hindu learning, which survived in the bordering Hindu kingdoms in medieval India, almost perished under the impact of western learning. When the British arrived in India, English education had been growing with the help of the European missionaries. Since then, Western education has made steady advances in the country. When the British replaced the Muslims as rulers, they also instituted their own system of education to meet imperial requirements. They were much interested in educating the Indians for facilitating their administration in India, while proselytisation was the primary motive behind the eagerness of the British to educate the Indians.

Besides, administration could be managed at a low cost since Indians could be paid less by the East India Company than the Englishmen. The modern educational system as developed by the British in India was completely new in concept and aspect. Although it was actually developed by the British administrators, probably, for facilitating their administration in India and also to facilitate missionary operations in India, it may still be considered as the introduction of modern educational system in India and the western education gave birth to a group of enlightened Indians who were able to free India from the British rule.

The current system of education, with its western style and content, was introduced & funded by the British in the 19th century, following recommendations of Macaulay. Charles Grant, Macaulay and Trevelyn propounded the ideology of colonial education in the early years of colonial rule. Macaulay's Minute of 1835 envisaged downward filtration where it was believed that education filtered down from the upper to the lower classes (Dave, 1992). Macaulay was of the view that education was not to be free but one needs to pay to receive education. He even went further to advocate the withdrawal of stipends from the native students. The policy to be adopted in regard to the spread of education in British India was summed up by Macaulay as, "To sum up what I have said. I think it clear that we are not fettered by the Act of Parliament of 1813, that we are not fettered by any pledge expressed or implied, that we are free to employ our funds as we choose, that we ought to employ them in teaching what is best worth knowing, that English is better worth knowing than Sanskrit or Arabic, that the natives are desirous to be taught English, and are not desirous to be taught Sanskrit or Arabic, that neither as the languages of law nor as the languages of religion have the Sanskrit and Arabic any peculiar claim to our encouragement, that it is possible to make natives of this country thoroughly good English scholars, and that to this end our efforts ought to be directed (Cultural Imperialism & Thomas Macaulay, http://www.mssu.edu/ projectsouthasia / history/ primarydocs/ education/ Macaulay001.htm). With the introduction of the fee system, education became inaccessible to a large section of the masses. Another official policy of the government was to introduce English as medium of instruction at the school level, thus making education a tool for the elites and the much envisaged 'downward filtration' failed to evolve as was desirable.

As opposed to downward filtration theory, Wood's Despatch of 1854 was a landmark in the history of primary education under British rule in India. The Despatch envisaged a system of grant-in-aid to educational institutions which would provide 'good secular education by trained teachers. It also mentioned the support that will be given to female education. The Despatch of 1854 also brought two very important issues to the forefront. One was the role of the government in fostering mass education, and accordingly, the policy adopted was to improve the existing indigenous schools and open new government schools. The other was the relative importance of English and the vernacular in the process of education. The Despatch envisaged English in the higher education for the few and vernacular education for many. But the then government was not seen to be interested in implementing the suggestions of the Despatch. Much was done for higher education than for the development of primary education. Eventually, no significant progress was discernible during this period (1813-1859).

Serious efforts were undertaken during the period 1859-1881 and primary education progressed rapidly during this time. Lord Stanley's Despatch of 1859 stressed on the role of government alone in providing primary education and not reliance on grant-in-aid. Local cesses for the development of primary education were levied both in rural and urban areas. In Punjab province, a cess of one percent was levied on land revenue in 1856-57 in certain areas and was generalised in all areas in 1864. A rapid expansion of primary schools was seen during this period.

The next major milestone was the establishment of Indian Education Commission of 1882 or the Hunter Commission. The Hunter Commission published its detailed report in 1884 and its focus was to explain the failure of Charles Wood's Education Despatch of 1854 and to recommend reform. The commission devoted its primary attention to elementary education. Among other things, the commission suggested that government along with local bodies should shoulder responsibility of primary education and primary education should be given through vernaculars

(Hunter, 1884). In spite of these recommendations, primary education suffered between 1881 and 1901 because of inadequate financial supports by the government.

A few efforts were also made by Lord Curzon who declared through the Resolution of 1904 that extension of primary education was one of the most important duties of the State. As a result of this Resolution, both the Central and Provincial government allotted large grants for primary education and consequently there was a remarkable improvement in school infrastructure.

The goal of universal primary education was officially accepted in 1921 when the British Government transferred the controlling power of primary education to the Indian ministers. In this respect, 1921 was a significant year in the history of primary education in India. Public opinion was also organised in the field of primary education. Accordingly, both primary schools and enrolments were increased tremendously. But the World Economic Depression of 1930 necessarily forced the government to curtail education expenditure. Consequently development was interrupted. The then government accepted the view of 'consolidation and improvement' rather than that of expansion in the field of education (recommendations of The Hartog Commision appointed in 1929 to review the conditions of Indian education). Primary education under provincial autonomy (1937-47) also suffered from various problems owing to the outbreak of Second World War in 1939. Attempt was made by the Congress Ministries to introduce Gandhiji's concept of Basic Education in several provinces. However, owing to the brevity of the period between the introduction of provincial autonomy and World War II (two years), not much headway could be made in this regard.

In pre-independent India, significant efforts were made to introduce universal free compulsory basic education by the Indian leaders and thinkers. Indian leaders began to demand compulsory education in the latter half of the 19th century. Dadabhai Naoroji, Sir Ibrahim Rahimtoola and Sir Chiman Lal were among them who raised the question of introducing free and compulsory primary education as soon as possible before the First Indian Education Commission (1882). But the Commission rejected the demand by sparing a few words that it was too early to set a goal of universal education. The first successful experiment of compulsory primary education was conducted in the State of Baroda. The Maharaja Sayajirao Gaikawad of Baroda introduced compulsory education as an experiment in the Amreli Taluk of his State in 1893. By the success of this experiment, the provision was enacted throughout the State in 1906. Gopal Krishna Gokhale made a serious effort by raising the demand of free compulsory primary education before the Imperial Legislative Council in 1910. On March 18, 1912, he moved a resolution to examine his Bill by a select committee. However the Bill was rejected by 38 to 13 votes. Shri Vithabhai Patel took Gokhale's work and in 1917 he moved a Bill in the Bombay Legislative Council for the introduction of compulsory primary education in the municipal districts of the Province. The Bill was passed with some modifications and became the first law on compulsory education in India. After World War I, some of the Provincial governments passed Primary Education Acts, in the respective provinces (e.g. Bengal Primary Education Act, Uttar Pradesh Primary Education Act and Punjab Primary Education Act in 1919). However, several reasons including the poor socio-economic background of the country posed a barrier in the path of universalisation of basic education.

2.2 Elementary Education in post-Independent India

Although several efforts were made during the British period to spread elementary education to the masses, it failed universalise it. Consequently, the decolonized India inherited a weak educational base. The first post-independence census indicated only 9 percent of females and 27 percent of males as literate. The Government of free India fully realized the importance of mass literacy and the Constitution of India made a Directive Principle of State Policy under Article-45 as follows-

Article-45: "The State shall endeavour to provide free and compulsory education for all children up to the age of 14 years within ten years from the date on which the Constitution comes to force."

'Kher Committee' in 1944 recommended 16 years for achieving the goal of education for all. Eventually, on January 26, 1950, when the Indian Constitution came into effect, the above

constitutional commitment was also made effective. In reality, the years went by but they could not bring forth the desired result. Policy, as it is defined and developed, gives the direction in which a country proposes to move to achieve a certain targetted goals in future (Premi, 2001). It is basically the political statement of the Government pertaining to the vision about the future (Mukhopadhyay, 2001). Eventually, educational policy assigns the proposals of the Government for future development of the educational scenario of the country. But the constitutional commitment made at the time of its commencement, proved itself that the time limit for achieving the goal of universal education was very short. It was little before the independence in 1947, Central Advisory Board of Education (popularly known as Sargeant Plan) recommended a period of 40 years for achieving the goal of free and compulsory education for all children in the age group of 6-14 years.

At the time of commencement of Indian Constitution, the primary responsibility for elementary education was given to the State Government, while the responsibility of higher and technical education was given to the Central Government. In 1978, after the 42nd Constitutional Amendment, all levels of education were placed under the concurrent list.

Having failed to achieve the goal of UEE after the 10 years of constitutional commitment, the Government of India appointed a commission in 1964 (Kothari Education Commission) to advise the government on the general principles and policies for the development of education at all stages and in all its aspects. The Commission submitted its report in 1966 where it was strongly recommended to give highest priority to elementary education. It set a target before the government to universalise 5 years of schooling by the year 1975-76 and 7 years of schooling by 1985-86. It is well known that this target was not achieved. The National Policy on Education (1968) was framed following the reports of Kothari Commission which stressed to bring equal opportunities to both boys and girls and also to all social groups (Sudarsan, 2000). The National Policy on Education (NPE) of 1986 that was updated in 1992 again targeted the year 1995 to achieve the constitutional goal of achieving free and compulsory education of the children aged upto 14 years.

In 1999, a high-powered committee comprising a group of experts (Saikia Committee) submitted their report where it was clearly recommended to allocate a public expenditure of 6 per cent GDP, which is still unattended.

In May 2000, the Government announced to achieve a sustainable threshold level of 75% literacy rate by the year 2005. This was declared before the World Education Forum at Senegalese capital Dakar for reaching the goal of Education For All. During the same year a national program under the campaign called Sarva Shiksha Abhiyan (SSA) was launched by the Ministry of Human Resource Development (MHRD) as an effort towards universal education.

The Hon'ble Supreme Court in Unnikrishnnan, J.P. Vs State of Andhra Pradesh and others (1993) has categorically rendered in its judgement that every child of this country has a right to free education until he completes the age of 14 years.

The Constitution (86th Amendment) Act, 2002, enacted in December 2002 seeks to make free and compulsory education a Fundamental Right for all Children in the age group 6-14 years by inserting a new Article 21-A in Part III ("Fundamental Right") of the Constitution (Government of India, 2008).

The recent Constitutional Amendment has restructured the educational right of the Indian children upto the age of 14 years as follows –

Article 45 (Modified): "The State shall endeavour to provide early childhood care and education for all children until they complete the age of six years."

Article 21 (A): "The State shall provide free and compulsory education for all children of the age of 6 to 14 years in such a manner as the State may, by law, determine."

It also adds Article 51 (A) (K) under Fundamental Duties as follows-.

Article 51(A) (K):"Parents/guardian to provide opportunities for education to his child or ward between the ages of 6 to 14 years."

This amendment does not ensure the equal opportunities to be provided for the education of the children. Rather it stated in Article 21 (A) that education will be provided in such a manner, as the State shall by law determine. Again, by adding Article 51(A) (K), the parents are also made duty bound to provide opportunities for the education of their children. Though it is found in different surveys (PROBE; Pratichi Education Report) that there is a strong aspiration among the Indian parents to educate their children, but in reality this aspiration is far from realization. According to a senior educational official, "The Government should not force poor parents to send their children to school when it cannot provide employment for all adults. Children are an economic asset to the poor. The income they bring in and the work they do may be small, but parents close to subsistence need their help (quoted in Weiner, 1996)." A common proposition that poverty alleviation is a pre-requisite for achieving the goal of UEE has been falsified by several country experiences. Many countries have successfully made primary education compulsory and universal when per-capita income in those countries was low and poverty was widespread. Japan introduced compulsory education in 1872 and by 1910 Japan had achieved 98 per cent of its children (6-13 years) attending school. In 1949, only one-forth of the Chinese children were in Primary School, while in 1982 the figure was 93 per cent, with 70 per cent completing the sixth grades. Sri Lanka also ensured 90 per cent primary schooling coverage of its children in 1981 of which 70 per cent was completing fifth grade. North and South Korea, and Taiwan are countries that made education compulsory shortly after World War II. In the West too, many countries have introduced the same before the onset of the Industrial Revolution. These countries have successfully ensured the universalisation of primary and elementary education in their country and they have regarded mass education as an instrument for the reduction of poverty (Weiner, 1996), justifying the need for education for poverty reduction. Beyond this poverty effect, it is obviously very difficult to cater to the educational needs of the rapidly growing population having a demographic base of 1.03 billion (Census of India, 2001) of which 0.253 billion are in the school going age group (5-14 years).

The New Economic Policy consisting of liberalization, privatization and globalization of economy in India started at the beginning of the last decade of last century. It is argued that economic reforms create space for poor and vulnerable sections of the society. But the basic question, whether they can be able to use these spaces for their economic development or not, is conditioned by whether they are educated, healthy well-feed or not. Without having sufficient access to these social needs, economic reforms would not benefit the poor and vulnerable sections of the society.As such it will be too optimistic to think that the 86th Amendment to the Constitutional Amendment (The Constitution Act, 2002) may automatically ensure universalisation of education to the Indian children. Finance Minister P. Chidambaram on July 2004 proposed to levy an Education Cess @ 2% on all major Central Taxes (income tax, excise duty, customs duty, corporation tax and service tax) that actually came into effect from November 14, 2005 (Government of Indiaa , 2008; Apeejay Stya Education Research Foundation. www.aserf.in). It has been levied to strengthen the financial assistance to primary education in the country. For the purpose, a non-lapsable fund for funding SSA and MDM has been established in the name of of Prarambhik Shiksha Kosh. The constitutional amendment, promises and budgetary provisions, however, is only the beginning - not the end – of the struggle to universalize elementary education. It was soon realised that legislation alone is not sufficient to make any headway in education. A massive effort in a series of programs is required to bring the schooling system in line with the goal. However, given the dimension and gravity of the issue to universalize education, it is apparent that education has been receiving some focused attention at present and the process will be continued in the recent future too.

2.2.1 Public Expenditure on Elementary Education

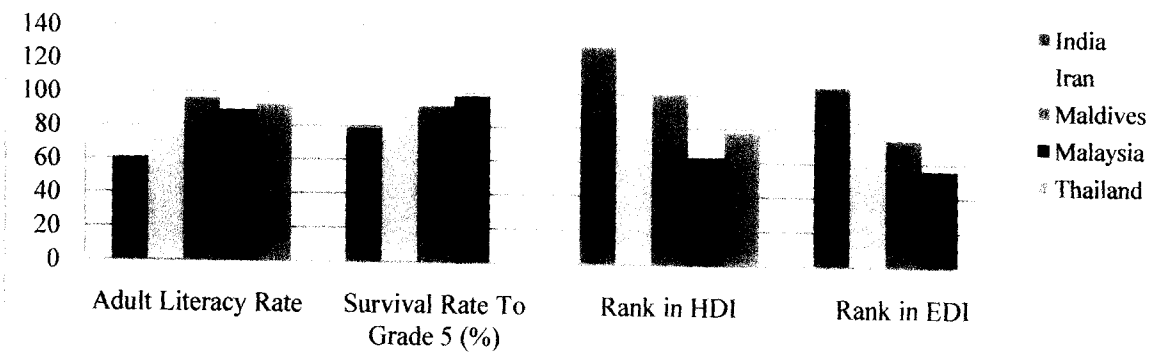
The financing of Education for All (EFA) has become a key issue in national and international efforts to achieve universal primary education. A number of studies have repeatedly stressed the importance of ensuring a sufficient and stable source of funding for education (Colclough with

Lewin, 1993; Mehrotra, 1998; Bruns, Mingat and Rakotomalala, 2003). In India, education is financed by the central government, state governments, local authorities, and a variety of private sources. But government is the major contributor of educational access and this has been done through the fund allocated by the government to the education sector. It has been argued that in India, apart from several other factors, insufficient allocation of financial resources to the education sector on the part of Government is a prime reason for non-implementation of the constitutional commitments (Tilak, 2002). As against the goal of 6 per cent of GDP, the total expenditure on education in India was 2.78 per cent of GDP (Actual) in 2006-07 and has become 2.87 per cent in 2007-08 (Revised Estimate) and currently 3.02 per cent as per the Budget Estimate of (2008-09) (GOI; Table: 10.9). Against this backdrop, the section presents and analyses the pattern of Government finances to educational sector in India during the second half of the last century with a special focus on elementary education.

The International Commission on Education for the 21st Century (http://www.unesco.org/delors), a UNESCO task force, recommended in the late 1990s that governments should invest at least 6 percent of their Gross National Product (GNP) on education, covering all grade levels. About one quarter of countries do, but the majority invests less than 5 percent. And even some faces the largest educational challenges that still spend less than 3 percent. As a proportion of GDP, 5.6% of the regional GDP is invested by the Governments in North America and Western Europe followed by the Arab States (4.9%) and sub-Saharan Africa (4.5%). The regions of Latin America and the Caribbean as well as Central and Eastern Europe are close to the world average (4.4%). However, the Governments of South and West Asian countries are investing only 3.6% of the regional GDP on average. Indian figure in this respect stands at 3.8%, which is below the world's average and far from the international norm (6% of GDP as proposed by UNESCO (http://www.unesco.org /delors/). Table 2.1 compares the public expenditure on Education in selected Asian Countries. This comparison brings to fore some important dimensions in public expenditure on education. Public expenditure on education as proportion of GDP in India (3.8 percent in 2004) is somehow comparable to some Asian countries. However, it is far below if the comparison is made with some developed countries. For example, Norway spends 7.7% of its GDP on education. The same is 9.8% in Cuba, 8.5% in Denmark 7.4 % in Sweden, 6.5% in New Zealand and 5.9% for United States respectively (UNESCO, 2007, Statistical Table-13). Even among the Asian countries it spends less than Iran, Maldives, Malaysia and Thailand.

An important aspect that is revealed from the data is that when public expenditure on education as a percentage of GDP is compared to the educational performance/outcome (e.g. Primary completion rate, Adult Literacy Rate, values of Education Index or Human Development Index) of the countries, a distinct trend is discernible between the outcomes and the social spending (Fig-2.1). In India, all these educational indicators are considerably low compare to the countries spending more on education. Even some countries like Vietnam, Thailand, Philippines, China, Indonesia and Sri Lanka with a lower spending are being observed as better performed so far the educational indicators are concerned (Table-2.1).

Fig-2.1: Educational Performance in Selected Asian Countries



Source: Calculated from Table-2.1

Apart from this, the UNESCO report (2007 pp-18, 19) also draws attention to the fact that the annual public expenditure per primary student is an important indicator representing the commitment of the Governments towards achieving the goal of education for all (EFA). By expressing expenditure as a percentage of GDP per capita, education budgets can be compared in relation to national income level, which is a proxy for a country's ability to generate education financing. The UNESCO report (2007) compares the annual public expenditure per primary student as a percentage of GDP per capita for 122 countries for which data were available. The lowest public expenditure in this respect has been found in Central Asia region with a median value of 9.3% followed by South and West Asia at 9.7%. In sub-Saharan Africa, the median expenditure per primary student was almost 13% of GDP per capita being placed at the third position. The countries of North America, Western Europe have been found to spend highest proportion of GDP per capita on education and this region tend to spend close to a regional median of 22%. The same was 17% in Central and Eastern Europe and 15% in the East Asia and the Pacific region. The annual public expenditure per primary student in India is close to 9% percentage of GDP per capita.

Table-2.1: Public Expenditure on Education in Selected Asian Countries

Country	Popula-tion in thousand	GNP per capita (in US$)	Public expenditure on education as % of GDP	Total Public Expenditure on Education as % of total Govt. Expenditure	Adult Literacy rate (% ages 15 and older)*	Survival Rate To Grade 5 (%)	Education for All Develop-ment Index (EDI)	Human Develop-ment Index
	2005	2005	2005	2005	1995-2005b	2004	2005	2005
	1	2	3	4	5	6	7	8
Bangladesh	141822	470	2.5	14.2	47	65y	0.547 (140)	0.759 (107)
India	1103371	730	3.8z	10.7y	61	79y	0.619 (128)	0.797 (105)
Iran	69515	1600	4.7	22.8	82	88x	0.759 (94)	0.883 (90)
Maldives	329	1320	7.1	15	96	92	0.741 (100)	0.910 (74)
Nepal	27133	270	3.4y	14.9y	49	79	0.534 (142)	0.734 (110)
Pakistan	157935	690	2.3	10.9	50	70	0.551 (136)	0.540 (120)
Sri Lanka	20743	1160	NA	NA	91	NA	0.743 (99)	NA
China	1315844	1740	NA	NA	91	NA	0.777 (81)	NA
Indonesia	222781	1280	0.9y	NA	90	89	0.728 (107)	0.935 (62)
Japan	128085	38950	3.6z	9.8y	NA	NA	0.953 (8)	NA
Malaysia	25347	4970	6.2z	25.2z	89	98x	0.811 (63)	0.945 (56)
Philippines	83054	1320	2.7z	16.4z	93	75	0.771 (90)	0.893 (82)
Thailand	64233	2720	4.3	25	93	NA	0.781 (78)	NA
Vietnam	84238	620		NA	90	87x	0.733 (105)	0.899 (79)
World#	6450253	7011	4.4	14	82	NA	--	--

Note- (x) Data are for 2002, (y) Data are for 2003, (z) Data are for 2004, (*) National estimates; # Weighted Average EDI = 1/4 (total primary NER) + 1/4 (adult literacy rate) + 1/4 (GEI) + 1/4 (survival rate to grade 5)

Source: - Column-1, 2 and 5 to 8 UNESCO, 2007[a], Column-3, 4 UNESCO, 2007 and Column-9 UNDP, 2007

This public expenditure is far below compare to the other developed even developing countries too. India's position is only a shade better than some of the sub Saharan countries (Madagascar, Congo, Zambia, Cameroon, Chad) and a few East Asia and the Pacific countries (Myanmar, Cambodia, Macao,-China, Lao PDR, Philippines). The United States alone accounts for more than one quarter of the global education budget. Countries like France, Germany, Italy and the United Kingdom have education budgets that exceed the spending on education in all of Sub-Saharan Africa. Sub-Saharan Africa is home to 15 percent of the world's school-age population but combined spending on education by national governments in the region amounts to only 2.4 percent of the global education budget. The world is at the midpoint between the adoption of the

Millennium Development Goals and the 2015 target date, but without increased spending on education in Sub-Saharan Africa and other regions the goal of universal primary education is unlikely to be met.

There is another significant difference between India and other developed countries with respect to social expenditure on education by sectors of education. While India spends only 66% of total public education expenditure on primary and secondary education, the same is 88.6% in Bangladesh, 81.9 % in Korea, 70.4% in Thailand, 65.3% in Sri Lanka, 69.6% in China, 72.8% in Sweden 76.3% in UK and 74.8% in United States (Dev and Mooij, 2002).

2.2.2 Aggregate Educational Expenditure in India (1951-52 to 2001-02)

The public expenditure on education as proportion of GNP/GDP has an important role in determining the country's educational performance so far. Tilak (2002) has rightly remarked that among the several indicators relating to Government's financial commitment to education, the share of education in GNP/GDP may be considered as the most important standard indicator of all. Table 2.2 traces the public expenditure on education over the period from 1951-52 to 2001-02. Over the 50 years since independence in 1947, India has gone through a planned system of economy.

The education sector was given due importance in this term. Total Expenditure on All Sectors has been increased(by 761 times from 1951-52 to 2001-02) considerably, while the increase in Total Expenditure on Education sector is observed almost double compare to the expenditure on all sectors (by 1239 times over the same period). A time wise trend has been discussed below. It is also observed that there has been a considerable jump in literacy rate from 18.34% in 1951 to 64.84% in 2001(GOI, 2007-2008). Presently the literacy rate has been calculated at 67.3% (GOI, 2008b).

The gross or total increase in expenditure does not end the whole story. In consonance with the constitutional commitment, universalisation of elementary education and to foster social sector development, proportions of educational expenditure to all segments of expenditure and to GDP are the two important indicators that can determine the role of Government in this regard. Columns 5 and 6 in Table 2.2, shows the trend in proportional educational expenditure over the period 1951-52 to 2001-02.

The Kothari Commision in 1966 strongly recommended the spending of 6 per cent of GDP on education in India, for universalisation of elementary education in the country. The government also targeted to spend the same and it was also declared to make provisions for the recommended level by 1986. Public expenditures on education, both as a percentage of GDP and as a percentage of total government expenditure, have increased since 1950-1951. Education and training expenditure as a percentage of GDP rose from below 1 percent in 1950-1951 to over 4 percent by 2000-01(column-6 of Table-2.2). Column-6 of Table-2.2 depicts it simply that the government had been far from its target till 2001. Expenditure on education had been below 2 % of GDP till 1970 and below 3% up to 1981-82. Actually, it does not cross the bar of 4% of GDP in any of the years except in the last years of the time period under consideration (1999-00, 2000-01). It remained still below 4% of GDP in 2004-05 (GOI, 2007). This is hardly comparable to international standards where e.g., governments of 35 countries out of 177 countries in the world are spending more than 6% of GDP on education (UNDP, 2007).

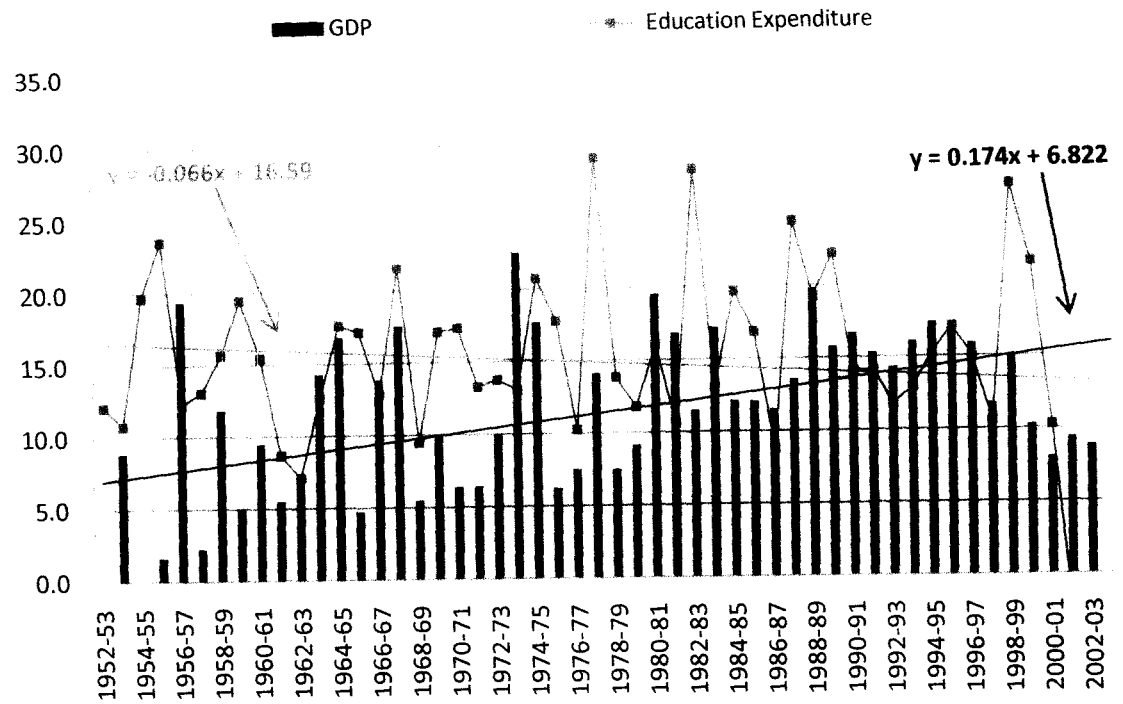
Apart from the high human developed countries like Iceland, Norway, Sweden, Switzerland, Finland, Denmark, Belgium, New Zealand and Malaysia, there are several countries like Ukraine, Tunisia, Fiji, Guyana, Maldives, Bolivia, Botswana, Namibia, Morocco, Kenya, Yemen with medium scale of human development which are also spending much higher than India (UNDP, 2007). It may be noted here that human development in India has been placed in the medium category along with the above mentioned countries. Exceptions like Ethiopia however spend more than 6% of its GDP on education although occupying the lower rungs in human development (UNDP, 2007)

Table-2.2: Educational Expenditure (by Education & Other Departments) in India (1951-52 to 2001-02)

Year	GDP at current prices at factor cost (Rs. In crore)	Total Expenditure by all Sectors (Rs in crore)	Expenditure on Education (Rs. In crore)	Expenditure on as %age of GDP	Expenditure on Education as %age of Public Expenditure
1951-52	10080	814.13	64.46	0.64	7.92
1952-53	9941	857.67	72.26	0.73	8.43
1953-54	10824	908.2	80.06	0.74	8.82
1954-55	10168	973.74	95.82	0.94	9.84
1955-56	10332	1111.26	118.39	1.15	10.65
1956-57	12334	1158.01	132.88	1.08	11.47
1957-58	12610	1416.62	150.26	1.19	10.61
1958-59	14106	1594.36	173.78	1.23	10.9
1959-60	14816	1770.06	207.59	1.40	11.73
1960-61	16220	1997.93	239.56	1.48	11.99
1961-62	17116	2225.4	260.3	1.52	11.7
1962-63	18302	2942.67	278.76	1.52	9.47
1963-64	20916	3488.97	313.93	1.50	9.0
1964-65	24436	3844.91	369.29	1.51	9.6
1965-66	25586	4404.82	432.61	1.69	9.82
1966-67	29123	5100.24	487.83	1.68	9.56
1967-68	34225	5619.77	593.14	1.73	10.55
1968-69	36092	6922.07	649.13	1.80	9.38
1969-70	39691	7908.07	760.23	1.92	9.61
1970-71	42222	8787.12	892.36	2.11	10.16
1971-72	44923	10610.89	1011.07	2.25	9.53
1972-73	49415	11863.56	1150.43	2.33	9.7
1973-74	60560	12884.48	1300.72	2.15	10.1
1974-75	71283	14625.03	1570.67	2.20	10.74
1975-76	75709	17958.99	1849.47	2.44	10.3
1976-77	81381	20482.83	2039.09	2.51	9.96
1977-78	92881	22666.31	2630.6	2.83	11.61
1978-79	99823	26134.84	2994.69	3.00	11.46
1979-80	108927	30915.39	3347.57	3.07	10.83
1980-81	130178	36398.39	3884.2	2.98	10.67
1981-82	152056	41715.71	4298.29	2.83	10.3
1982-83	169525	43996.18	5509.17	3.25	12.52
1983-84	198630	61889.25	6229.53	3.14	10.07
1984-85	222705	69025.45	7455.88	3.35	10.8
1985-86	249547	67091.41	8713.02	3.49	12.99
1986-87	278258	80454.66	9479.13	3.41	11.78
1987-88	315993	92518.38	11798.35	3.73	12.75
1988-89	378491	107543.75	14069.82	3.72	13.08
1989-90	438020	126045.97	17192.5	3.93	13.64
1990-91	510954	146711.53	19615.85	3.84	13.37
1991-92	589086	170370.38	22393.69	3.80	13.14
1992-93	673221	190327.45	25030.3	3.72	13.15
1993-94	781345	218535.15	28279.69	3.62	12.94
1994-95	917058	251691.92	32606.22	3.56	12.95
1995-96	1073271	286194.55	38178.09	3.56	13.34
1996-97	1243546	329389.92	43896.48	3.53	13.33
1997-98	1390148	380728.45	48552.14	3.49	12.75
1998-99	1598127	439768.11	61578.91	3.85	14.0
1999-00	1761838	512519.33	74816.09	4.25	14.6
2000-01	1902998	572160.14	82486.88	4.33	14.42
2001-02	2081474	619713.14	79865.7	3.84	12.89
2002-03	2265304	678548.31	68561.55	3.03	10.10
2003-04	2549418	743668.96	73044.93	2.87	9.82
2004-05	2855933	797345.74	81280.85	2.85	10.19
2005-06	3250932	916465.26	97224.19	2.99	10.61

Note: GDP figures for the years from 1979-80 to 1998-99 are on the base year 1993-94 series and from 1999-00 to 2006-07 are on the base year 1999-00 series; Source: Ministry of Human Resource Development, GOI http://educationforallinindia.com/public-expenditure-education-in-india-1950-51-to2006-07.pdf

Fig-2.2: Annual Growth of GDP and Educational Expenditure in India (1952-53 to 2002-03)



Source: Calculated from table-2.2

In order to comprehend the trend of growth of educational expenditure, the annual growth of GDP and the annual growth of public expenditure on education have been calculated and the same is depicted in Figure-2.2. The trend line of annual growth of GDP shows that the growth of GDP has an increasing trend, while, in contrast, the growth of educational expenditure has a decreasing trend. Actually, the growth of educational expenditure is much fluctuating in nature over the consecutive years and as such the growth pattern over the last 50 years (1952-53 to 2003-04) shows a decreasing trend. This shows that educational expenditure in India does not grow proportionately in line with the growth of GDP since independence.

2.2.3 Public Expenditure on Education over the Plan Period

The Planning Commission in India was set up in March, 1950 by a Resolution of the Government, which, while presenting its first plan before the nation, categorically stated that "------economic planning is an integral part of a wider process aiming not merely at the development of resources in a narrow technical sense, but at the development of human faculties and the building up of an institutional framework adequate to the needs and aspirations of the people" (http//planningcommission. nic.in/reports/publications/pubf.htm:). Education is not only an important component of human faculty development, getting the children an adequate level of education is also a strong aspiration of the Indian parents (PROBE, 1998; Pratchi Education Report). Even after more than 50 years of the planning era in India, the question that still remains significant is whether the government has been in line with its declaration. This section exclusively analyses the importance that has been given to the education sector during the plan period in terms of public expenditure on education.

The planning regime has been introduced in India taking five years as the planning period for each economic plan. This five year economic plan is expected to provide the developmental strategy to the Government. Economic intervention of the government is reflected by this plan. Since its inception in 1950 the country has gone through 10 five year plans (FYPs) and currently the economy is progressing under the 11th FYP. Table 2.3 depicts the share of education in plan outlay over the different plans.

Table 2.3 depicts the public expenditure on education Plan-wise in India along with average plan outlay beginning 1961 (3 FYP). Although absolute plan outlays have increased manifold between the 3FYP and 10FYP, it must be noted that the outlays in the table as per Economic Survey (GOI) are calculated at current prices. After allowing for calculations on constant prices, the picture no longer remains the same Tilak (2002).

Table 2.3: Share of Education in Plan Outlay in India (Rs. in crore) at Current Prices

Plans	Period	Total@	Education	% on Education
Third Five Year Plan	1961-66	8576.6	588.7	6.9
Annual Plans	1966-69	6625.4	306.8	4.6
Fourth Five Year Plan	1969-74	15778.8	774.3	4.9
Fifth Five Year Plan	1974-79	39426.2	1710.3#	4.3
Annual Plan	1979-80	12176.5	263	2.2
Sixth Five Year Plan	1980-85	109292	2976.6	2.7
Seventh Five Year Plan	1985-90	218730	7685.5	3.5
Annual Plan	1990-91	58369.3	2316.5	4.0
Annual Plan	1991-92	64751.2	2599	4.0
Eighth Five Year Plan	1992-97	434100	19599.7	4.5
Ninth Five Year Plan	1997-02	859200	49838.5	5.8
Tenth Five Year Plan (Realisation))	2002-07	945328	63224	6.7
Eleventh Five Year Plan (Projection)	2007-12	2156571	238608	11.1

@ includes both Central and State sector # includes expenditure on scientific research;
Source: Economic Survey, different years, GOI: http://indiabudget.nic.in/

Looking into the total plan outlays allocated to education it is evident that percentage of total plan outlay on education (Column 5 in Table 2.3) has been increasing steadily after an all time low during the Annual Plan (1979-80) and the 6FYP (1985-90). The proportion of total plan outlay was at its zenith during the 3FYP at 6.9%, and it was only during the 10FYP (6.7 percent) that it could reach close to this figure. This also shows that the basic intention of the government in the early years of the planning era was to ensure the spread of education in the country. But the scenario changed soon after the 3FYP and the proportion of educational outlay remained well below 5 percent till the 8FYP. It is only in the 11FYP that this crucial sector has been given special attention although the 10FYP outlay was marginally above 6 percent after gross neglect towards this sector for over 40 years since 1966. It took more than 40 years for the government to implement the recommendation of the Kothari Commission (1966). There has been an unprecedented increase in educational outlays in the 11FYP and it is hoped that the goal of Education for All may after all be realised. However, analysts have attributed slow growth rate of the economy to the low proportional outlay in education over the 40 year period. The rate of growth of the economy has been lower than what had been recommended by the Kothari Commission. Thus, it may be concluded that the slow growth rate of the economy along with a marginal share allocated to education may be one of the important reasons for non-fulfillment of educational right of Indian children.

There is another issue that may be addressed here. Is the 6% of GDP sufficient for a country having a billion plus population size? In India, out of a 1.02 billion population, 25% (253 million) belong to the age group of 5-14 year (Census of India, 2001). An estimate was made by the Department of Education, GOI in 1999 for the additional requirement in public expenditure on education for making Elementary Education a Fundamental Right in India by the year 2001. It has been reported that there are 377. 53 lakh children in the primary age group (6-11) and 303.45 lakh are in the upper primary age group (11-14) who are still uncovered by the schooling system. Some estimates, made by individual researchers, indicated clearly that India will require more than 6% of GDP on education for having universal provision of schooling for the children in the age group 5-14 year. Seth (1985) suggests 10% of GDP, Tilak (1994) estimated about 8% of GDP as

educational outlay while Rao (1992) proposed about a quarter of GDP to be allocated on education (cited in Tilak, 2002).

2.3 Sectoral Allocation of Educational Expenditure (1990 - 2004)

Allocating 6% of GDP for educational progress is a well accepted norm to analyze government's intervention into education. But behind this 6% norm, there are issues that need to be addressed. A feasible economic rate of growth along with resources allocated exclusively for the development and expansion of elementary education are prerequisites for the spread of elementary education amongst the masses. In order to capture this particular issue relating to the priority given to elementary education, expenditure on elementary and secondary education as a proportion of total education expenditure and expenditure on elementary education as a proportion of GDP is represented in Table 2.4 for the period commencing 1990-91.

Table-2.4: Expenditure on Elementary Education in India since 1990 (Rs. in crore)

Year	Expenditure on Education by Education & Other Deptts.	Expenditure on Elementary Education	Expenditure on Secondary Education	Share of Elementary Education	Share of Secondary Education	Elementary Education as %age to GDP
1	2	3	4	5	6	7
1990-91	19615.85	9076.28	6310.33	46.27	32.17	1.78
1991-92	22393.69	10367.83	7400.56	46.30	33.05	1.76
1992-93	25030.3	11321.5	8574.97	45.23	34.26	1.68
1993-94	28279.69	13071.14	9371.37	46.22	33.14	1.67
1994-95	32606.22	15133.05	10835.33	46.41	33.23	1.65
1995-96	38178.09	18433.93	12530.38	48.28	32.82	1.72
1996-97	43896.48	21543.63	14164	49.08	32.27	1.73
1997-98	48552.14	24083.17	15663.5	49.60	32.26	1.73
1998-99	61578.91	30191.07	20100.97	49.03	32.64	1.89
1999-00	74816.09	34068.78	25447.89	45.54	34.01	1.93
2000-01	82486.88	39274.6	26057.5	47.61	31.59	2.06
2001-02	79865.7	40019.36	25163.47	50.11	31.51	1.91
2002-03	68561.55	41747.26	27498.97	60.89	40.11	1.86
2003-04	73044.93	44349.47	28475.89	60.72	38.98	1.74

Source: column-2 as in Table-2.2, column 3&4 from Selected Educational Statistics, 2004-05, MHRD, GOI, 2007, Table: 35, column-5 &6 calculated

Expenditure on Elementary Education as a percentage of GDP since 1990 has been consistently remaining below 2%. As such during the period there has not been any notable difference on the part of the Government to increase its allocation to elementary education. Expenditure on Elementary Education when taken as percentage to Total Expenditure for all sectors (by comparing column-3 of table-2.4 with column-3 of table 2.2), it is observed that elementary education has not been given much importance inspite of the declaration of Jometin and Dacar conference and of the promises made at the Millennium Development Goals (MDGs). A study conducted by NCAER in India has calculated the cost of educating the children belonging to the elementary schooling age group and categorically reported to spend about 3.5% of GDP for reaching the goal of UEE (Singh and Sridhar, 2002). In this respect, the actual spending on elementary education has been very low. It has been suggested that the spending on elementary education needs to be doubled to ensure the smooth functioning of the elementary education system.

Intrasectoral allocation of expenditure on education is also an important aspect through which one can evaluate the importance by the government assigned to each sector of education. Analysis of this trend is not very satisfactory. In 1990-91, less than 50 percent (46.1%) of education expenditure had been provided for the elementary education. Since then it has remained more or

less static till 2000-01 (column-5 of Table-2.4). It is only after 2001-02 that an increasing trend is being observed so far as the financing of elementary education is concerned. In the recent period (2003-04), a little over 60 percent of the total expenditure on education has been earmarked for Elementary Education followed by Secondary Education, at 38.98%.

Thus it can be said that, although public expenditure on education in India is not taken to be sufficient for the billion plus population, it is heartening to note that the largest chunk of intra-sectoral allocation is towards elementary education rather than secondary or higher education.

2.3.1 Social Sector Expenditure: The Recent Trend

Universal access, enrolment, retention, achievement, and equity were the five parameters on which the 10FYP laid its main thrust. Among these five parameters, providing access to education is the primary responsibility of the government. According to the VII Educational Survey (2002), 87% of the total habitants (10.71 lakh) were provided with a primary school within a distance of 1 km and 78% (9.61 lakh) were also served by an upper primary school. To provide universal access, a sizeable number of habitants have to be provided with a school. To achieve this goal a substantive amount of financial allocation to elementary education is imperative. Figure 2.3 and 2.4 depict the trends of social expenditure on education in the recent past. A steady increase in total expenditure by the Government (Central and State combined) can be highlighted and it has more than doubled between the year 2001-02 (Rs. 644746 crores) and 2007-08 (Rs. 1355381 crores). A similar trend is also observed in the social sector in the aggregate and education expenditure in particular although the latter has shown a lower rate of growth than the former. Social sector expenditure as percentage of Total Expenditure decreased from 21.4 percent in 2001-02 to 19.3 percent in 2003-04, while recovering in the following years (22.4 per cent in 2007-08 (RE) and 24.1 per cent in 2008-09 (BE)). But, expenditure on education, which stood at 10.6 percent of Total Expenditure in 2001-02, have been remaining around 10 percentage points over the recent years (up to 2008-09 (BE)).

Nevertheless, the Government has been successful in establishing a large number of primary (1.32 lakh primary schools and 56000 Education Guarantee Scheme, EGS and Alternative and Innovative Education, AIE Centres) and upper primary (0.89 lakh) institutions in the recent past and as such access to primary education is very close to achieve the desired goal of universal access (Government of Indiab1, 2008). Government estimates show that around 1 (one) lakh habitations still remain to be covered by any primary and upper primary school.

Constitutionally, India is federal in character and as such there is a union budget at the Center along with the budgets prepared by the State Governments at State level. As education sector has been placed at the concurrent list, both the Central and State Government are allocating fund to this sector separately. But the fund allocation by the Central government has not been seen appropriately till the world conference on Education for All held at Jometien in 1990. For instance, in 1995-96 the Centre allocation to elementary education was Rs. 23.72 Croe (81.46 Crore) while it was 3424.60 Crore (2212.41 Crore) by the States (Compendium of Educational Statistics, Table-7.6, NCERT, New Delhi, 2002; figures in the parenthesis represents expenditure on secondary education).Up to the year 1990, this share was too few to be mentioned. During some years (in 1970's) it was even '0' from the end of Centre. This may be due to the fact that at the time of commencement of Indian Constitution, the primary responsibility for elementary education was given to the State Government, while the responsibility of higher and technical education was given to the Central Government. In 1978, after the 42nd Constitutional Amendment, all levels of education were placed under the concurrent list. Thus for the un-fulfillment of constitutional commitment in regard to elementary education in India, both the Central and the State Governments are equally responsible. The pressure on Indian Government by the inter-national dignitaries at this conference compelled to accord a high priority to UEE. Accordingly, it is after 1990-91 that the Centre has been sharing a sizeable amount to elementary sector of education. Yet the actual expenditure by the Centre compare to the States altogether is very marginal. However, it is a matter of ushering fact that the share to elementary education has been increasing steadily in recent years.

Fig-2.3: Recent Trends of Social Sector Expenditure by General Government* (In Rs. crore)

Fig-2.4: Recent Trends of Social Sector Expenditure by General Government* (In % age)

Note: * Central and State Government combined; 2006-7 Revised Expenditure and 2007-08 Budget Expenditure;
Source: Economic Survey (different years), Ministry of Finance, Government of India: http://indiabudget.nic.in

2.3.2 External Funding in Elementary Education

External financial support to the education sector in India has become a significant ingredient in recent times (after1994). Prior to the introduction of the District Primary Education Programme (DPEP) in 1994, the education sector in India had been funded by foreign agencies like Andhra Pradesh Education Programme funded by DFID, UK, Siksha Karmi by Dutch funding, Lok Jumbish with the fund from SIDA, (Sarangapani et al, 2003). These funding were exclusively in the form of 'Aid' and supplemented government funding. But, after 1990, this foreign funding to education sector in India has turned out to be an integral part of the policy of structural adjustment within India's New Economic Policy. The Government of India has been allowing funding in the form of 'loan' and introduced the concept of DPEP as an umbrella under which all the foreign funding programmes have been brought together and eventually channelled to the education sector. In lieu of centralized national planning in education, DPEP aimed at decentralized planning (at district level) to pave entry into primary education and to ensure enrolment of all the out of school children into the educational system. District planning in primary education is an important dimension of the programme, but what is central to the theme is that there will not be any direct intervention by the funding agencies into the process of planning and administration. Nevertheless, an unwanted aspect is that any quantitative or qualitative improvement in primary education may

be undertaken only with external assistance. It has been argued that the policy of such foreign aid in the country had been initiated without any serious discussion or debates (Tilak, 2002). Moreover, the DPEP documents clearly specify that at the end of the programme, the recurring liabilities will be the exclusive responsibility of the State government only (Sarangapani et al, 2003). This clearly imposes future financial burden on the government inspite of immediate relief of burden to finance primary education at present.

2.4 Trend in Elementary Schooling in India: 1951-2001

Progress in elementary schooling is not a uni-dimensional process, rather it is the development of a series of indicators associated with it. Broadly, the indicators are of two types - infrastructural indicators or often called the enabling attributes (e.g., number of schools, teachers, type of building, drinking water facility, sanitation facility, etc.), and aspects of educational outcomes or achievement attributes (e.g. enrolment rate, retention rate, dropout rate, etc).

Table-2.5: Pattern of Growth in Elementary Schooling in India Since 1950 (In thousand)

Year	Primary School	Upper Primary School	Primary Enrolment	Upper Primary Enrolment	Teacher at Primary level	Teacher at Upper Primary level
1	2	3	4	5	6	7
1950-51	209.7	13.6	19200	3100	538	86
1955-56	278.1	21.7	24600	4800	691	151
1960-61	330.4	49.7	35000	6700	742	345
1965-66	391.1	75.8	50500	10500	944	528
1970-71	408.4	90.6	57000	13300	1060	638
1975-76	454.3	106.6	65600	16000	1248	778
1980-81	494.5	118.6	73800	20700	1363	851
1985-86	528.9	134.8	87400	27100	1496	968
1990-91	560.9	151.5	97400	34000	1616	1073
1991-92	566.7	155.9	100900	35600	1644	1079
1992-93	571.2	158.5	99600	34100	1651	1085
1993-94	570.5	162.8	97000	34100	1623	1124
1994-95	586.8	168.8	105100	36400	1688	1156
1995-96	593.4	174.1	107100	37500	1734	1182
1996-97	603.6	180.3	108200	38100	1756	1200
1997-98	619.2	186	110300	39500	1823	1237
1998-99	629	193.1	111700	40400	1838	1289
1999-00*	641.7	198	113600	42100	1919	1298
2000-01*	638.7	206.3	113800	42800	1896	1326
2001-02*	664	219.6	113900	44800	1928	1468
2002-03*	651.4	245.3	122400	46900	1913	1581
2003-04*	712.2	262.3	128300	48700	2097	1592
2004-05*	767.5	274.7	130800	51200	2161	1589

* Provisional; Source: Selected Educational Statistics 2004-05, MHRD

Access to schools by the school-going children can be assessed by the number of schools established by the government. Table 2.5 shows the growth in infrastructural facility in the post-independence era in India. There has been a proliferation of schools during the reference period (1950-2005) with a fourfold increase in the number of primary schools as opposed to upper primary schools by more than 20 times.

However, the growth pattern shows that the increase in upper primary school has been more rapid than primary schools. This has been narrowing the gap in the ratio of upper primary to primary school. The Programme of Action (1992) envisaged an upper primary school/section for every two primary schools/sections, although this official target is yet to be reached.

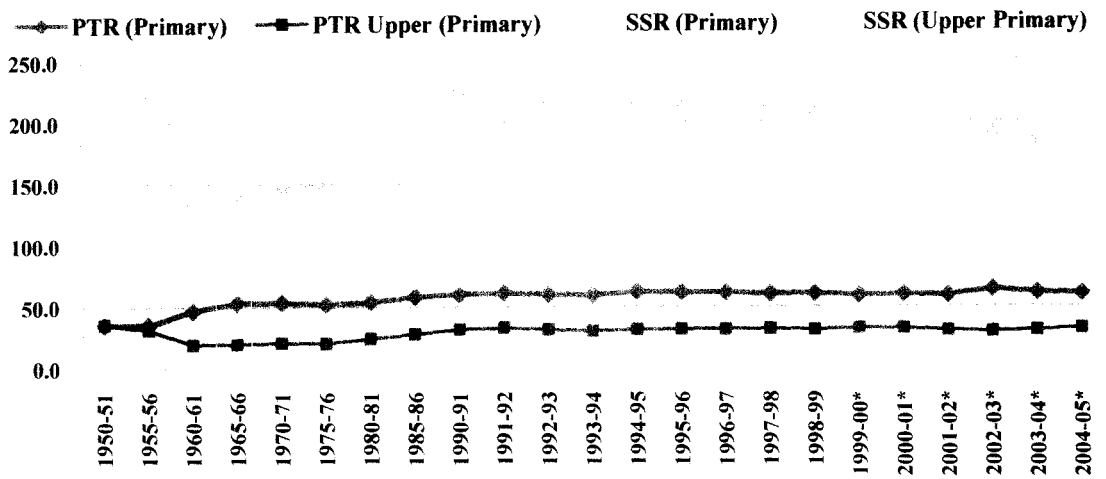
School enrolment since 1950-51 has been increasing steadily except during 1993-95. The growth in enrolment figure appears to be impressive especially after 1999-2000. Enrolment figures, like

the number of institutions, also show that at upper primary level, the increasing trend has been sharper over the specified period. The trend in 'teachers in position' at primary and upper primary levels also reflects a similar trend.

2.4.1 Enabling Attributes of Elementary Education

Apart from this gross development trend, two strands of analysis are commonly undertaken for in-depth analysis. They are firstly the ratio analysis and secondly, the gender analysis. Student per school and student per teacher are two important ratio indicators relating to school education. A high load of students on a school may reduce the opportunity of a student to avail facility from common resources of a school (e.g. library, laboratory, computer access). On the other hand, a high load of student on a teacher may lower the time to be devoted to an individual student. Figure 2.5 has been calculated to depict the teacher-pupil ratio and student-school ratio over the period 1950-51 to 2004-05.

Fig-2.5: Pupil-Teacher Ratio (PTR) and Student School Ratio at Elementary Level in India 1950-51 to 2004-05



* Provisional; Source: Selected Educational Statistics 2004-05, MHRD

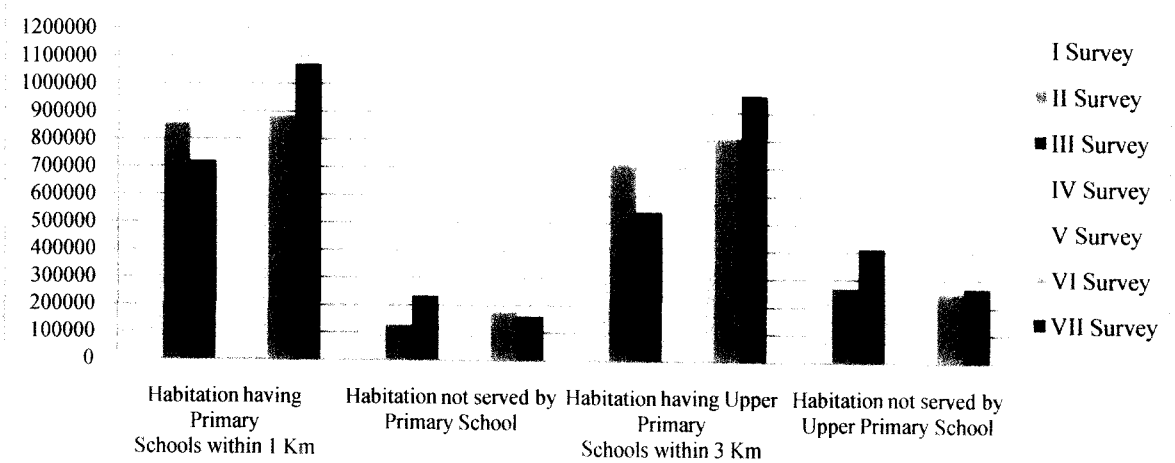
Both the ratios are expected to display a declining trend to imply positive educational outcomes. In other words, if there is an increase in the values of the ratios, it will lead to a negative impact on the indicators of educational outcome such as enrolment ratio, gender parity index, etc. The pupil teacher ratio is an indicator of education quality. It is commonly believed that in a crowded classroom with a high number of pupils per teacher, the quality of education tend to suffer. In spite of the fact that there has been a tremendous growth in gross enrolment figures, in number of institutions and teachers, the pupil teacher ratio has not improved since 1950 as it should have. Starting with a pupil teacher ratio at around 36 in 1950-51, it became 60 in 2004-05 (Figure-2.5). The ratio has been actually consistently increasing since 1950 instead of the much desired declining trend. However a more vivid picture can be traced by drawing the Student classroom ratio which is important in the sense that a class room with a small size (i.e., having fewer numbers of students) is much more teaching-learning friendly than a big size classroom. However, owing to the non-availability of data, year wise trend of this particular ratio indicator is not represented here.

Data from UNESCO (UNESCO, 2008) on the pupil-teacher ratio in primary school show that crowded classrooms are more common in Sub-Saharan Africa and Southern Asia than in other parts of the world. The highest ratios in this respect exist in Sub-Saharan Africa (40.7) and Southern Asia (37.8). In contrast, the average pupil-teacher ratio in the developed countries is 13.7. In Western Asia (17.8), the Commonwealth of Independent States (17.9) and in the Oceania (19.8), the average pupil/teacher ratio is below 20. The global average is 24.6 (for the year 2006)

for pupils per teacher in primary school. India has recorded the highest pupil-teacher ratio (64) among all the South-Asian countries. The ratio has also been highest for the upper primary level. The higher pupil-teacher ratio in India as depicted in Figure 2.5 indicates that increase in enrolment is not substituted by sufficient allocation of teachers which increases the ratio consistently. The international data depicts that the area/region shows dismal educational outcomes where the pupil-teacher ratio is high. For example, the UNESCO (2007a) data shows that GER at primary level is found to be lowest in Sub-Saharan Africa (80) followed by Arab States (90) and South and West Asia (94). The other related outcome indicators such as, school life expectancy, adult literacy rate, dropout rate are also very low in those region. It may therefore be said that with such a high pupil teacher ratio at elementary level the UEE within a time frame is still a distant goal.

Access to school cannot be explored through number of schools. Location of schools closer to households is much more important and it is also considered to be an important strategy for achieving the goal of UEE. Kothari Commission recommended the provision of primary school within walking distance from a village. In order to capture the issue, habitation1 served by schools is commonly used in the literature on education. A habitation has been said to be served by a primary school if a school is located within 1 km of the habitation and by an upper primary school if there is a school within 3 km. (educational surveys conducted by National Council of Educational Research and Training) distance from the habitation. On this basis, Figures 2.6 & 2.7 illustrate the habitations served/unserved by school within a reasonable distance in rural India over the last seven survey periods carried out by the NCERT between 1957 and 2002. So far, 7 such surveys have been conducted by the NCERT and the findings are enumerated below.

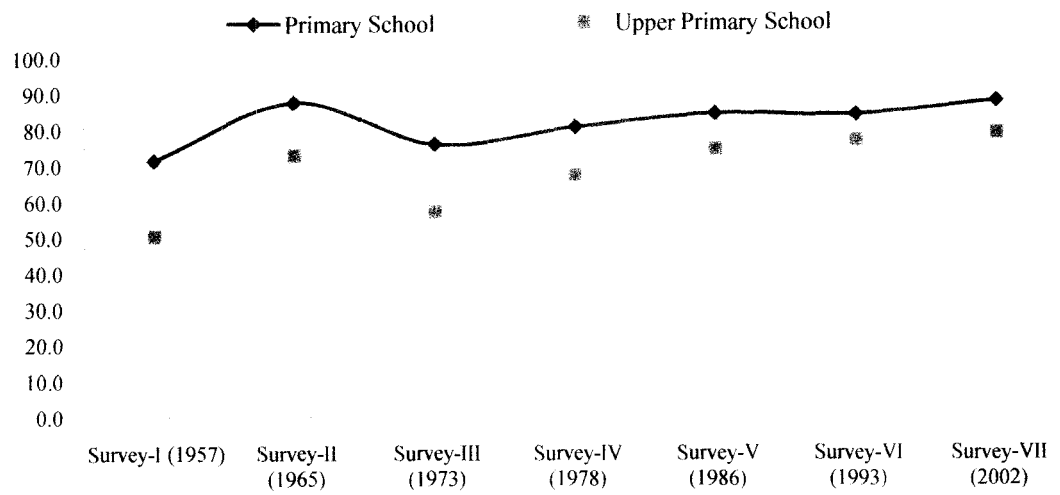
Fig-2.6: Rural Habitation (Total) Served/Unserved By School 1957-2002



Source: National Council of Educational Research and Training, 2002 and 2005

During the period between 1957 to 1965, total number habitations increased from 8,40,033 to 9,82,251 (17% increase) but the number of habitations covered by primary school increased from 5,99,985 to 8,56,816 (43% increase). Proximity of school to the habitation was found to be comparatively better during the survey period II when more than 87% of the rural habitation was served by at least one primary school and 73% by an upper primary school (Fig-2.7). Although during the period Survey II and III (1965-73) there has been a considerable decline in coverage, it has been consistently increasing since 1973. Nevertheless, till the Seventh All India Educational Survey (2002), 13% of the rural habitation (1.61 lakh) were still uncovered by any primary school while nearly 22% (2.7 lakh) by upper primary school.

Fig-2.7: Rural Habitation (in %) Served by School 1957-2002



Source: National Council of Educational Research and Training, 2002 and 2005.

Thus a fourfold leap in the number of primary schools or upper primary schools by more than 20 times over the period 1950-51 to 2004-05, there still is no room for complacency until the schools are located within the reasonable distance norm for the rural households. The encouraging aspect is that the coverage has been steadily increasing since 1973 and one can expect that more rural households will be brought into its fold by the time the VIII survey report is presented.

2.4.2 Gender Disparity in Elementary Education: Enrolment, Dropout Rates and GER

Regarding the gender aspect in education, an area of concern for India is the dearth of female teachers in schools. As mentioned earlier, employing female teachers can enhance the enrolment possibilities in schools, which in turn has a positive impact on the educational outcomes like high literacy rates and enrolment rates etc. (Bhatty, 1998; Debi, 2001; Pratichi Education Report, 2002; Reddy and Rao, 2003; Thind and Jaswal, 2004). Srilanka with 79 percent of female teachers at primary level in 2005 exhibits 89 percent adult female literacy rate (15 years and above) in 2001, China with 55% of female teachers exhibits 87% adult female literacy rate, Islamic Republic of Iran with 61% exhibits 77% of adult females as literate. On the other hand, India has the proportionate share of female teacher at primary education only 34% (in 2005, UNESCO estimation) and the female literacy rate (adult) for the year 2001 was recorded only at 41 percent level (UNESCO, 2007, Table-3 & 15). Proportion of female teachers, especially at primary level, around the world, is higher compared to the Indian average. The world average in this respect was 62 (UNESCO, 2007, Table-3.), while it was 84% for North American and Central Asian countries, 81% for Central and Eastern European countries. The proportion for India was calculated by the UNESCO at only 44% which was even lower than the average of Sub-Saharan African countries (45%).

Against this world perspective, the year-wise trend in the proportion of female teachers to total teachers is shown in Table 2.6. With an initial strength of only 15%, the share of female teachers at both primary and upper primary level increased to near 40% over the period 1950-51 - 2004-05 (Table-2.6).

Gender disparity in enrolment is calculated on the basis of proportion of girls' enrolment to total enrolment vis-à-vis boys. Between 1950 and 1980 enrolment of girls in India was below 40 percent and it has been increasing since then although it is lagging behind boys' enrolment. At upper primary level, it was also below 40% till 1996-97 but increased to 44.4% by the year 2004-05. Compared to this, the world average of girls share in primary enrolment was more 47% in all the regions including Sub-Saharan African and Arabian countries (UNESCO, 2007).

Table- 2.6: Trend in Elementary Education by Gender

Year	%age of Girls Enrolment at Primary	%age of Girls Enrolment at Upper Primary	%age of Female Teacher at Primary	%age of Female Teacher at Upper Primary
1950-51	28.1	16.1	15.2	15.1
1955-56	30.5	20.8	16.9	12.6
1960-61	32.6	23.9	17.1	24.1
1965-66	36.2	26.7	19.1	26.3
1970-71	37.4	29.3	21.2	27.4
1975-76	38.1	31.3	22.7	28.8
1980-81	38.6	32.9	25.1	29.7
1985-86	40.3	35.6	26.9	31.5
1990-91	41.5	36.7	29.3	33.2
1991-92	41.9	38.2	29.9	33.8
1992-93	42.6	38.8	31.1	34.7
1993-94	42.7	39.1	31.6	36.1
1994-95	42.9	39.3	31.5	35.5
1995-96	43.1	39.5	32.2	35.9
1996-97	43.2	39.9	32.2	35.9
1997-98	43.5	40.3	32.7	35.9
1998-99	43.9	40.8	32.9	36.3
1999-00*	43.6	40.4	35.6	36.1
2000-01*	43.7	40.9	35.6	38.2
2001-02*	44.1	41.8	37.1	37.3
2002-03*	46.8	43.9	39	40.8
2003-04*	46.7	44	39.9	40.7
2004-05*	46.7	44.4	39	37.6

* Provisional; Source: Selected Educational Statistics 2004-05, MHRD

The goal of universal primary education and gender parity at all levels of education by 2015 was the main thrust area endorsed at the United Nation's Millennium Development goal (MDG). Latter on, meeting in Dakar, Senegal, in April 2000, the World Education Forum committed to the attainment of the six goals. It has categorically stated in both the forum to eliminate gender disparities in primary and secondary education by 2005, and achieving gender equality in education by 2015, with a focus on ensuring girls' full and equal access to and achievement in basic education of good quality (UNESCO, 2000, United Nation, 2007). In 2005, 94 girls started Grade 1 for every 100 boys, according to the global average. Overall, gender disparities in access have improved since 1999, especially in South and West Asia (from 83 in 1999 to 92 girls per 100 boys in 2005). The number of girls enrolment compare to the enrolment of boys in India is presented in Table-2.7 below.

The goal of eliminating gender disparities in both primary and secondary education by 2005 had already been missed in most of the regions. International data (UNESCO, 2007a) shows that out of 181 countries, Only 59 countries, had achieved the gender parity goal. The report adds that gender disparities persist in many countries, particularly at the upper levels.

In India, considerable increase in the enrolment of girls has been observed since 1950-51 both at elementary (primary and upper primary) and secondary level of education (Table-2.7). Still, the enrolment figure shows that there are 88 girls enrolled at primary level (grade- I to V), 80 at upper primary level and 71 at secondary level as against 100 boys enrolled at these level of education. Thus, it seems that the Millennium Development goal -2 or the EFA goal-5 will become very tuff for India. Actually, India had already missed the first part of this goal (eliminate gender disparities in primary and secondary education by 2005) and without having specific policy measures the second part of the same (achieving gender equality in education by 2015) will be missed too.

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Table-2.7: Number of Girls Enrolment per Hundred Boys Enrolled: 1950-51 to 2004-05

Year	Primary (I-V)	Upper Primary (VI-VIII)	Secondary (IX-X)
1950-51	39	18	16
1960-61	48	32	23
1970-71	60	41	35
1980-81	63	49	44
1990-91	71	58	50
1991-92	72	62	52
1992-93	72	61	51
1993-94	76	66	57
1994-95	75	65	57
1995-96	76	65	57
1996-97	76	66	58
1997-98	77	67	58
1998-99	78	69	62
1999-00*	77	68	65
2000-01*	78	69	63
2001-02*	79	72	65
2002-03*	88	78	70
2003-04*	88	79	70
2004-05*	88	80	71

* Provisional; Source: Selected Educational Statistics 2004-05, MHRD

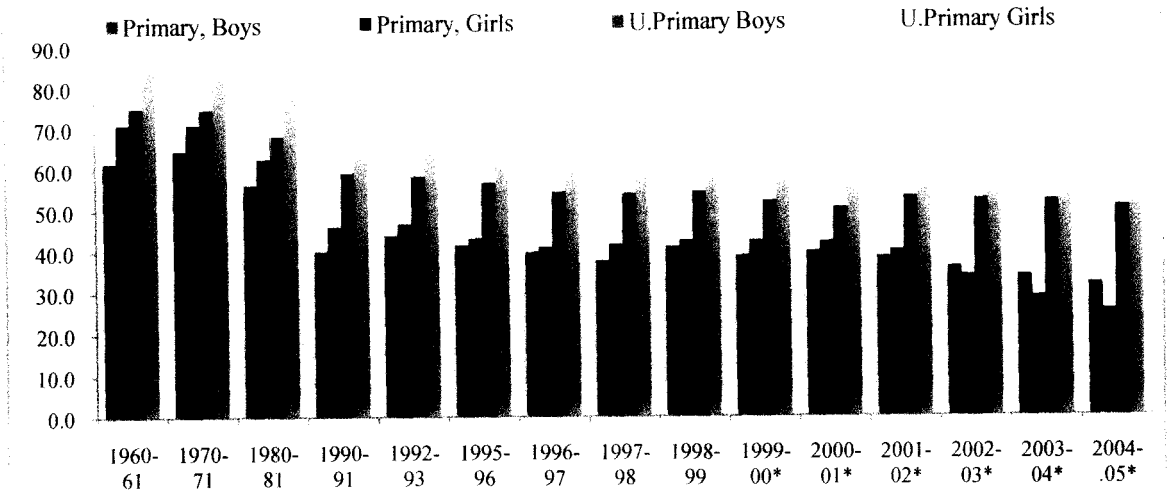
Based on enrolment data, about 72 million children of primary school age were not in school in 2005 of which 57 were girls. In sub-Saharan Africa, 54% of out-of-school children were girls compared with South and West Asia at 66% and the Arab States at 60% (UNESCO, 2008b). Universal retention of children at school up to eight years of elementary education is necessary for achieving UEE. To reach this goal within the time frame, it is imperative that the dropout rate at this stage is declining and is approaching the much desired zero level. But in reality, along with the problem of universal enrolment, India is faced with still another major problem which is of the high dropout rate associated with the school education system. Figure 2.8 illustrates the trend in dropout rate at primary and upper primary levels of education in India between 1960-61 and 2004-05. The bar diagram reflects firstly, that the rate of dropout tends to be higher for higher levels of education. Secondly, it is also observed that the girls register higher dropout rates in school than the boys at both primary and upper primary stages. Thirdly, the dropout rate has been falling steadily over the years. Fourthly, although there are gender disadvantages in this respect, the gap of dropout rates between the boys and girls is narrowing in primary as well as upper primary level. Finally, it is a matter of significance that since 2002-03, the gender gap in dropouts has narrowed at primary stages and even has become equal to the boys at upper primary level. This implies that dropout rates amongst the girls have been declining faster than the boys.

Inspite of the promising trends in dropout rates, even in 2004-05, half of the children at upper primary stage (50.84%), and 29.00% at primary stage dropped out of school before completion (Government of India, 2007). With such a high rate of dropout, it naturally raises the question of achieving the UEE within a time frame as set out in the MDGs.

Gross enrolment ratio (GER) is another indicator of school education system by which the extent of children attending school can be captured. Global primary school enrolment rose from 647 million to 688 million (6.4%) between 1999 and 2005, with increases especially marked in sub-Saharan Africa (by 29 million, 36%), and South and West Asia (35 million, 22%). The GER at primary level increased from 80 t0 97 in sub- Saharan Africa and in South and West Asia from 94 to 113 between 1999 and 2005 (UNESCO, 2008b). Data from India shows that between the period (1999 and 2005), primary enrolment rose from 111.7 million to 130.8 million thererby showing a

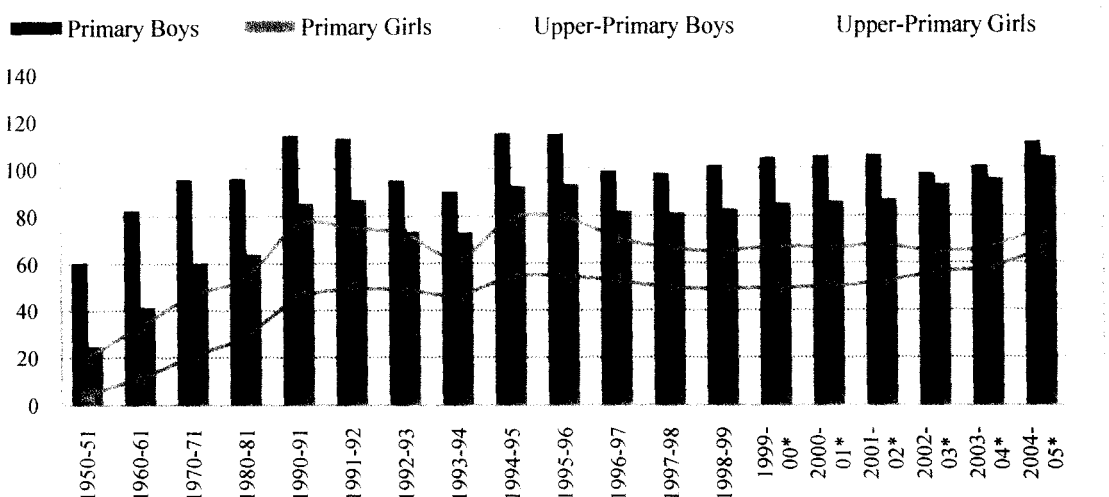
17% increase in all (Table-2.5). This is comparatively lower than the regional average (22%). The year-wise trend in the ratio by gender and levels of school education is shown in Figure 2.9.

Fig-2.8: Drop-Out Rates at Elementary Stages (1960-61 to 2004-05)



* Provisional; Source: Selected Educational Statistics 2004-05, MHRD.

Fig-2.9: Gross Enrolment Ratio, 1950-51 to 2004-05



* Provisional; Source: Selected Educational Statistics 2004-05, MHRD

Setting off with a very poor education base in 1950-51 (GER around 61% at primary and at upper primary only 19.2), the trend in enrolment of the children into schools had been increasing steadily till the year 1990-91. It is after 1991 (globalisation period in this country) that a fall in the ratio is being observed. It was after 1996-97, the ratio has been seen to be an increasing trend. However, between the period 1999 and 2005, the GER at primary level rose from 92.8 to 107.8 which was also to be considerably lower than its regional increase. Moreover, the trend in GER shows a sharp gap between primary and upper primary levels of education as also between boys and girls. The important point of the trend of GER is that the gap between the GER of boys and girls is steadily narrowing, similar to the dropout rates.

2.5 Pattern of Literacy Development in India

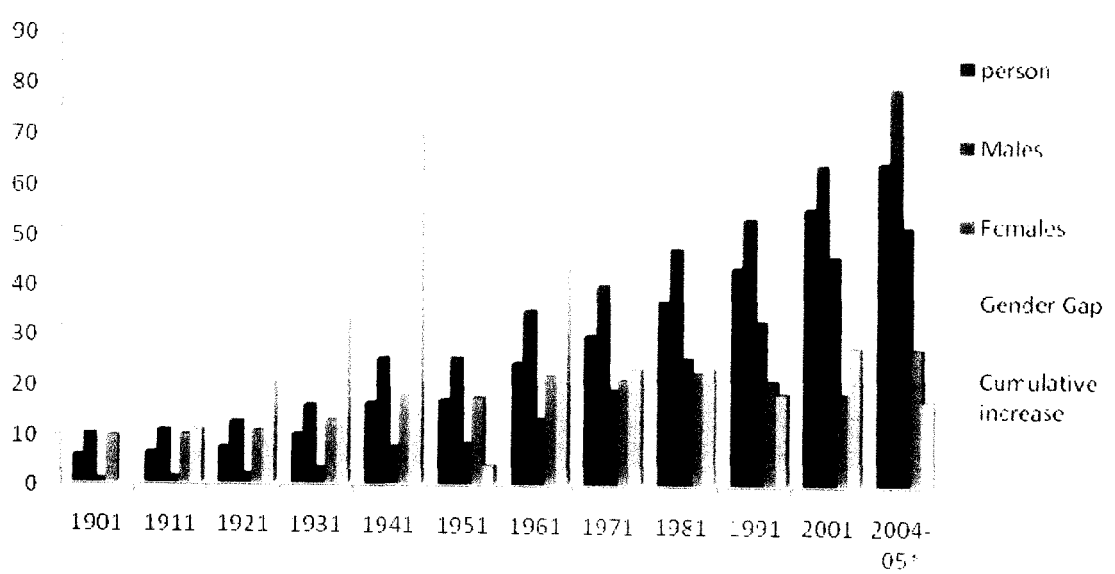
Literacy can be viewed as a gateway that enables a person to learn new skills for both the classroom and the workplace, while assuming their rights and responsibilities in society. It is an established fact that literate parents are more likely to keep their children healthy and send their children to school. It is also observed that literate people are better able to access other education

and employment opportunities and, collectively, literate societies are better geared to meet development challenges. Achieving widespread literacy can only happen in the context of building literate societies that encourage individuals to acquire and use their literacy skills. It is for these reasons, many would say that literacy is not only an important social variable, rather it is a human right (UNESCO, 2008c). The potentiality of a society to operate with the problems such as discrimination, poor health, social exclusion and powerlessness mostly depends upon the basic literacy skill that is equipped with a particular society. It is thus, rightly remarked, "Literacy is at the heart of the social, cultural, economic and political wellbeing of individuals, communities, societies and nations, indeed of the world" [Literacy Assessment and Monitoring Programme (LAMP); www.uis.unesco.org/ TEMPLATE/pdf/LAMP/LAMP_EN_2005.pdf].

Globally, literacy rate (census figures) increased from 56% in 1950 to 70% in 1980, then to 75% in 1990 and to 82% in 2000- 2004 (UNESCO, 2008c). Worldwide, the adult literacy rate increased at a faster pace in the 1970s than in the subsequent decades. Literacy rates have been increased by more than 10% between 1990 and 2000 in the regions of sub-Saharan Africa, South and West Asia, and the Arab States. The international data in this report also shows that despite these substantial increases and because populations have grown rapidly, the overall numbers and distributions of illiterates have hardly changed in these regions. It reiterated the fact that the problem of illiteracy is most significant in the most populous countries like Bangladesh, Brazil, China, Egypt, India, Indonesia, Mexico, Nigeria and Pakistan (the E9 countries).

'Literate' is an English word denoting a meaning "familiar with literature" or, more generally, "well educated, learned". It is since the late 19th Century that the word has been referred to as the ability to read and write text while maintaining its broader meaning of being 'knowledgeable or educated in a particular field or fields' (UNESCO, 2008c). France adopted the term 'littérisme' in August 2005 to represent "the ability to read and understand a simple text, and to use and transmit written information of everyday life" (OCED, 1997; Limage, 2005). In India, Office of the Registrar General and Census Commissioner is the official source providing data on literacy rate, according to which, a person is considered literate if he or she can read and write with understanding, in any language. However, a person who can merely read, but cannot write, is not recorded as literate in census.

Fig-2.10: Growth of Literacy (Crude) Rates in India:1901 to 2004-05



Source: Census of India, 2001; NSSO, 2008

In order to trace the trend of one hundred years of progress in literacy, the crude literacy rate[3] has been taken into account in Figure 2.10. In addition to literacy rates of male, female and person, the gender gap along with cumulative increase in decadal literacy rate is represented separately by the

five coloured bars for the decades beginning 1901. A cursory look at the bar diagram delineates some interesting trends in the literacy data, of which, it is important to note that every census year has experienced a jump in literacy rate compared to the earlier census and it is applicable to both males and females till the last census 2001. This aspect is also supported by the recent NSSO (2008) Report. This increase is true in absolute terms. There are still other qualifying characteristics of the literacy data which is explored below.

The gender gap in literacy rate is a common indicator to measure the gender disadvantage in literacy achievement. It is seen from the diagram that the gap instead of being narrowed down, the gap has been, by and large, increasing since 1901. But this interpretation seems to be confusing as because a significant increase in literacy rate has been observed over the last 100 years. Gender aspect in literacy rate is better understood by some indices proposed by different researchers (Naik, J, P., 1971; Tilak JBG, 1983, Kudu et el, 1986). The present study adopts the methodology of Kundu et al [i.e., (Male-Female)/Total x 100] to probe into the aspects of gender disparity in education. These estimates are represented as decade-wise indices in Figure 2.11. A continuous decreasing trend has been observed in the values of the index for different decades. It thus makes sense that an increase in female literacy cannot be overshadowed by a similar or a larger increase in male literacy rate if a simple gap is calculated. The decade 1961-71 experienced the increase in male literacy that was higher than female literacy rate. Significantly during the last three decades, increase in female literacy (5.74%, 7.35% and 12.98% respectively) has got an edge over the male literacy rate (5.01%, 5.85% and 10.5% respectively). This clearly suggests that the country is on an optimistic path of narrowing down the gender gap in literacy rate in the near future.

In order to see the dcadal achievement in literacy rate, a cumulative increase[4] in literacy rate over the past decade has been calculated and illustrated in the same figure. It is seen that the decade 1931-1941 is the decade when increase in literacy rate was the highest (an increase of 69.5% in 1941 over 1931). The following decade (1941-51) (i.e. the critical years of independence) recorded the lowest literacy achievement so far. Starting from 1941 to 1991 the decadal cumulative increase actually has been declining substantially. It may be noted here that during this period, most of the world's contemporary economies like China, Vietnam, USSR, Cuba, Srilanka, Indonesia etc. had succeeded in achieving higher literacy rates than India (Bolashetty and Girija, 2004). It is only in the last decade 1991-2001, India's performance appears to have changed drastically with a substabtial increase in literacy rate in 2001. However, a recent sample based study (NSSO, 2008) again shows a considerable decrease (from 27.2% between 1991-01 to 16.7% to between 2001-2005). One has to watch out for the next Census for further development in literacy achievement.

Literacy development can be further disaggregated by region of which the focus on rural-urban disparity in literacy rates is important. The pattern in this regard is portrayed in Figure 2.11 and 2.12.

The literacy rate[5] in general for person, male and female at rural and urban areas in the country has been increasing over the decades. The rural-urban gap in literacy rate is evident for the decades under consideration and literacy rates for all categories are lower in the rural areas than the urban areas. However, the gap between the literacy rates for males and females has been narrowing in both rural and urban areas since 1951. Rural-urban disparity in literacy rates is at its minimum (21.1%) over the last decade (1991-2001), with rural female literacy registering the highest increase. If one considers the literacy rate for the urban areas, it is seen that the increasing trend in literacy rate (person, male and female) is accompanied by the diminishing trend in gender disparity. This scenario is not observed in the rural areas till 1981. It is only after 1981 that the gender gap in literacy in the rural areas has been narrowing down along with increases in literacy rates. The index of gender disparity for both rural and urban areas, however, has been decreasing over the last six censuses. But the index has been remaining much higher in the rural areas compared to its urban counterpart. Thus, in order to achieve progress in literacy, it is important that equity is maintained in terms of gender and an equitable access in both rural and urban areas.

An observation that is favourable for rural India is that the cumulative increase in literacy rate over the last five decades has been consistently higher than the cumulative increase in literacy urban

India. Till 1971-81, it was the urban literacy rate that has grown faster than the rural literacy rate. But over the last two decades (1981-91 and 1991-01) the scenario has changed with rural literacy increasing at a faster rate, e.g. in the last decade, the rate of increase in rural literacy is recorded at 14.01 percentage points which is more than double compared to the urban rate (6.82 percent). This is a positive sign in bridging the rural-urban gap in literacy achievement throughout the country. However, it must be noted that the rural literacy rates have been very low in the earlier decades and hence even a small increase in the number of literates will register as a high growth rate in literacy. Nevertheless, the Census of India 2001, which is the fourteenth census in the continuous series from 1872 and the 6th since independence, reveals that there are as many as 560,687,797 persons (64.8 %) in the country belonging to the age group 7 years and above who are literate. It shows a gap of 21.6 percentage points between the sexes at the national level.

Fig-2.11: Regional Aspect of Literacy Development

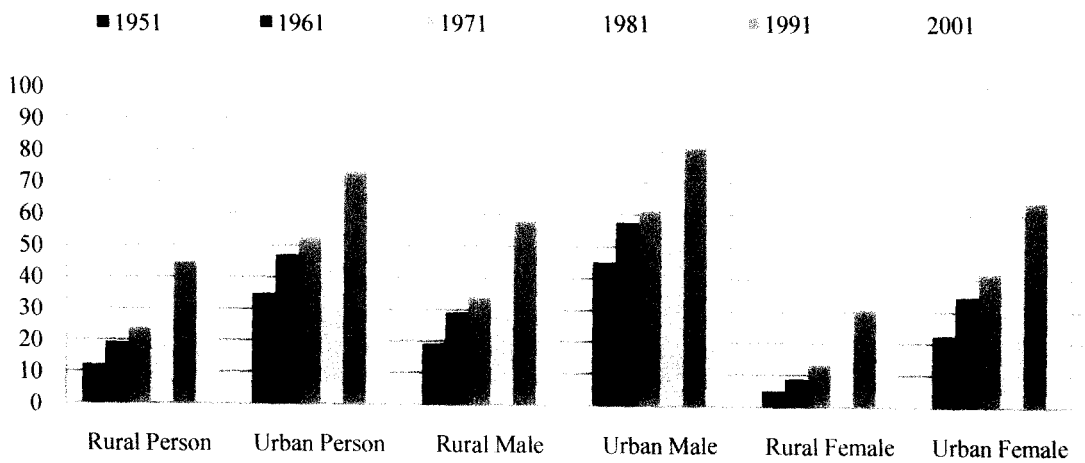
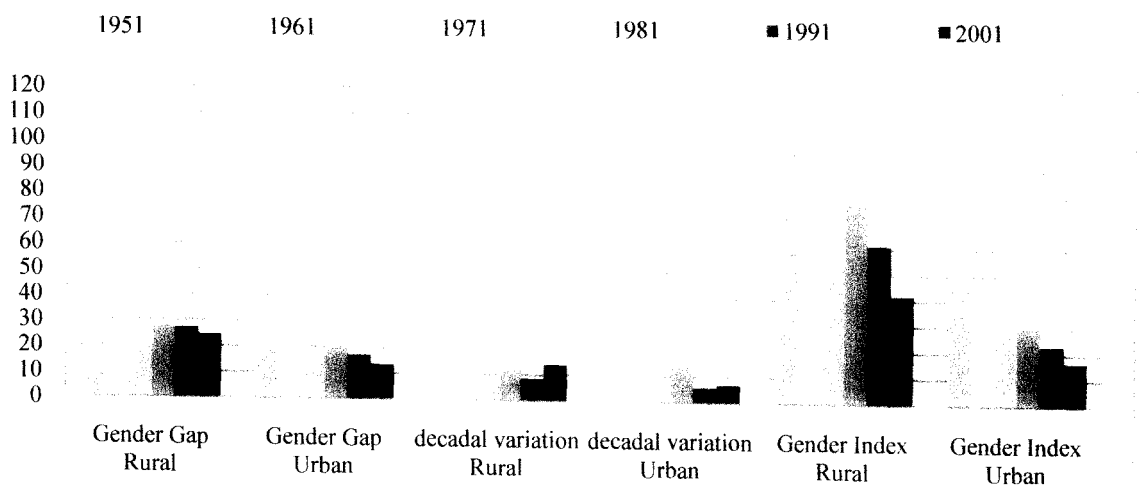


Fig-2.12: Variation and Gap in Literacy Rate



Source: Census of India (Various Years)

2.6 Recent Issues and Polices towards Educational Development in India

2.6.1 Key Areas of Concern

The goal of achieving universal primary education (UPE) has been on the international agenda since the Universal Declaration of Human Rights affirmed in 1948 that, elementary education is to

be made free and compulsory for all children in all countries. This objective was restated subsequently on many occasions, by international treaties and in United Nations conference declarations. Such statements are found in the declarations that emerged from a series of United Nations regional conferences on education in the early 1960s, in the treaties that formed the International Bill of Human Rights in the 1970s, in the World Declaration on Education for All adopted at the World Conference on Education for All in Jomtien, Thailand, 1990 and in the Millennium Declaration and the Dakar Framework for Action in 2000. The last two reaffirmed the commitment to achieve universal provision and access to primary schooling by 2015. The goals adopted regarding Education for All at the World Education Forum in Dakar, Senegal in 2000 were to -

1. Expand and improve early childhood care and education;
2. Provide free and compulsory universal primary education by 2015;
3. Provide equitable access to learning and life-skills programs;
4. Achieve a 50% improvement in adult literacy rates;
5. Eliminate gender disparities in primary and secondary education by 2005 and at all levels by 2015.
6. Improve all aspects of the quality of education.

The second Millennium Development Goal (MDG) of achieving universal primary education is to - 'Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling'. The third MDG of promoting gender equality and to empower women is to - 'Eliminate gender disparity in primary and secondary education preferably by 2005 and in all levels of education no later than 2015'. This is an integral part of Education for All goal as set out by the UN member countries across the world. These two Millennium Development Goals are time-bound and quantified targets for addressing the basic educational needs of the world's children. These are the critical issues related to basic education and literacy that, the countries of the world have to achieve. Although a substantial increase in primary enrolment is evident in the recent period, especially after the Dakar Declaration, yet it is apprehended/projected that in line with the current trends, fifty-eight out of eighty-six countries that have not yet reached universal primary enrolment will not achieve it by 2015. One third of all the countries in the world missed the goal of achieving gender parity in primary education by 2005. Two thirds of all countries missed the goal of gender parity in secondary education. According to projections of UNESCO (2007a) more than 90 countries will not achieve gender parity in primary and secondary education by 2015 (UNESCO, 2007a). The report has also projected that there are still 101 countries far from achieving 'universal literacy', of which 72 will not succeed in halving their adult illiteracy rates by 2015. The EFA Development Index as prepared by UNESCO shows that out of 129 countries, 51 have achieved or are close to achieving the four most quantifiable EFA goals, 53 are in an intermediate position and 25 are far from achieving EFA as a whole (UNESCO, 2007a). It is projected that the UPE goal (NER≥97) is already achieved in Bangladesh and Sri Lanka out of nine South and West Asian countries, while, India has been moving towards the goal, with steady progress (UNESCO, 2008). It is expected that the country have a high chance of achieving the goal by 2015.

As discussed earlier, India is also burdened with missing targets in elementary education. Faced with the international targets and commitments, it is necessary to review the policies adopted by the Indian government to address the educational issues and to assess the progress achieved so far. The present section thus takes a close look at the matter to identify the predisposing factors affecting education at a disaggregated level.

2.6.2 Policy Initiatives

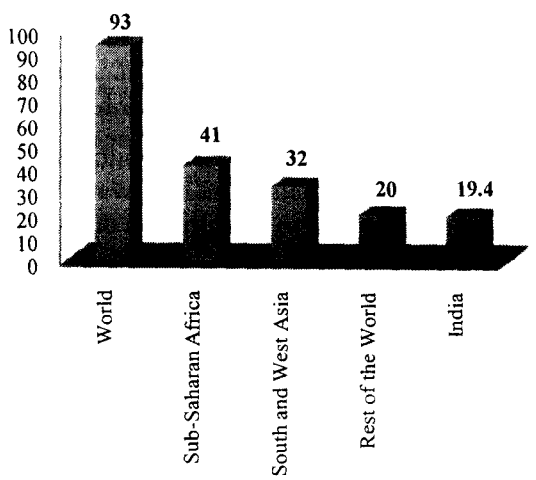
Before discussing the measures taken by the government to promote the universalisation of education, it is important to delve into economic scenario in India. India has been experiencing

considerable economic growth over the past decade. The growth rate of the economy, which was around only 1% per annum from 1900 to 1950, rose to 3.5% through the 1950s and 1960s. Since the early seventies, the economic growth rate suddenly picked up and since 1993, the economy was growing at a faster rate. Since 2005, the rate of growth of the economy reached an all-time high at 9% (Basu, 2007). This has largely been sustained by strong agricultural growth, a rapidly expanding service sector (Chanda, 2007; Basu and Maertens, 2007) and with a spurt in export-based and other manufacturing activities (World Bank, 2004). This rapid economic growth has led to significant declines in poverty rates (Chen and Ravallion 2004; Bajpai, Sachs, and Volavka, 2004). Beyond such a growth, India has still been facing some challenges towards achieving the MDGs. Important among them are high rates of under nutrition, large numbers of children out of school, poor health indicators, and wide disparities in social and economic indicators, particularly for women, girls, and members of low-caste and tribal population (UNDP, 2005).

A recent estimate of UNICEF (2007) based on household surveys reveals that the number of children of primary school age who are out of school[6] has declined markedly from 115 million in 2002 to 93 million in 2005–2006. Of these children, 48 million were girls and 45 million boys (UNICEF, 2007). Region-wise, 41 million lived in Sub-Saharan Africa, the region with the world's lowest primary school enrollment rates, 32 million in South Asia with a substantial number belonging to (19.4 million) India, the country with the world's largest population of children not in school (Fig-2.13.a). One in six children of secondary school age attends primary school because they started school late or had to repeat grades. However, a very recent Indian estimate gives some more promising trend. Especially after SSA interventions, the number of out-of-school children have been brought down from 32 million in 2001– 02 to 7.0 million in 2006–07 (Fig-2.13.b). There were as many as 48 districts in 10 States, each of which accounted for over 50,000 out-of-school children in 2001-02. The number of such districts declined to 29 in 2005–06.

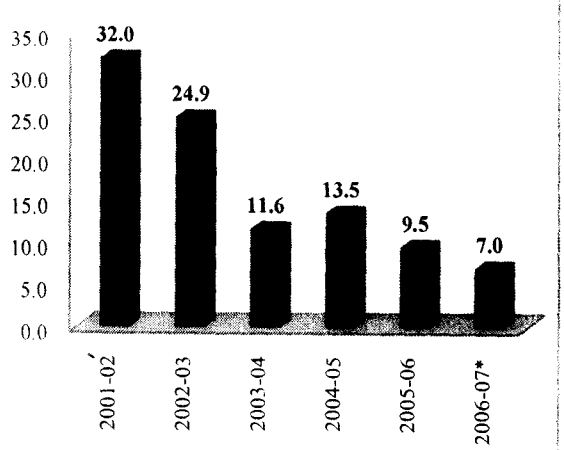
National policy intervention and initiatives so far adopted in India since 1990 shows government's positive viewpoint in achieving the targets of MDGs and EFA goals as set out internationally. Some of the recent policies in core human development areas are – Sarva Siksha Abhiyan, Total Literacy Campaign of the National Literacy Mission, 73rd and 74th Constitutional Amendments providing reservation for women, commitment for women's empowerment in the national Common Minimum Programme, National Rural Health Mission, Total Sanitation Campaign, Bharat Nirman, etc. With these policy measures, it is expected that the government of India is stepping onto the correct path towards achieving the goals by 2015, as internationally proclaimed. For achieving the goal of basic education and literacy, some specific policy measures has been adopted.

Figure-2.13.a: Global Out of School Children: 2005-06 (in Million)



Source: UNICEF, 2007

Fig-2.13.b: Out of School Children in India (In million)



Source: Government of Indiab, 2008; * up to July 2006

Enhanced financial provision for elementary education is one of the significant steps towards achieving the MDGs. A non-lapsable fund in the name of Prarambhik Shiksha Kosh has been approved by the cabinet and it is being developed and maintained by the Ministry of Human Resource Development, Department of Elementary Education and Literacy. The fund for the purpose is being procured from the tax collected as an Educational Cess imposed through the Finance (No.2) Act, 2004 on all central taxes. An amount of Rs. 8746 crores have been initially transferred to the Prarambhik Shiksha Kosh as per provision of Union Budget 2006-07 out of which Rs. 5831 crores for Sarva Shiksha Abhiyan (SSA) and Rs. 2915 crores for Mid-Day Meal Scheme respectively (Government of Indiaa, 2008).

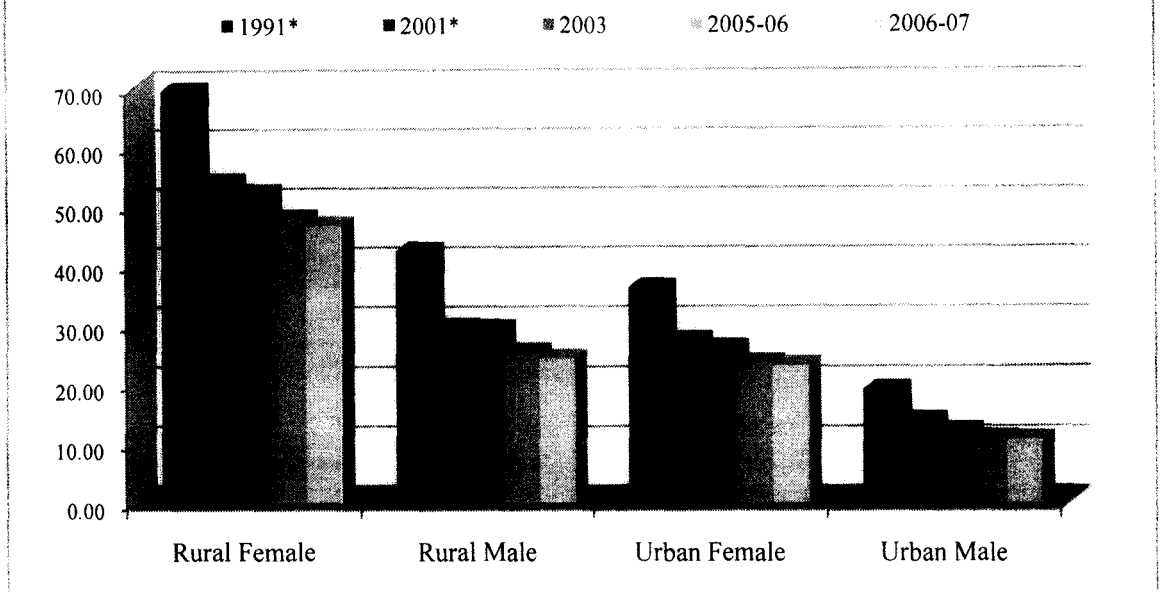
Keeping in view the objective of improving the nutritional status of children and encouraging the poor and disadvantaged children, to attend school more regularly, and help them concentrate on classroom activities, the National Programme of Nutritional Support to Primary Education (NP-NSPE) was launched as a Centrally Sponsored Scheme on 15th August 1995 (Government of Indiaa (2008). At the time of its launching in 1995, it covered 2408 blocks in the country. In October 2007, the scheme has been further revised to cover children in upper primary (classes VI to VIII) initially in 3479 Educationally Backwards Blocks (EBBs) and subsequently it is targeted to cover all areas across the country from 2008-09. Some recent survey based studies have found the practicability of the Scheme. The scheme has been found to be much more effective in enrolling the girl children and children of the backward class families.

Uunder the coordination of SSA, Kasturba Gandhi Balika Gandhi Balika Vidyalaya (KGBV) Scheme is an important central initiative for the girl students at elementary level, belonging predominantly to the SC, ST, OBC and minorities sections of society in difficult areas. The blocks with a female literacy rate (2001) below the national average along with a high gender disparity (more than national average) are identified as educationally backward blocks and the scheme envisages the setting up of residential schools in these areas. Presently, there are as many as 1564 KGBVs which are operational (as on 30.9.2007) as against 2180 KGBVs sanctioned in 25 States. These schools in aggregate having an enrolment figure of 1.10 lakh girls belonging to the SC/ST and other disadvantaged groups (Government of Indiaa, 2008). The fund allocation to this scheme increased to Rs.68929.59 lakh in the year 2007-08. Along with these, the 83rd Amendment of Indian Constitution is a milestone in ensuring one of the basic needs of children so far the government resolution is apprehended. Having taken such new polices, a positive impact is being observed in the indicators responsible for progress of elementary education in the country. The outcome bears reference to the research questions under study which is elaborated below.

A substantial increase in the literacy rate since 1991 among the 7+ population is noteworthy. The Tenth FYP had set a target of achieving a sustainable threshold level of 75% literacy by 2007 and during the Eleventh FYP (2007-12), it is targeted to achieve 80% literacy rate and educe gender gap in literacy to 10% (Government of Indiab, 2008). In respect of this threshold level of literacy rate (75%), it is seen that the Indian males both from rural and urban areas have crossed the same (Fig-2.14).

The urban females have crossed the same after 2003. Special attention and intervention is required in the rural areas where a little less than 50% of the rural females are still illiterate. After the implementation of SSA, the intervention of this scheme has brought down the number of out-of-school children from 320 lakh (32 million) million in 2001– 02 to 70 lakh (7.0 million) in 2006–07 (Government of Indiaa, 2008). Along with this, the dropout rate at elementary level has come down from 68.3% in 1999-00 to 61.92% in 2004-05. The allocation of funds for elementary education increased from Rs. 39274.6 crores in 2000-01 to Rs. 44349.47 crores in 2003-04. Intra-sectoral share in educational expenditure shows that much attention has been paid on elementary education. The share, in this respect, on elementary education has been increased from 47.61% in 2000 -01 to 60.72% in 2003-04 (Selected Educational Statistics 2004-05, MHRD). As such, the number of Institution at elementary level grows from 8.5 lakh in 2000-01 to 10.6 lakh in 2005-06 (a 25% increase) and enrolment figure rose from 15.7 crores to 18.4 crores (a 17% increase) at elementary level in the same period. This indicates a further decrease in the number of out of school children in the near future.

Figure-2.14: Percentage of Illiterate Person aged 7 Years and above



Source: NSSO, 2006; 517,* Census 2001

In spite of such a development in the field of literacy achievement and elementary education, the country still has 26 per cent of its rural households and about 8 per cent those in the urban areas, wherein the 15+ population cannot read and write a simple message with understanding (NSSO, 2006). Female literacy is much more important within a household to make the children enrolled in school. Based on a household survey conducted during July, 2004 to June, 2005 it is found that 50 per cent of the rural households and 19.5 per cent of the urban had no literate female members of age 15+ years (NSSO, 2006). It is also observed that the proportion of non-literates was found to be the highest in the bottom monthly per capita expenditure (MPCE) class (Rs. 335 –395) and it decreased gradually as the MPCE increased. Still there are 50 percent of people in the age group 5-29 years, who were not currently attending educational institutions (NSSO, 2006).

In 1950, the target to achieve universal elementary education within 10 years was assumed to be an adequate time-period to reach the goal. After 50 long years, India's commitment at the international forum once again places her at a critical juncture although there is substantive ground to believe that the two education-related goals of MDGs could be accomplished by 2015. With the change in the perspective, the spread of education could be expedited. Firstly, the demographic change that had occurred over the past decade and more - as reflected in the Census - is quite reassuring. The rate of growth of population per annum between the years 1983-84 to 1993-94 was 2.11%. the same is decreased to 1.98% between the years 1993-94 and 1999-00, 1.69% between the years 1999-00 and 2004-05 and finally more decreasing trend between the years 2004-05 to 2008-09 at only 11.49% per annum (Economic Survey, GOI, different years). The second major supportive factor is the current state of the Indian economy. The economy has been experiencing a substantially high rate of growth in the recent years to enable the planners to reallocate more funds to the education sector. A nine percent rate of growth of GDP at factor cost at 1999-2000 prices has been observed in the financial year 2007-08 (GOI, 2008-09). A series of measures to ensure mass participation in the process of educational development have been undertaken with the launching of SSA after 2001. People's participation i.e., those who seek education as well as those who seek to support educational activities, has grown by enormous proportions, indicating that India is not far behind in achieving UEE and 75% of the threshold level of adult literacy in the near future.

2.7 Concluding Observations

The main objective of this chapter, as stated earlier, is to identify the critical issues relating to literacy and school education in the country that need immediate intervention. For this, it was necessary to look into the history of Indian educational process along with the development of literacy and elementary education in the country. Attention has been drawn towards the various indicators that enumerate educational outcomes along with the enabling infrastructural factors related to the process. The available evidences bring to light the following issues among others –

- It is observed from the history of development of education that universalisation of primary education was advocated even under British rule and a constitutional commitment was also done in free India. But the very basic need of our children regarding their education has still been remaining as an illusive one and appeared as a distant goal. It also appears that time and again it was decided to achieve the goal from the end of government. But whatever time limit has been targeted has proved itself to be unrealistic. Even the target year 2010 of SSA by which it is being tried to universalise eight years of schooling does not appear to be realistic one. We have to look forward up to the international target year of 2015 for the goal.

- Financial assistance to education was a subject of neglect both in British and post independent era and still remains the same. Per capita spending on education in India is significantly low even when it is compared with the countries like Bangladesh, Korea, Thailand and Sri Lanka. Actually we are spending more or less half what we need for UEE.

- During the entire post-independence period, government expenditure on education has been remaining well below the 6% of GDP (Kothari Commission's recommendation), thereby witnessing the government's apathy to reach the goal of UEE.

- In India, primary responsibility of school education lies with State government but being a subject of concurrent list, the Union Gvernment can't bypass its responsibility in this respect. It has been observed that the Centre has been sharing a sizeable amount to elementary sector of education only after 1990-91. Yet the actual total expenditure by the Centre compare to the States altogether is very marginal.

- The first post-Independent census indicated only 18.3 percent of India's total population as literate, while the same becomes 64.8 percent in 2001, still half of the females and one fourth of males in India are reflected as illiterate, whereas the developing countries in the world are approaching to universal literacy.

- Significantly during the last two decades (1981-91 & 1991-01), increase in female literacy has got an edge over the male and the same is also seen for rural literacy compare to the urban sects. This suggests that the country has been approaching to a more equitable literacy development in respect of gender and regional pattern in the process. Still there is a gender gap in literacy achievement by 21.6% at the national level and it is more prominent in rural areas 24.6% than in urban (13.4%) frame of the country.

- The overall achievement in literacy development has been satisfactory in the rural India. Up to the decade 1971-81, it is the urban literacy rate that grows faster than the rural literacy rate (Fig-2). Since then, the scenario has become opposite and during the last decade, the rate of increase in rural literacy is recorded at 14.01 percentage points which is more than doubled compare to the urban rate (6.82). But in achieving the overall literacy (person) there is still a substantial gap (21.2%) in rural –urban frame of the country. For the females it is 26.8% and for the males it is 15.6% so far the last Indian Census is concerned.

- In physical number, a tremendous increase in educational institution has been recorded during the period (1950-2005), a fourfold jump in the number of primary schools has been observed and the upper primary schools by more than 20 times.

- This increase of number can't be credited unless and until schools are located within the reasonable distance of the rural households and a reasonable pupil teacher ration is maintained. According to the VI All India Educational Survey (1993) nearly 17% of the rural

habitation (1.77 lakh) still uncovered by any primary school while 24% (2.53 lakh) by upper primary school. One thing that seems to be encouraging is that the coverage has been steadily iuncreasing since 1973 and as such we can expect more rural households to be covered by schools as soon as the VII survey report will be published. The decadal trend of the pupil-teacher ratio at primary level clearly suggests government's failure to provide adequate access to primary education in the country. The ratio remains as high as around 60:1 throughout the years of last decade (1991-2001) as against the official level of 40:1.

- In our country the acute shortage of female teachers has been an area of concern and debate. Proportion of female teacher, especially at primary level, around the world is far high compare to the Indian average. Though the proportion has been increasing, yet it is too low (around 35% at elementary level of education) to compare at international scenario.

- Starting with a pupil teacher ratio at around 36 in 1950-51, it became 60 in 2004-05. The ratio has been actually consistently increasing since 1950. This supply side issue is a major remaining concern in this country.

- But it may be noted here that Gross Enrolment ratio at primary level has been decreased from 114 to 104 for the boys and from 85.5 to 85.2 for the girls during the period from 1990-91 to 1999-00 (Selected Educational Statistics 1999-2000, MHRD, GOI, 2001). This trend is also being observed for the upper primary level too.

- The dropout trend of the children has been decreasing slowly but shows it clearly that the girls are more dropping out of school than the boys both at primary and upper primary level. At the same time the problem becomes more acute at upper primary level than at primary level of education. This deprivation against the girl child is a major concern of our research and will get special attention in our latter discussion.

- One important recent trend of decrease in absolute number of out of school children quite marginally assures us in achieving the 2nd MDGs

The review and analysis of educational development in India since independence as it has been seen and sketched in this chapter does not seem to be satisfactory, especially when it has been compared with international perspectives. Eight year of schooling (Elementary Education) is a basic right of the children born in a society and it is also a social need for any country. This, for realisation, requires a series of efforts from several dimensions in different ways. It is not a single dimensional effort. Rather it is a holistic schema. Parents should be well aware and responsible in sending their children to school, society should have a positive direction so that the parents may be encouraged in the process, political leadership should have a clear-cut agenda regarding this need and above all the Government will have to ensure universal access so that each and every child can get at least the feasible schooling facilities. Beyond this, there should have 'minimum quality' of the teaching-learning process for universal retention of the children getting enrolled at school. All these can ensure and achieve the goal and fulfil the need.

Note

1. Article 26 of Universal Declaration of Human Rights

a. Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit.

b. Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding,

tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace.

c. Parents have a prior right to choose the kind of education that shall be given to their children.

2. A habitation is a distinct cluster of houses existing in a compact and contiguous manner; with a local name; and its population should not be less than 25 in plain areas and not less than 10 in hilly/desert/sparsely populated areas. In case there exists more than one such cluster of houses in a village, they will not be treated as separate habitations unless the convenient walking distance between them is more than 200 meters.

3. The Crude Literacy Rates is computed with the total population as base without removing the mandatory illiterate population aged 0-4 or 0-6 from the denominator.

4. Cumulative increase in literacy rate is calculated as – [{(PLRd – PLRd-1)/PLRd-1}x100] where PLRd represents the person literacy rate in decade 'd' and PLRd-1 is the literacy rate (person) of the previous decade.

5. Literacy rates for the years 1951, 1961 and 1971 censuses relate to the population aged five years and above while those for the 1981, 1991 and 2001 censuses relate to the population seven years and above.

6. Primary-school-age children out of school refer to children of this age group who are not in primary or secondary school but who may be in preschool or in other schools outside the formal education system.

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Chapter-3

Educational Backwardness in India: An Inter-State Comparison

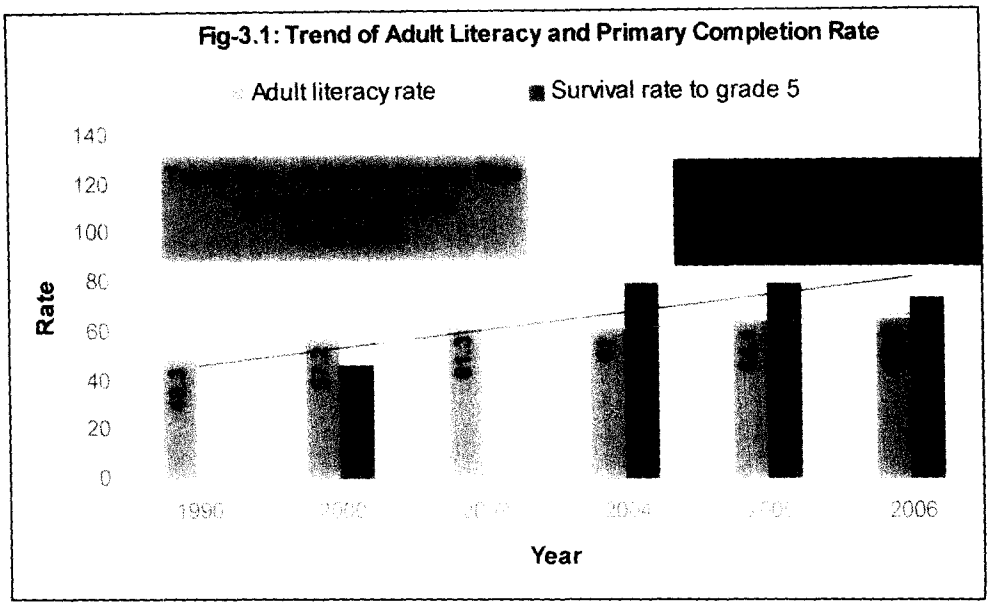
3. Introduction

India, with 28 States and 7 Union Teritories and more than 100 crores of people (16% of the world's population), is a vast country with heterogenous population groups. Several socio-economic strata exist within each group adding to its multidimensional character. The regional pattern of educatonal status at State level is considered in this chapter for a disaggregated view of trends in educational devement in the country. This chapter also explicates the issues related to the various manifestations of educational development at State level with a view to have a handle on the problem at more disaggregated level. This will also provide the degree to which the states differ in the process of educational development against a regional perspective. The analysis will enable the study to focus on a state or a region for an in-depth survey based study.

The previous chapter has delineated the historical background which has enabled education to spread in India and the status of elementary education and adult literacy rate in this whole process. The spread of elementary education and the adult literacy rate were found to be lagging far behind the Education for All goal. This is also evident from the Global Monitoring Report which is a regular publication of UNESCO since 2002 after the *United Nations Millennium Development Goals*. The report analyses mainly the development achieved by the different countries towards the fulfillment of global education targets that are affirmed and declared at different international conferences (especially *Jomtien Conference on Education for All,* 1990; *Dakar World Education Forum, 2000 and United Nations Millennium Development Goals).*

Each year, the report constructs an index (Education for All Development Index) to assess the inter-country educational development throughout the world especially for the countries committed to achieve the MDGs by 2015. Education for All Development Index (EDI) is a composite using four of the six EFA goals, selected on the basis of data availability. The goals are: Universal primary education (UPE), Adult literacy, Quality of education and Gender (www.efareport.unesco.org). Primary Net Enrolment Ratio (NER), the survival rate up to Grade 5 and the simple average of the three gender parity indexes (GPI) for primary education, secondary education and adult literacy, with each being weighted equally are used as proxy of the Universal primary education (UPE), Quality of education and the respective Gender in constructing the EDI as per the methodology of UNESCO. As per the 2009 EFA Global Monitoring Report (UNESCO, 2008), India was ranked at 102nd position out of 129 countries for which complete set of indicators required to calculate the EDI were available (www.efareport.unesco.org). According to the value of the EDI the countries are ranked as "high", "medium" and "low" EDI. India with a value of EDI, 0.794, has been included in the low ranked EDI countries just merely above Bhutan, Bangladesh and Nepal among the Asian countries and some Sub-Saharan African countries. The data of the Report also shows that in India, NER at Primary level (0.961) is quite satisfactory and also the Gender related EFA Index (0.834) is up to the mark compared to the High EDI countries. But the Adult Literacy Rate (0.652) and the Survival rate to grade 5 or Primary Grade completion rate (0.730) are far behind the countries, even from the countries lying below India in respect of EDI as constructed by the UNESCO. On the basis of the above figures, it is apparent that universal enrolment or Literacy Rate of 7+ age group population as enumerated in the Indian Census are inadequate to reflect on educational development. It is the Primary Grade completion rate and Adult Literacy Rate (15 years and above) that are the two central criteria to foster educational development. Figure 3.1 depicts the year-wise value of adult literacy and primary completion rate since 1990. On the basis of the rates for different years, the trend equations for adult literacy and primary completion rate have been calculated. The trend lines along with the equations are shown in the fig-3.1. The equations project that the growth rates of both adult literacy rate and survival rates are positive. But the former increases at a slower rate than the latter. Thus it can be said that over time, *it is possible to achieve the target of primary completion rate of Dakar Goal, while it will be difficult to reach the official target of adult literacy rate within the given period of time*

unless the rate of growth in adult literacy rate picks up. Accordingly, in order to select the region/state, performance of these two indicators will be given special attention.



Source: Global Monitoring Report, UNESCO, different years

The prime objective of this chapter, as stated earlier, is to select a State among the major Indian States in terms of educational disadvantages especially in connection with the achievement of literacy rate and elementary education. Considering this, the present chapter has been designed and developed as follows-

- *Section-3.1 represents State wise trend in literacy rate and their relative performance over the period 1951-2001 by using the UNDP methodology of Range Equalisation to assess the relative position of each State for a particular period of time.*
- *Section-3.2 analyses State-wise major literacy attainment in the last decade (1991-2001)*
- *Section-3.3 compares the decadal variation by constructing the district-wise Index of literacy development for the period 1991 and 2001 following the methodology of Principal Component Analysis.*
- *Section-3.4 reviews the present status of Elementary Education in India with a view to obtain a comparative ranking of the Indian States*
- *Section-3.5 analyses the Educational Development Index as prepared by the National University of Educational Planning and Administration (NUEPA) and finally,*
- *Section-3.6 briefly summaries the analysis and concludes the chapter*

3.1 Performance of the Indian States: Literacy Trends in India - 1951-2001

Literacy grade as portrayed in decennial census data of India comprises the 7 + population age group and thus wraps both who have been in the formal education system along with those who have been remaining out of formal education system with or without having completed a certain grade of formal schooling. Considering this wide range of coverage, the literacy rate may therefore, be deemed to be a crucial index of educational development.

The first census in independent India was carried out in 1951 and thereafter it is being continued as decadal enumerations. In 1951, there were 14 States whose literacy rates were below the national average of 18.3% and in 2001, it has again been found 13 State and UTs who have been lagging

behind the national average literacy rate (64.8). The BIMARU States along with Assam and Orissa were below the national average in 1951that have been still hovering around at the same status even in 2001. While, Sikkim, Himachal Pradesh, Punjab and Tripura are among some of the notable States which have been upgraded from below national average to above the national average literacy status during the same period, the North-East States (Himachal Pradesh, Sikkim, Manipur, Tripura) and the South Indian States have made satisfactory progress in literacy rate during the last fifty years. West Bengal with a literacy rate 24% was in third position after Kerala and Delhi among the other major States in 1951. In 2001, with a literacy rate of 68.6%, it has moved down the ladder to the 9th rank among the 21 major States in India. The State has barely managed to retain its position on and around the national average over the last decades.

Performance of a state in achieving the literacy rate can be better understood by calculating the Achievement Index for literacy performance of each state separately. The basic idea of the Achievement Index is to measure the literacy performance of each state using comparisons of how a particular state performed relative to other states. We have adopted here the UNDP Methodology of Range Equalization [UNDP, 1990] that considers the following formula in measuring the progress of relative achievement of literacy rate:

$$Z_i = [\text{Actual } X_i - \text{Min } X_i]/ [\text{Max } X_i - \text{Min } X_i], \text{ ---------- (1).}$$

Where X_i=Literacy Rate of the i-th State for a particular time point. Z_i is an index that measures the relative position of a particular State. It may be called an achievement index of that particular state. The value of the index lies between the values 0 and 1. The state with an index value closer to 1, its relative position is expected to better than the other states.

By using the above methodology, the relative index of each State has been calculated for the periods 1951, 1961, 1971, 1981, 1991 and 2001. The result is depicted in table-3.1. The main theme that the table describes is that one can easily evaluate the performance of a particular State during any particular period of time and also over the last six decades.

For example, starting with almost bottom position in 1951 (just above Sikkim and D & N Haveli), Himachal Pradesh achieved the 11th rank as per the achievement index calculated for the year 2001. West Bengal with an index value of 0.545 and accordingly a rank of 4th in 1951 (out of 24 states ranked) is positioned at 17th rank (out of 35 states ranked) with an index value 0.492 as per the last census report. In this way, one can easily evaluate the performance of a particular State over the last six decades. A simple mathematical difference between the ranks of 1951 and 2001 may give us the relative development of achievement in literacy of a particular state.

For observing the state-wise relative progress in literacy achievement over a period of time (e.g. from 1951 to 2001) one cannot simply compare the value of the index or rank over a span of years. In order to tackle the problem, one needs to modify the formula in the following manner-

$$Z_{it} = \frac{[\text{Actual } X_{it} - \text{Min } X_{it}]}{[\text{Max } X_{it} - \text{Min } X_{it}]} = - - - - - (2)$$

Where, X_{it}= Literacy Rate, i= States, t= time.

The main difference between the two formulas is to determine the value of maximum and minimum literacy rates. In formula-1 one has to find the maximum or minimum literacy rate within a certain period of time (e.g. for literacy index of 1951 only the literacy rates of the States during 1951 will have to be considered) and calculate the index for that particular period of time. But in the latter (i.e., for formula-2), the maximum and minimum values will have to be determined from the values within a range of time (e.g. literacy rates of the states for the six census periods - 1951, 1961, 1971, 1981, 1991 and 2001) irrespective of index calculating year. For example, in order to calculate the achievement index for the periods for 1951 or 2001, the maximum and minimum values of literacy rate will be the same (Haldar, 2008).

Table-3.1: Relative Literacy Performance of the Indian States/Union Territories (1951-2001)

Area	1951		1961		1971		1981		1991		2001		Progress over (1951 - 2001)
	#	*	#	*	#	*	#	*	#	*	#	*	
J & K	-		0.028	28	0.145	27	0.119	27	-	-	0.194	32	
H. Pradesh	0.101	22	0.264	18	0.412	14	0.438	13	0.486	11	0.672	11	0.792
Punjab	0.305	13	0.395	14	0.445	11	0.405	16	0.402	16	0.517	16	0.627
Chandi garh	-		0.863	2	1.000	1	0.887	2	0.771	4	0.795	5	0.308
Uttaran chal	-		-	-	-	-	-	-	0.386	18	0.560	14	0.160
Haryana	-		0.248	21	0.310	20	0.308	19	0.350	22	0.476	20	0.504
Delhi	0.937	2	1.000	1	0.901	3	0.821	3	0.723	6	0.790	6	0.498
Rajasthan	0.134	21	0.129	26	0.155	26	0.073	29	0.021	33	0.305	29	0.593
U. Pradesh	0.185	18	0.181	23	0.207	24	0.129	25	0.061	31	0.212	31	0.524
Bihar	0.223	16	0.202	22	0.171	25	0.109	28	0.000	34	0.000	35	0.400
Sikkim	0.090	23	0.052	27	0.127	28	0.268	21	0.371	20	0.497	18	0.708
Andhra Pradesh	-		0.720	4	0.000	30	0.000	30	0.078	29	0.166	33	0.074
Nagaland	0.174	19	0.175	25	0.320	19	0.440	12	0.461	13	0.446	21	0.647
Manipur	0.202	17	0.484	9	0.429	13	0.415	15	0.428	15	0.535	15	0.680
Mizoram	-		-	-	-	-	0.788	4	0.857	2	0.952	2	0.333
Tripura	0.313	12	0.252	20	0.392	16	0.429	14	0.438	14	0.597	13	0.664
Meghalaya	-		-		0.362	17	0.268	22	0.222	24	0.355	27	0.381
Assam	0.390	10	0.425	13	0.346	18	-	-	0.294	23	0.371	25	0.518
West Bengal	***0.545***	***4***	***0.454***	***12***	***0.435***	***12***	***0.405***	***17***	***0.386***	***19***	***0.492***	***19***	***0.513***
Jharkhand	-		-						0.075	30	0.150	34	0.140
Orissa	0.322	11	0.270	17	0.296	21	0.270	20	0.222	25	0.367	26	0.544
Chhattis garh	-	-	-	-	-	-	-	-	0.103	28	0.403	23	0.251
Madhya Pradesh	0.158	20	0.177	24	0.215	23	0.143	24	0.138	26	0.380	24	0.620
Gujarat	-		-		0.487	10	0.462	11	0.398	17	0.503	17	0.383
Daman & Diu	0.515	6	0.462	11	0.656	5	0.724	5	0.644	9	0.711	9	0.636
D & N Haveli	0.000	24	0.000	29	0.074	29	0.119	26	0.061	32	0.241	30	0.617
Maha rashtra	0.460	7	0.466	10	0.555	9	0.532	9	0.524	10	0.681	10	0.644
Arunachal Pradesh	0.251	15	0.258	19	0.264	22	0.183	23	0.126	27	0.308	28	0.544
Karnataka	0.417	9	0.361	15	0.402	15	0.357	18	0.354	21	0.446	22	0.544
Goa	0.518	5	0.488	8					0.727	5	0.797	4	0.679
Laksha dwep	0.305	14	0.310	16	0.644	6	0.692	7	0.847	3	0.904	3	0.823
Kerala	1.000	1	0.863	3	0.976	2	1.000	1	1.000	1	1.000	1	0.578
Tamil Nadu	0.458	8	0.492	7	0.561	8	0.524	10	0.482	12	0.604	12	0.606
Pondi cherry	-		0.637	5	0.690	4	0.708	6	0.711	7	0.779	8	0.432
A & N Islands	0.594	3	0.565	6	0.642	7	0.621	8	0.679	8	0.781	7	0.639

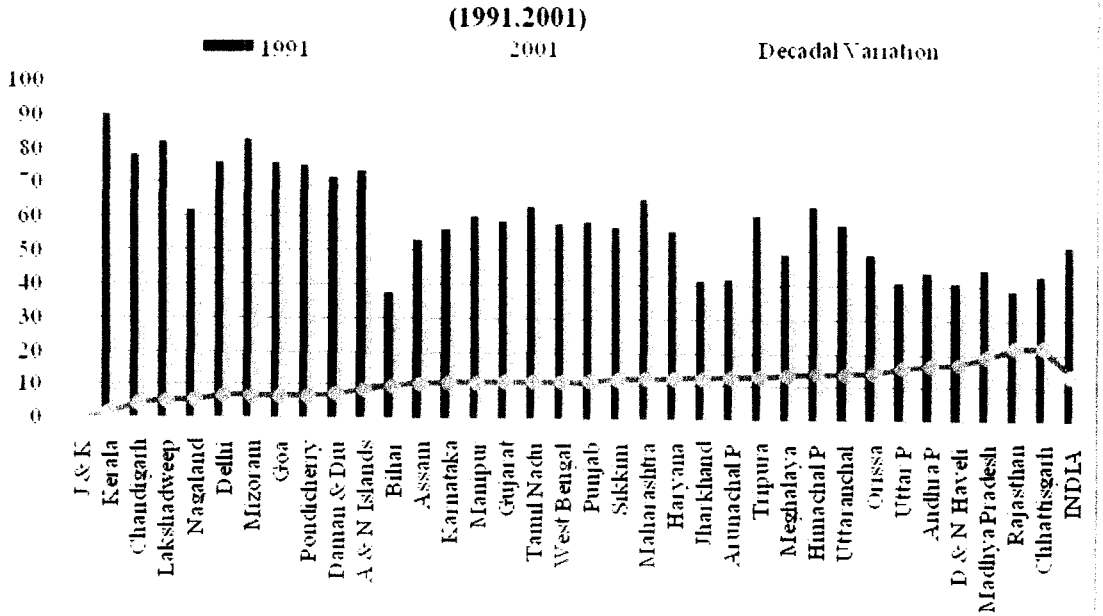
Note: # value of Literacy Achievement Index, * Rank; Source: Calculated from Census of India different years

Following the above methodology the revised literacy achievement index has been calculated for two distinct time periods 1951 and 2001 for each State in order to review the growth pattern of the States. It may however be noted here that for some States the literacy rates were not available for the year 1951 and in that case the next available census year has been considered. The arithmetical difference between the index values of 1951 and 2001 has been tabulated in the last column of Table-3.1 which represents the Progress of Achievement over the period from 1951 to 2001. Among the major States (excluding the 7 smaller States and 7 north eastern states) Himachal Pradesh could accomplish the highest progress in respect of literacy achievement followed by Maharastra, Punjab, Madhya Pradesh, Tamil Nadu, Rajasthan and Kerala. While Jharkhand remains at the bottom position in this respect along with Uttaranchal, Chattisgarh, Gujarat, Bihar and Jammu & Kasmir. *West Bengal is closer to the country's national average but lies below the average national achievement level.*

3.2 Major Achievements in Literacy Rate by States (1991-2001)

One of the targets for Education For All that was resolved at Dakar in 2000 by the world leaders was to reduce the levels of adult illiteracy by 50% within 2015. In this respect increase in the literacy of 7+ age group population during the last decade (1991-2001) was extremely encouraging. This decade has emerged as the fastest decade in raising the literacy rate (13.3%) in the country since its independence. It was the rural section of the country where decadal increase was higher than the urban section, both for male and female. The rural females recorded the highest literacy jump (15.9%) in this period. Another remarkable progress is that it is for the first time that the absolute number of illiterates declined by over 24 million. Gender disparity in literacy rate also declined from 24.5 percentage points in 1991 to 21.6 percentage points in 2001. Progress has also been reported for the literacy rate of schedule castes and schedule tribes. Figure-3.2 depicts the decadal variation in literacy rate vis-à-vis the literacy rate of 1991 and 2001 for the 35 Indian States and Union Territories.

Fig-3.2: Literacy Rate and Decadal Variation of Indian States (1991.2001)



Note- Census was not carried out in J & K in 1991.Source: Calculated from Census Data

The average literacy progress of the country has been occurred because of the better performance of some low literate states. Chattisgarh and Rajasthan have both registered the highest literacy jump at 21.8% during the last decade (1991-2001) followed by Madhya Pradesh, Andhra Pradesh, Uttar Pradesh, Orissa, Uttaranchal and Himachal Pradesh. It is found that the decadal variation (1991-2001) in literacy rate and literacy rate of 1991 is negatively correlated with a value of '-0.823' being significant at the 1% level (2-tailed). *This implies that the states with lower literacy rate would show higher decadal increase and vice-versa.* However, aberrations to the rule exist.

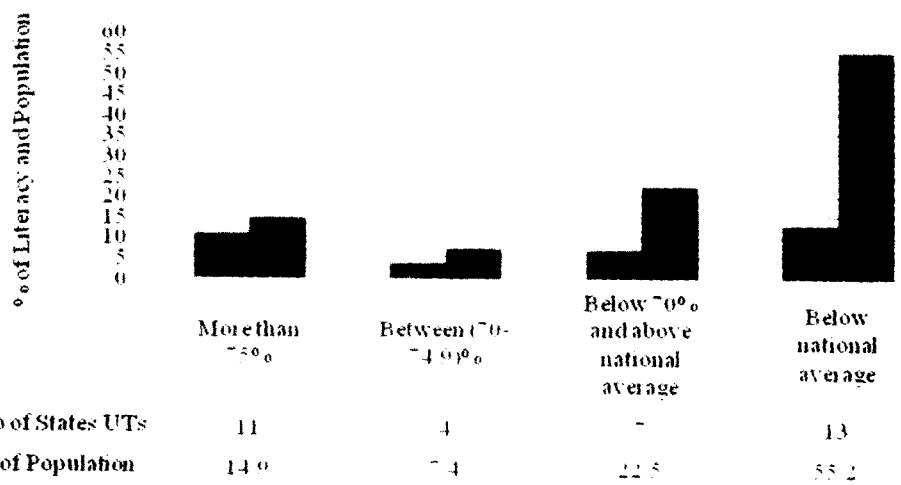
Notably, Tripura, Uttaranchal and Himachal Pradesh with a comparatively higher literacy rate show a literacy jump higher than the states like Assam, West Bengal, Karnataka and Punjab etc. (Fig-3.2). *Thus it may be said that there might be other variables with socio-economic characteristics that have an impact on literacy development and our main task is to identify those variables and their explanatory power in enhancing the literacy rate especially in the disadvantaged areas of the country.*

As has been stated earlier, West Bengal could not maintain its relative position in respect of literacy achievement since 1951 when compared to states (e.g. Punjab, Maharastra, Tripura) with a literacy rate higher than West Bengal in 1991 and have acquired a higher decadal increase (figure 3.2). *The trend in literacy development indicates a further decrease in the relative position of this particular state, West Bengal, as and when the Census 2011 will come into the picture. Thus an immediate intervention has to be made in this state to move the state from its dormant status.*

In spite of the major achievements in literacy advancements by several states over the last decade, a sizeable proportion of the population (304,102,917) in the age group of 07 and above are still illiterate, out of which, 36.38% are males and 63.62% are females (Census 2001). Again out of total illiterates in India, 83.57% lives in rural areas and the remaining only 16.43 % are living in urban areas. Thus the critical interventions in literacy advancements need to be focused on the literacy of the females and that of rural India to obtain the desired results.

The literacy achievements across the states reveal a sorry picture. In India, there are 35 States and Union Territories of which 11 have arrived at the literacy target of 75 per cent (the official target to be reached by the year 2007). Among these 11 states, three are the major states and Union Territory (Delhi, Maharastra and Kerala) and the remaining eight are either the north-eastern states or are the union territories having a small share of population. These 11 states altogether comprise only 14.9% of the country's population (Fig-3.3) thereby leaving around 85% of population whose average literacy level is below the desired level.

Fig-3.3: Coverage of Population and Level of Literacy in Indian States UTs, 2001



Source: Calculated from Census of India, 2001.

Among the remaining states, 13 states lie below the national average literacy rate (64.8%) of which only two are the so called small states, two are the newly formed states having comparatively lower population and remaining nine are the major states. These 13 states together comprise 55.2% of total population, i.e., more than half of the country's total population still remains below the national average. This shows a wide range of variation in literacy attainment in spite of tremendous jump in this respect. The regional pattern of literacy achievement is therefore very important to understand the critical gap in literacy in the country.

Gender deprivation and the consequent disparity between sexes are evident in nearly all spheres of social, economic and cultural aspects in India. In achieving the literacy skill, the proposition holds true, 21.59% males are more literate than the Indian females. It may be of special interest to find whether there exists any causality between male and female achievement in literacy skill. At State level, a strong positive correlation coefficient between male and female literacy rate (87 at rural level and 85 at urban) has been observed. This association can be given an interesting explanation that female achievement in literacy is not an independent attribute; rather, it is found that female achievement is positively dependent on the literacy achievement of males.

The correlation coefficient between male and female literacy rates for the states lying above and below the national average has been calculated separately. A significantly high positive association has been found for the states lying above the national average than for the states lying below the national average. *Thus it is apparent that the regions where male literacy has progressed substantially, it has led to a higher rate of increase in female literacy.*

Table-3.2 Inter-State Literacy Variation in India, 2001

Literacy Characters	Highest Literate States/UTs	Literacy Rate	Least Literate States/UTs	Literacy Rate	Literacy Variation
Total (Person)	Kerala	90.86	Bihar	47	43.86
Rural (Person)	Kerala	90.04	Bihar	43.92	46.12
Urban (Person)	Kerala	93.19	Uttar Pradesh	69.75	23.44
Total (Male	Kerala	94.24	Bihar	59.68	34.56
Rural (Male)	Kerala	93.63	Bihar	57.09	36.54
Urban (Male)	Kerala	95.94	Uttar Pradesh	76.76	19.18
Total (Female)	Kerala	87.72	Bihar	33.12	54.60
Rural (Female)	Kerala	86.69	Bihar	29.61	57.08
Urban (Female)	Kerala	90.62	Uttar Pradesh	61.73	28.89

Source: Calculated from Census of India, 2001.

Regional variation in literacy achievement is also a common phenomenon in Indian literacy scenario (Table-3.2). Kerala has emerged as the highest literate state in every aspect of literacy characteristics, while the deprivation is concentrated in two Indian states namely Bihar and Uttar Pradesh. The highest literacy variation is found for the rural females as against a lowest for urban males. The literacy rate for the rural females is highest in Kerala (86.69%) and a lowest rate of 33.12% has been registered in Bihar. As such a state-wise gap of 57% has been found to exist in case of literacy achievements of Indian rural females followed by total females (54.60%) and rural person (46.12%). However, the gap is not so significant in the case Indian urban males. *This once again indicates that educational backwardness in India is more serious in the rural section and most in the case of rural females.*

3.3 Literacy Index

In order to capture the regional pattern of literacy development in the country, it is necessary to look at the literacy indicators at sub-state level. India has as many as 593 districts within the various states. To reflect upon the literacy variation in the country, the chapter will make an attempt to analyse the regional pattern at the district level by taking all the districts in the country.

The main objectives of this section is

- To construct the Educational Development Index for Literacy Parameters of the Indian districts on the basis of district level data for the period 1991 and 2001 as provided by the Census department
- To capture the regional pattern of literacy development across the country.

- To know the position of a district vis-à-vis the other districts.
- To compare the decadal variation on the basis of this index

It may be noted here that, Educational Development Index across the districts has recenly been calculated and published by NUEPA where 22 school level indicators in 5 broad categories were incorporated. Institute of Applied Manpower Research under the sponsorship of Planning Commission, GOI had also published such an index based educational report (GOI, 2001) where literacy as well as school level indicators have been incorporated. But both the first and second report reflects only a particular time period. The present exercise captured two particular periods of time (1991, 2001) by which inter district comparison for the two referred period will be undertaken. Simultaneously, decadal variation of a particular district will also be evident by using the index of a particular district for the two referred periods of time.

Literacy is an indicator which contains several correlated sub-parameters (e.g. male literay, female literacy, person literacy, gender gap etc). Analysis of such a socio-economic variable causes serious problem in the application of econometric methods. In order to avoid this co-linearity problem, the range of variables may be reduced to a fewer number by using Principal Component Analysis (PCA).

The method of PCA actually seeks to reduce a large number of variables into a new variable or some fewer new variables, called principal component/components, which is/are the linear combination of original set of variables (A_{xis}) as

$$P_i = a_{11}X_1 + a_{12}X_2 + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots + a_{1k}X_K,$$

where, X's are the set of original set of variables and P's are the Principal components which reduce the dimensionality (number of indicators) of the data set but retain most of the original variability in the data. The a's are called factor loadings and these are constructed in such a way so that the PCs satisfy two condition-

- The components are uncorrelated
- The first component absorbs and accounts for the maximum possible proportion of the total variation in the set of all X's, the second one absorbs the maximum remaining variation in X's and so on.

As such the components are so determined that the properties of these constructed PCs remain almost same compared to the original data sets. It may be noted here that, the number of PCs must have to be less than the original number of variables and the components will represent most of the characteristics of the original variables.

In order to construct LDI, following sub-parameters associated with the literacy character have been incorporated in the analysis - male literacy rate, female literacy rate (both for 7+ age group population), gender gap in literacy rate, rural-urban gap in literacy rate for male and female seperately. Thus in formulating the LDI, all the 5 literacy characters are first normalized.

There are certain limitations that are associated with the selection of the sub-parameters and time frame of the analysis. Firstly, in 1991, no census was carried out in Jammu & Kasmir and as such the LDI is not possible to construct for the districts of this state. Secondly, there are some districts in the country which are either purely rural or urban in nature and thus construction of EDI on the basis of rural-urban gap for these regions cannot be undertaken. Thirdly, data for 1991 is not separately available for some of the newly bifurcated districts.

3.3.1 Methodology of Principal Component Analysis (PCA)

The various literacy indicators used in the method have both positive and negative impact on literacy. For example, Gender gap in literacy rate (GGLR) and rural-urban gap (RUGLR) have negative impact on literacy development if they increase in value. On the other hand, both male and female literacy rate separately has a positive impact on overall literacy development.

Depending upon the nature of a particular indicator, the best and worst values of the indicator are identified (Mehta and Siddiqui, 2006).

Once the Best and Worst values are identified, the following formula is used to obtain normalize values-

$$NVij = 1 - \frac{\{Best\ Xi - Observed\ Xij\}}{Best\ Xi - Wrost\ Xi}$$

Normalized Values[2] always lies between 0 and 1.

With the help of this normalized value of the indicators, PCs are extracted along with their factor loadings and weights. Principal Component Analysis (PCA) is used to compute the Factor Loading and Weights of these indicators. Finally the development index is worked out using the following formula -

$$I = \frac{\sum_{i=1}^{n} V_i \ \{\sum_{j=1}^{n} F_{ij} E_j\}}{\{\sum_{j=1}^{n} F_{ij} E_j\}}$$

Where 'I' is the Index[3], Vi's are the i^{th} Indicator; F_{ij} is the factor loading value of the i^{th} variable on the j^{th} factor; E_j is the Eigen value of the j^{th} factor.

3.3.2 Construction of Index:

The PCA primarily extracts 8 PCs among which those are retained for the analysis whose values are greater than 1 (Kaiser's Criterion). Accordingly, three PCs for both 1991 and 2001, have been retained. The extracted components alltogather explain more than 95% variability in the data

Component Transformation Matrix

	1991			2001		
Principal	Eigen	Total	Cunulative	Eigen	Total	Cumulative
First	4.6368	57.96	57.96	4.6602	58.25	58.25
Second	1.8562	23.20	81.16	1.9261	24.08	82.33
Third	1.1110	13.89	95.05	1.0767	13.46	95.79

The first components for the year 1991 and 2001 explain allmost 58% variation with a high factor loading for the literacy indicators related with rural areas. At the same time the first component has also a high loading of Rural-Urban Gap both for male (0.97) and female (0.93). This component can, therefore, be named as the factor of rural literacy. The second component, on the other hand having around 24% explanatory power bears a high factor loading for the urban literacy indicators and finally the third component with around 14% explanatory power has a high factor loading for the gender related literacy indicators. Summarily, the first component stands for the rural literacy indicators and also for the regional (rural-urban) variation, the second for urban and the third is for the gender related literacy character thereby altogether reflecting the three major literacy indicators.

Factor Loadings for Literacy Indicators

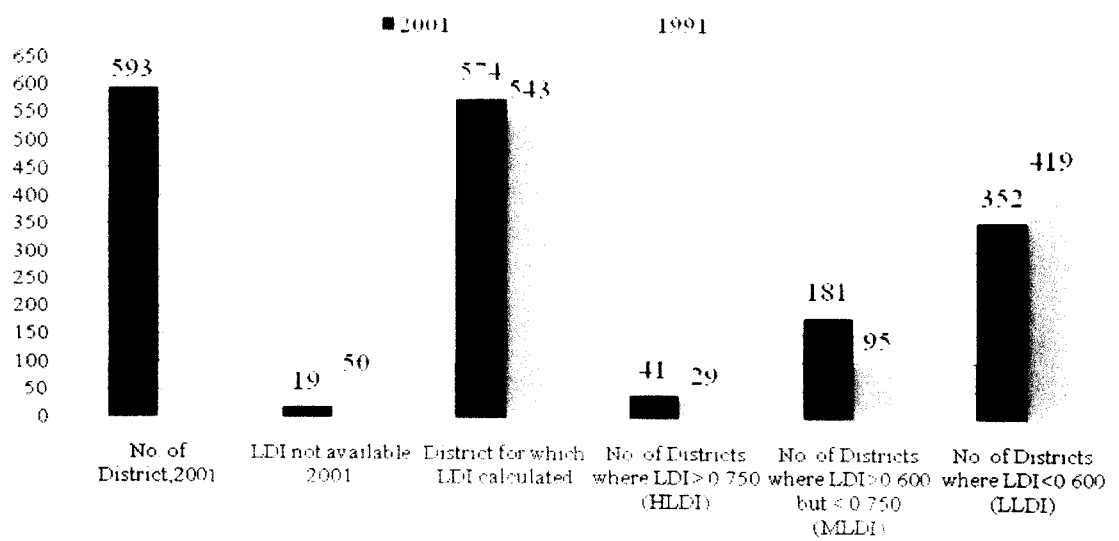
	1991			2001		
	Component 1	Component 2	Component 3	Component 1	Component 2	Component 3
UMLR	0.01531	**0.96371**	0.10666	0.06787	**0.96675**	0.13883
UFLR	0.10952	**0.86925**	0.47732	0.09712	**0.82739**	0.54826
UGGLR	0.18496	0.45587	**0.76243**	0.09961	0.37044	0.84384
RMLR	**0.75909**	0.64967	0.03580	**0.81125**	0.57892	0.06189
RFLR	**0.64344**	0.57307	0.49836	0.68954	0.48302	0.53291
RGGLR	0.04736	0.08318	**0.97055**	0.13750	0.08050	0.95743
RUGLRM	**0.97113**	0.11957	-0.03379	**0.97667**	0.05306	-0.02084
RUGLRF	**0.93431**	-0.10353	0.24757	**0.94034**	-0.08543	0.26470

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 5 iterations

3.3.3 Inferences on the PCA Results

Principal Component Analysis extracts and retains the PCs along with their Eigen values and calculates the loading of each factor for the variables. With the help of this, we then proceed to calculate the weights and finally the index for the districts followed by a series of steps as suggested by NUEPA. Each of the districts has then been assigned with an index that is called as literacy development index (LDI). According to the Census 2001, there are as many as 593 districts in India which are scattered in 28 States 07 Union Territories. Out of this, calculation of Literacy Development Index has been calculated for 543 districts in 1991[4] and 574 districts in 2001[5]. The value of LDI ranges highest from 1 to a lowest of 0. According to the value of index, the districts have been categorised in to three groups- high literate districts having LDI value more than 0.750 (HLDI), medium literate districts with an index value between 0.600 to 0.744 and thrdly low literate districts having LDI value less than 0.60.

Fig-3.4: Literacy Development Index (LDI) in India: 1991, 2001



Source: Calculated from Census of India, 2001.

In 1991 there were only 29 districts in this country which could hardly manage the high literate category and the picture marginally increases in 2001 where 12 more districts get them entried in this group (fig-3.4). The number of medium literate districts in 2001 has increased from 95 in 1991 to 181. This increase seems to be quite satisfactory. It may be noted here that these 181 districts are very close or closer to reach the 75% literacy rate which is an official target of this country. Nevertheless, the country has as many as 352 districts which are lowly literate districts. Education as a social variable has received due importance across the world especially over the last decade (1991-2001). In India, during this decade a series of programmes and policies were undertaken (e.g. NLM, DPEP, SSA, Constitutional ammendment etc) inspite of which a lot remains to be achieved in terms of literacy development.

Fig-3.5: LDI: Distribution of the Districts in 1991

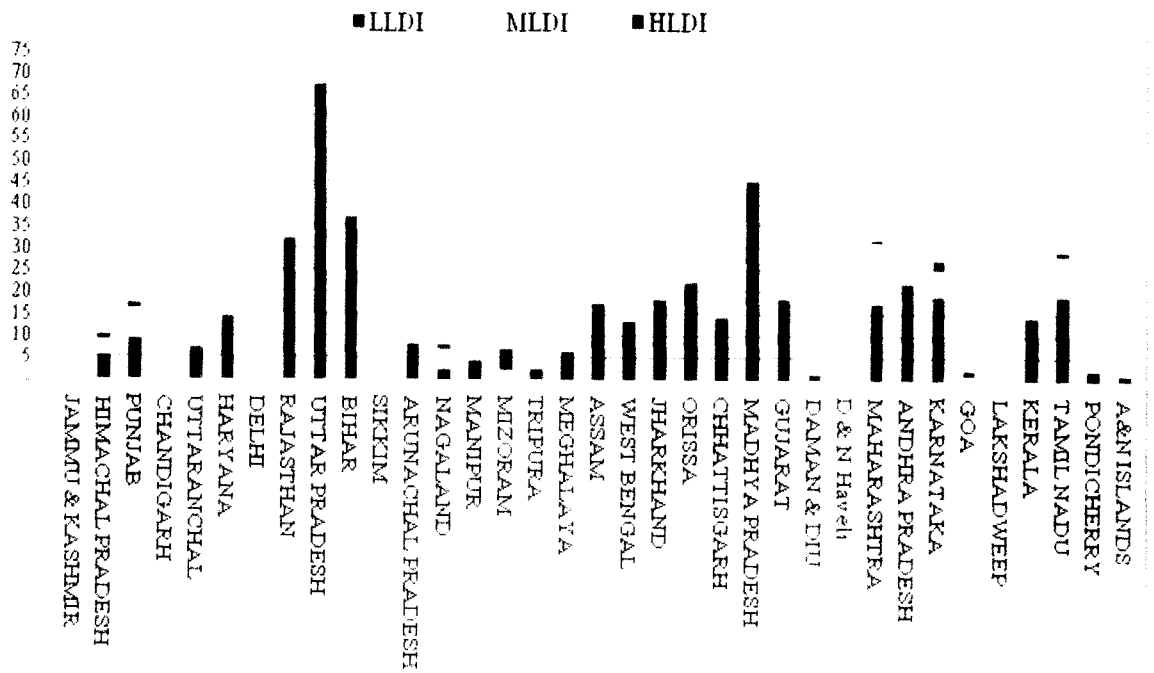
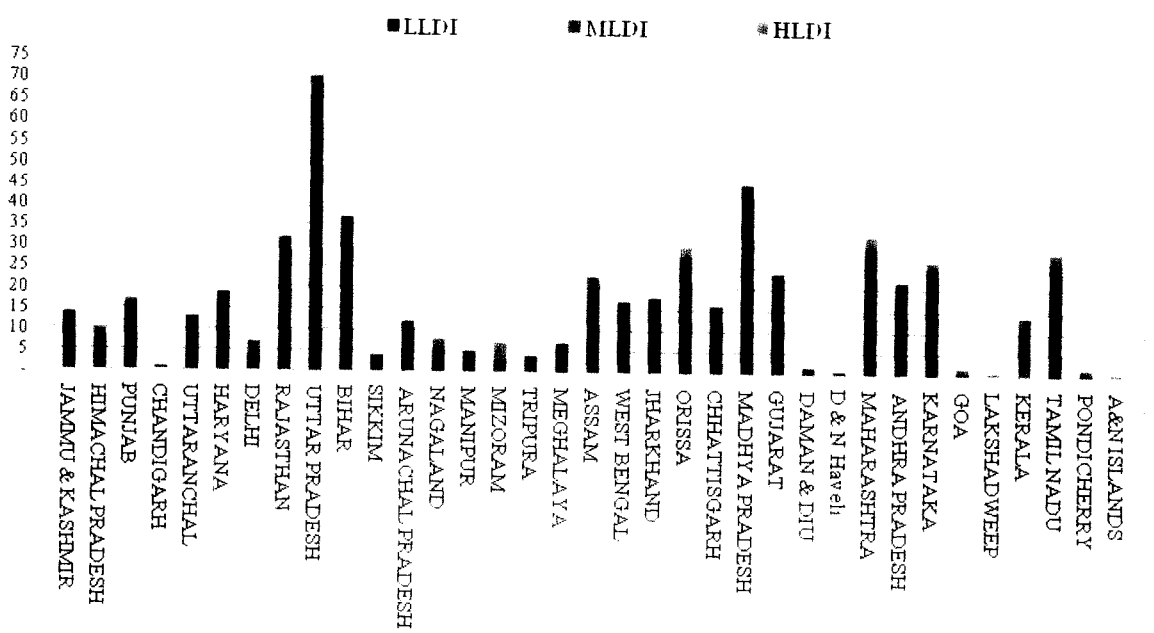


Fig-3.6: LDI: Distribution of the Districts in 2001



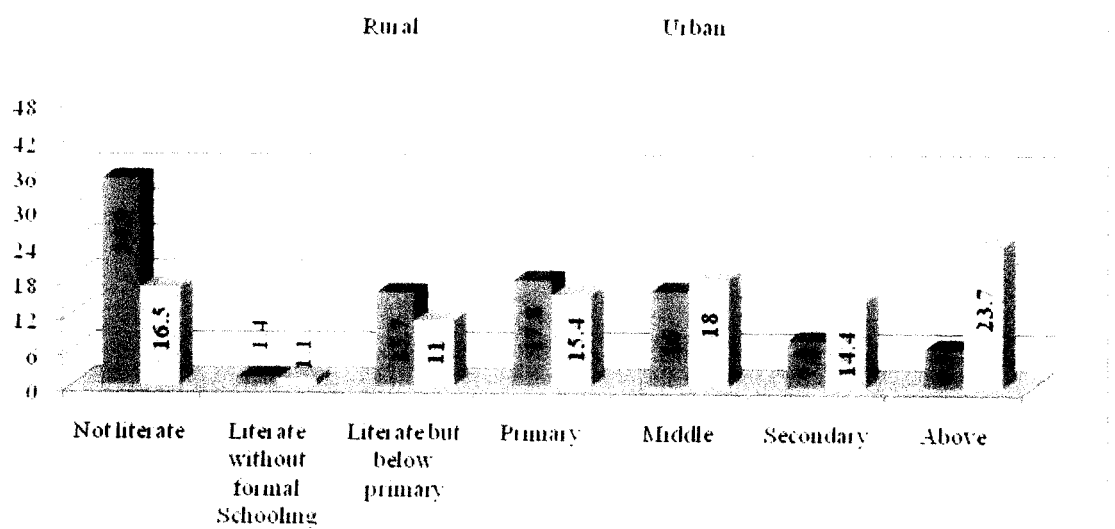
Source: Calculated from Census of India, 2001 (Fig-3.5 & 3.6)

State wise picture gives us a detailed and elaborate situation of the country. Excluding two UTs (DAMAN & DIU, Dadra & Nagar Haveli) 18 States (viz. Uttaranchal, Haryana, Rajasthan,Uttar Pradesh, Bihar, Sikkim, Arunachal Pradesh, Manipur,Tripura, Meghalaya, Assam, West Bengal, Jharkhand, Chhattisgarh, Madhya Pradesh, Gujarat, Andhra Pradesh) that had been remaining as the states where none of the districts have been ranked in the high LDI group both in 1991 and 2001 (fig-3.5 & 3.6). Again out of these 18 States, Bihar, Jharkhand and Arunachal Pradesh even did not have any of its districts to be ranked in the middle LDI group too. A state wise detail is shown in the following two diagrams. *West Bengal in this respect again shows quite an unsatisfactory result. Out of its 17 districts, 04 were found with middle LDI and 13 with low LDI in 1991.* The result in 2001 has become some thing to be better. 04 more districts were brought into the category of middle LDI forbidding all the districts to get entry into the highest quartile of the literacy category.

3.4 Review of Elementary Education in India: Schooling Status in India

Census of India defines a person literate if he or she can both read and write with understanding, in any language. Starting with this lower limit to be literate, a person with any higher level of education is also treated as a literate person as per the methodology adopted by the Census of India. The Ministry of Statistics & Programme Implementation, Government of India, through an organization, namely, National Sample Survey Organisation (NSSO) routinely publishes the detail educational data where a person is categorically identified by his or her educational level. Figure 3.7 depicts in brief the distribution of persons aged 7 years and above by level of education in India. It is being seen that in any level of education, there is a deprivation in the rural areas. Indian females, especially in the rural areas are lagging far behind. A little more than 50% of the rural Indian females are literate. Nearly 80% of the females in the age group 7 years and above in rural areas have not yet completed elementary level of education. The same picture is also seen between the males of urban and rural areas at all level education. Thus one can easily say that educational achievement is more problematic in rural areas of the country with a special reference to the rural females. This regional difference is very common in almost all the states of the country.

Fig-3.7: Percenage distribution of persons aged 7 years and above by level of education (2006-07)



Source: NSS Report No.527: Household Consumer Expenditure in India, 2006-07

3.4.1 Institutional Structure of Education in India

The District Primary Education Project (DPEP) was initiated in India in late 1994 and as a support agency National University of Educational Planning and Administration (NUEPA) developed a software 'District Information System for Education' (DISE) which is used for collection, computerization and analysis of various types of data related to schools. The DISE data is very much useful for analyzing all types of school related information and it has an ample coverage throughout the districts of India. The DISE 2004-05, has covered all the Indian States (except UTs) thereby covering almost all the areas of this country. A close look at the data as received from the survey is sketched below.

The total educational period in school in India mainly has 4 stages, namely primary, upper primary, secondary and higher secondary. The primary stage of education is generally meant for first 5 years of schooling although some States (Maharashtra, Meghalaya, Mizoram, West Bengal, Kerala, Karnataka, Assam and Gujarat) have 4 years of primary education cycle of their own. However, the primary and upper primary altogether comprises 8 years of schooling uniformly all over the country irrespective of State educational structure. The first eight years of schooling (primary and upper primary) are often called elementary education. The 9^{th} and 10^{th} grades are in secondary stage and 11^{th} and 12^{th} grades are in higher secondary stage. Accordingly, there are five categories of school that impart school level education in India, viz. primary only, primary with upper primary, primary with upper primary & secondary/higher secondary, upper primary only and upper primary with secondary/higher secondary. As per the DISE 2004-05, there are as many as 10, 37,813 such schools of which 87% are located in rural India. Regarding management, 84.8% are managed by government and the remaining 15.2% are privately managed schools.

State wise distribution of schools by area and management is depicted in table-3.3. Kerala has the highest share of Private schools (58.17%) in total schooling system in the State followed by Meghala (43.5%), Chandigarh (35.4%), Delhi (34.9%), Tamil Nadu (29.3), Pondicherry (27.7%), Maharashtra (25.2%). On the other hand, Jharkhand, Bihar, Tripura, Arunachal Pradesh, Haryana, Assam, Orissa are the States where private schools are not so prominent (less than 5%) in the total schooling scenario. In West Bengal the percentage is around 10% which appears to be substantially lower than the total average of all districts of 29 States.

Table-3.3: Distribution of Schools by Category (All Management)

Category	Total (All Management)	In % (All Management)
Primary only	693030	66.78
Primary with Upper Primary	179094	17.26
Primary with Upper Primary & Sec/H.Sec	23723	2.29
Upper Primary only	71880	6.93
Upper Primary with Sec/H.Sec	58970	5.68
No Response	11116	1.07
All	1037813	100.00

Source: Analytical Report 2005; NUEPA; TABLE- 2.1 & 2.2

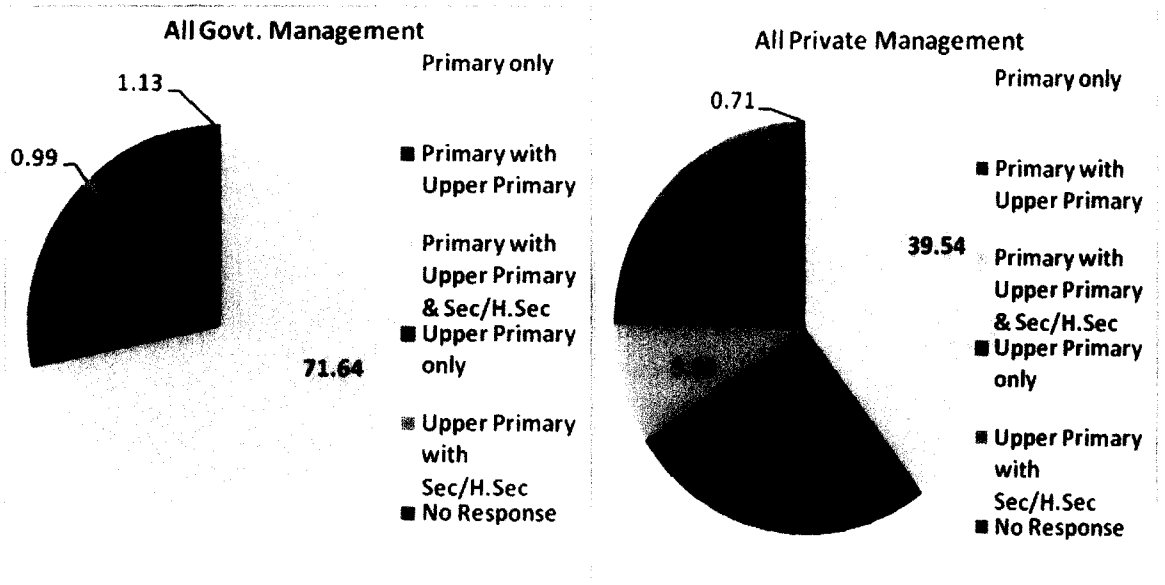
There is a specific distinction between the schools managed by government and private body. Following diagram (Fig-3.8) shows this difference clearly. *The institutional structure of government run schools has a larger share of primary schools (71.64%), where as the same is comparatively smaller (only 39.54%) for the schools managed by the private bodies.* This alternatively indicates that the ratio of primary to upper primary schools is much lower for the privately managed education system.

Distribution of schools by category (primary, upper primary etc.) throws light on an important point. Among the different category of schools, Primary with Upper Primary and Primary with

Upper Primary & Secondary/Higher Secondary type of schools have specific educational access of their own. Once the children get admitted at primary section in this type of school, they don't need to search alternative schools after completing the primary grade of education (e.g. 4/5 years of primary education/ 8 years of elementary education/ 10 years of secondary education). They can continue their education up to at least elementary level within the school. Proportionately, only 16.64 % of total government schools in the country are such stage-integrated schools that have the scope of continuing education up to at least elementary education, while around 36% of total private schools are stage-integrated schools that have this specific facility for the scholars (Figure-3.7.a).

State wise, Chandigarh, Gujarat, Karnataka, Pondicherry, Tripura, Delhi, Maharashtra, Kerala are the States that provides better facility in this respect. West Bengal in this respect remains at the bottom of the list. Only 1.2% of total schools in West Bengal have such stage-integrated schooling facility. Management wise, about 36% of total schools are stage integrated, while the same is only about 17% in case of rural areas (Table-3.4).

Fig-3.8: Distribution (in %) of Schools (All Govt. & Private Management) 2005



Source: Analytical Report 2005; NUEPA

The regional structure of Educational Institution in India has another important bias in favour of urban areas. The Ratio of Primary to Upper primary Schools/Section is much higher in the rural areas. It is 2.93 in rural areas, whereas the same is only 1.64 in case of urban areas. The Programme of Action (1992) envisaged an upper primary school/section for every two primary schools/sections. The difference is more prominent in case of the schools under government management. The privately managed schools have actually no such rural-urban bias at all. In rural India, out of 29 States/UTs for which DISE Data was collected, 17 States/UTs show this ratio to be more than 3 for the schools managed by the government. All the BIMARU States including Tamil Nadu, West Bengal and Assam are still in the queue. Interestingly, in rural West Bengal more than 13 primary schools/sections had been managed by an upper primary school/section. In case of all area all management, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Jharkhand, Meghalaya, Sikkim, Uttar Pradesh and West Bengal are the States where this ratio is found to be higher than 3 and it is the highest in West Bengal (5.3). *So it appears that insufficient number of upper primary schools compared to primary schools especially in rural India is one of the major problems of school education.*

Table-3.4: School System in India- 2005

Area	Total Rural	Total Urban	Total Govt.	Total Private	Total #	% Urban #	% Private #	% of Stage Inte-grated #	Primary / Upper Primary #
Andhra Pradesh	77,178	15,590	75,498	17,270	92768	16.8	18.6	18.27	2.53
Arunachal Pradesh	2,072	152	2,132	92	2224	6.8	4.1	26.26	3.57
Assam	37,972	2,203	38,034	2,141	40175	5.5	5.3	2.51	3.25
Bihar	49,654	3,621	52,654	621	53275	6.8	1.2	23.27	3.6
Chandigarh	30	148	115	63	178	83.1	35.4	82.58	1.17
Chhattisgarh	35,084	3,523	35,933	2,674	38607	9.1	6.9	7.44	3.2
Delhi	721	3,546	2,779	1,488	4267	83.1	34.9	34.45	1.67
Gujarat	31,141	5,174	32,646	3,669	36315	14.2	10.1	63.32	1.5
Haryana	11,981	1,218	12,548	651	13199	9.2	4.9	4.50	2.08
Him. Pradesh	15,071	605	14,294	1,382	15676	3.9	8.8	5.14	2.69
J & K	14,143	1,782	13,379	2,546	15925	11.2	16.0	34.66	2.69
Jharkhand	21,035	1,164	22,004	195	22199	5.2	0.9	24.05	3.78
Karnataka	43,559	9,902	43,887	9,574	53461	18.5	17.9	48.58	1.97
Kerala	9,709	1,975	4,887	6,797	11684	16.9	58.2	25.74	1.83
M. Pradesh	97,270	14,457	97,255	14,472	111727	12.9	13.0	17.09	2.77
Maharashtra	61,309	15,272	57,301	19,280	76581	19.9	25.2	32.44	1.84
Meghalaya	7,516	680	4,634	3,562	8196	8.3	43.5	5.77	3.91
Mizoram	1,625	721	1,930	416	2346	30.7	17.7	12.36	1.56
Nagaland	2,087	269	1,785	571	2356	11.4	24.2	24.32	2.52
Orissa	47,094	3,755	47,969	2,880	50849	7.4	5.7	21.43	2.88
Pondicherry	289	274	407	156	563	48.7	27.7	35.52	1.76
Punjab	18,708	3,232	19,075	2,865	21940	14.7	13.1	17.69	2.14
Rajasthan	75,773	11,918	74,233	13,458	87691	13.6	15.3	26.91	2.81
Sikkim	1,021	49	848	222	1070	4.6	20.7	30.75	3.18
Tamil Nadu	40,739	9,697	35,681	14,755	50436	19.2	29.3	21.65	2.66
Tripura	3,227	229	3,331	125	3456	6.6	3.6	46.12	2.02
Uttar Pradesh	129,321	13,535	116,347	26,509	142856	9.5	18.6	3.53	3.63
Uttaranchal	16,671	1,957	15,614	3,014	18628	10.5	16.2	3.70	2.94
West Bengal	49,824	9,341	53,345	5,820	59165	15.8	9.8	1.25	5.3
All Districts	901,824	135,989	880,545	157,268	1037813	13.1	15.2	19.54	2.68

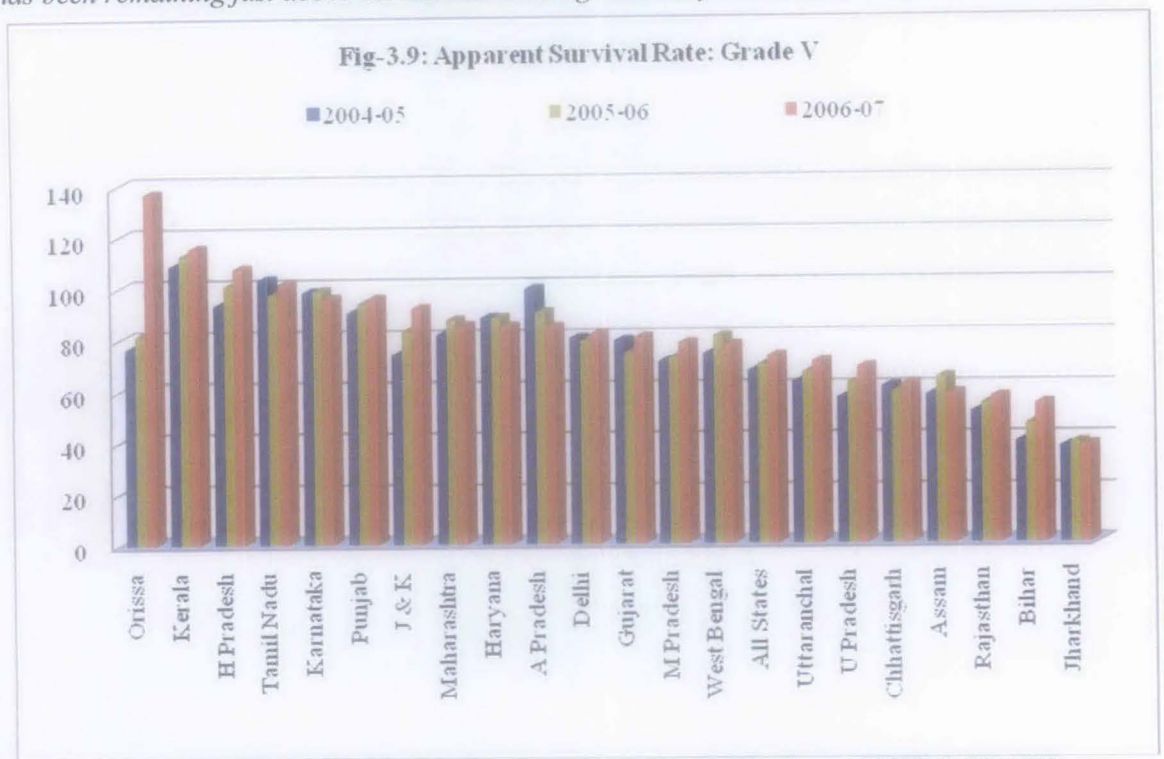
All area all management; Source: Calculated from Analytical Report 2005 (Table: 2.11 & 2.12); NUEPA

3.4.2 Educational Performance: Primary Grade Completion and Dropout Rate

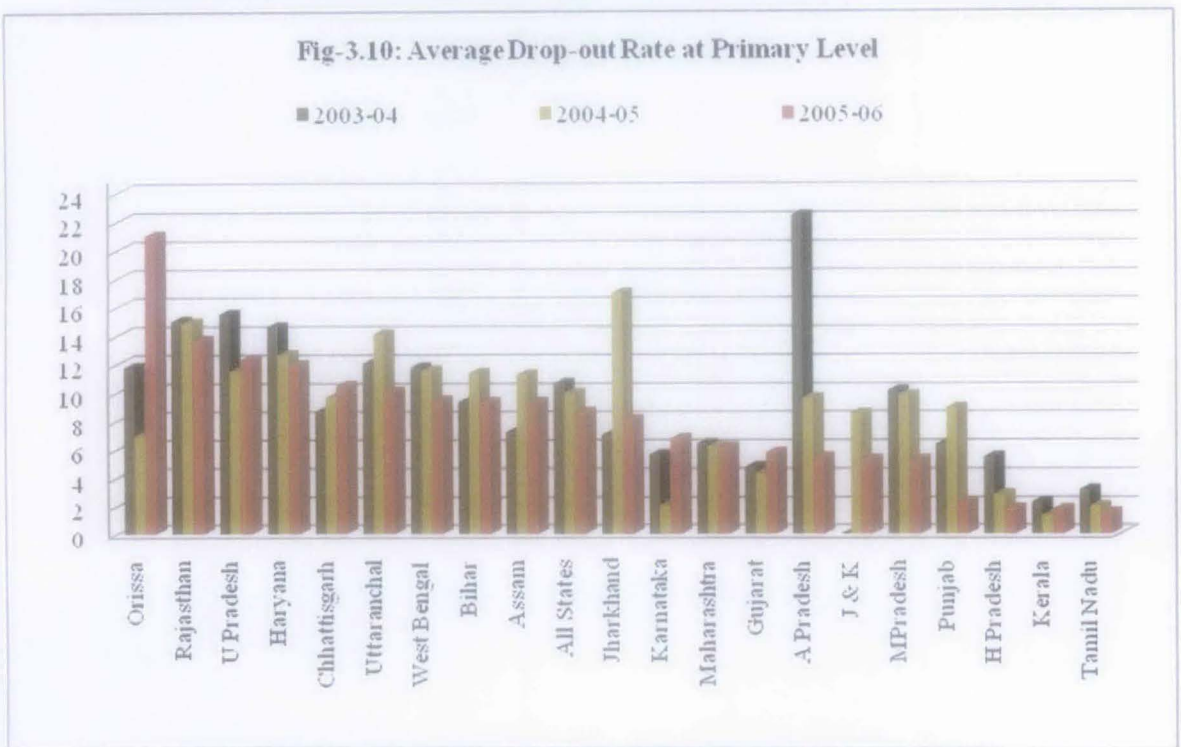
As has already been stated earlier in this chapter, India is on the verge to achieve the universalisation of primary education in the near future. However it is a gigantic task for a country with the largest schooling age children. Universalisation of Primary Education (UPE) needs universal enrolment along with 100% survival rate. Dropout at primary stages will dislocate the process in achieving the target. The net enrolment ratio is much higher and it is comparable with the educationally developed countries, discussion thus needs to concentrate on two main issues - *Primary Grade Completion Rate and Dropout Rate to identify the critical State in the country.* Three years (2004-05, 2005-06 and 2006-07) data has been used for the purpose. The data have been represented by the following two figures (Fig-3.9 & Fig-3.10) for major 21 states in India (excluding the 07 north eastern States and 07 small States/UTs).

Orissa, being a severely lagging State in respect of completion rate of primary level education, has overtaken many States in the year 2006-07 and thus has been placed at the top-most position. Otherwise, this particular performance indicator has been showing its expected value for the States. For example, *the BIMARU States except Andhra Pradesh are found to be the laggard States in this respect. Similarly, the relatively advanced States (Kerala, Himachal Pradesh,*

Tamilnadu, Maharastra, and Karnataka) also maintain a higher survival rate. West Bengal here has been remaining just above the national average and very much closer to the national rate.



Note: Survival Rate is calculated based upon one year enrolment data, Source: NUEPA & GOI, 2008.



Note: Average drop-out rates has been computed based on data of common schools
Source: NUEPA & GOI, 2008.

Dropout Rate is the second important component which is enviable to be at the minimum level as far as possible for Universalisation of Primary Education. The Drop-out Rate represents the percentage of pupils who drops out f rom a given grade or cycle or level of education in a given school year (SES 2004-05). The estimate of MHRD states that the rates of drop out have decreased from 64.9% in 1960-61 to 29.00% in 2004-2005 in primary classes. The rate of dropouts which was 78.3% in 1960-61, has come down to 50.84% in 2004-2005 in the upper primary classes

(MHRD, 2007). The estimate is, however, provisional since 1999-00. The actual rate in this respect seems to be quite lower than the provisional data of MHRD. Here we have presented the data as published by the NUEPA in its Flash Statistics, 2006-07 (NUEPA, 2008). The recent trend of dropping out of children is also observed to be decreasing (Fig 3.10 All States). At primary level, the rate is calculated at 8.61%. Again Tamil Nadu, Kerala, Himachal Pradesh, Punjab are doing well in maintaining a lower rate of dropouts in consecutive years. *West Bengal occupies 13th position out of 20 major States and its performance is worse than Jharkhand, Assam, Bihar, Madhya Pradesh etc. Thus the State needs a special intervention for bringing it in line with the other better performing States in the country.*

3.4.3 Access to Public Education

In the literature on education, access to school is an important positive component for the development of school education. But various indicators are used to explore this aspect. In this respect, NUEPA has used Percentage of Habitations not Served and Number of Schools per 1000 Population as the two indicators to denote access to school in their Educational Development Index Report. But the intake capacity of a school varies from school to school. So it does not seem that Number of Schools per 1000 Population may be the best indicator of access. Actually, accessibility is the schooling facility available to the children. Naturally, a school with an intake capacity of 500 students and a school with 1000 cannot have the equal accessibility power. Intake capacity therefore, may be an indicator of access to school before the children. This intake capacity depends, among other things, on the number of teachers. There are also some other infrastructural conditions (e.g. building facility) on which intake capacity may depend. But, an additional post of teacher is generally sanctioned to a school depending upon its student roll strength. It is for this reason that Number of Teachers per 1000 child population (5-14 years) has been constructed and shown in Table 3.5 along with the NUEPA's access to Schools per 1000 Population.

All India School Education Survey provides information on access to education on the basis of availability of school within a rural habitation, Census data on the basis of revenue or census village. Both these sources help to identify geographical proximity. According to 7th All India School Education Survey (2002), 87.0% of the total habitations (1231391) in India were served by a primary school within a distance of 1km and 53% of the habitation within them, while the coverage was only 78.1% for upper primary schools within a distance of 3 km and 18.4% within the habitation. Punjab, Andhra Pradesh, Haryana and Gujarat are the States where more than 70% of the rural habitations have been served by primary schools within them. Himachal Pradesh, **West Bengal**, Tripura, Jharkhand, Arunachal Pradesh, Uttar Pradesh, Uttaranchal and Assam are States of India where more than 50% of the rural habitations were not served by any primary schools within them. Himachal Pradesh being a hilly district and owing to its geographical nature may be thinly covered by the access of schools, but the accessibility of other States is very poor.

The District Primary Education Programme (DPEP) was initiated in 1994 in India with a view to improve the access, infrastructure and quality of primary education in India. This was initiated as a programme rather than a promise. To promote the line up of DPEP, a flagship scheme was again launched in the name of Sarva Shiksha Abhiyan (SSA) in 2001. The main objective of SSA was to achieve universal primary education by 2007 and universal elementary education by 2010. Thus it covers the whole elementary system of education and also all the districts thereby reflecting to be a holistic one in the field of elementary education in India. Recently it has been renamed as Sarva Siksha Mission maintaining all its earlier objectives. Considering this two crucial policy measures taken by the government, it is important to review the development of elementary education since 1994 in India.

The DISE (2004-05) data shows that about 2.5 lakh new schools were added since 1994 which is a great achievement in the recent development scenario. The trend in growth as seen in the recent years also indicates further establishment of schools in the near future.

Table-3.5: Access to School in India 2004-05

States/UTs/All Districts	School/1000 5-14 yrs Population*	Rank	Teacher/ 1000 5-14 yrs Population*	Rank	% of Habitations having Primary School within 1 Km**	Rank	% of Habitations having Upper Primary School within 3 Km**	Rank
Andh Pradesh	5.24	13	26.35	9	93.91	3	74.73	22
Arnchl Pradesh	7.29	7	28.43	7	51.62	30	31.17	30
Assam	5.79	11	0.02	30	84.34	20	82.04	10
Bihar	2.23	27	6.93	29	88.92	13	81.10	11
Chandigarh	0.98	30	24.68	11	86.96	18	100.00	1
Chhattisgarh	7.37	6	19.94	18	90.54	10	69.67	25
Delhi	1.37	29	20.83	17	100.00	1	100.00	2
Gujarat	3.20	21	16.82	22	93.62	4	95.52	3
Haryana	2.49	26	11.29	26	91.90	8	89.11	5
Him. Pradesh	11.84	2	39.74	3	74.98	29	77.60	19
Jam & Kashmir	6.00	9	26.83	8	78.60	25	75.91	21
Jharkhand	2.98	25	9.56	27	77.17	27	61.43	28
Karnataka	4.49	14	19.13	20	88.41	15	88.26	6
Kerala	2.11	28	21.50	15	79.46	24	84.12	9
M. Pradesh	7.03	8	23.76	13	89.20	12	79.56	13
Maharashtra	3.55	20	20.90	16	91.17	9	78.18	17
Meghalaya	12.49	1	38.64	5	85.46	19	59.46	29
Mizoram	11.02	3	59.09	1	90.35	11	65.95	26
Nagaland	4.36	16	33.85	6	94.59	2	61.64	27
Orissa	5.89	10	18.35	21	82.93	22	73.55	24
Pondicherry	3.16	22	26.11	10	91.98	7	87.70	7
Punjab	4.00	19	16.67	23	93.46	5	90.50	4
Rajasthan	5.73	12	19.34	19	79.84	23	78.26	16
Sikkim	7.83	5	56.22	2	77.91	26	76.26	20
Tamil Nadu	4.34	17	21.55	14	88.48	14	74.31	23
Tripura	4.42	15	38.97	4	75.86	28	79.91	12
Uttar Pradesh	3.03	24	8.49	28	87.96	16	78.43	15
Uttaranchal	8.60	4	24.45	12	84.08	21	85.34	8
West Bengal	3.11	23	12.21	25	92.28	6	79.44	14
All Districts	**4.11**		**16.54**		**87**		**78.10**	

Source: * Population figure from Census 2001, No. of Schools & Teacher from Analytical Report 2005 (Table: Table 2.2 & 5.1); NUEPA, 2007; **Seventh All-India Education Survey 2002 Note:

Again, if we analyse the growth of schools category wise, it is seen that up to 2004-05, out of total 2.5 lakh newly set up schools, 1.74 lakh (69.5%) are in the category of primary schools only. The remaining 0.76 lakh are either upper primary or primary integrated upper primary schools. This indicates that the deficiencies of upper primary schools/sections are diminishing rapidly after the introduction of DPEP. The building type of this newly set up schools is also better with 70% of the schools having pucca buildings and 10% are partially pucca. Negligible number of schools (0.11%) has been running under open sky/tent. With such a holistic schema it is the next task to compare the Indian States on the basis of school education scenario in a much broader concept

3.5 Educational Development Index

In India, National University of Educational Planning and Administration (NUEPA) is an apex body working over the country's educational scenario and supervising the different activities of Sarva Siksha Aviyan (SSA). It has estimated an Educational Development Index (EDI nuepa) for the 35 Indian States and Union Territories in order to review the progress of SSA towards Universal Education for primary and upper primary levels as well as for Elementary Education. The EDI, which is prepared by the NUEPA has been developed on four broad parameters of access to school, school infrastructure, teacher related indicators and elementary education outcomes. *The index takes into account 22 variables. Based on the data of District Information System of Education (DISE 2005-06) the value of the index ranked Kerala at the top and Bihar at the bottom*

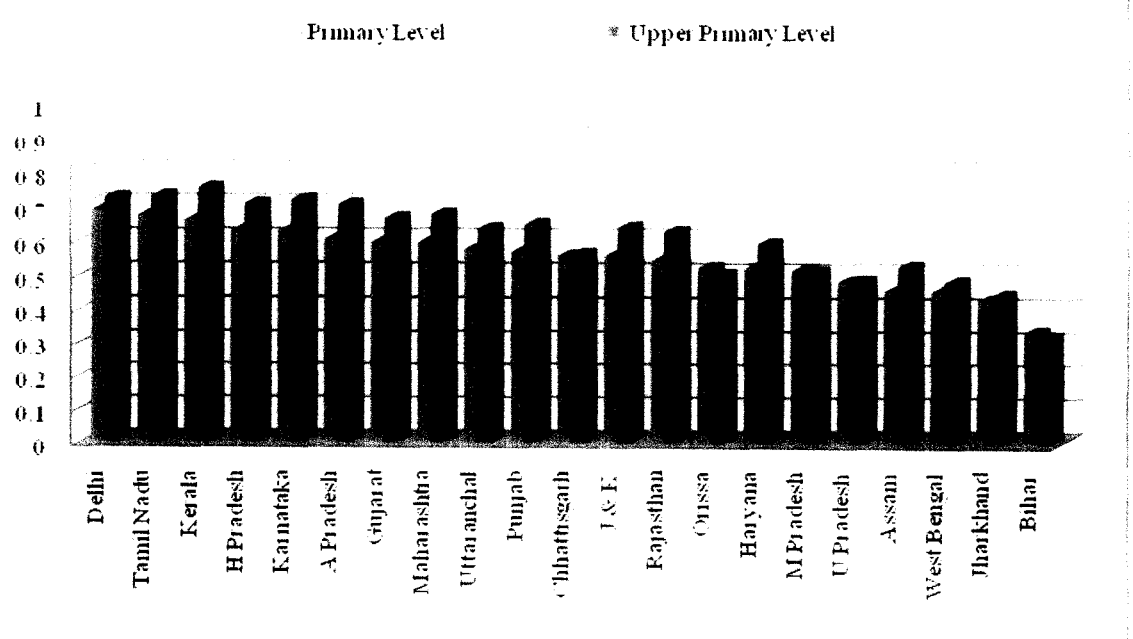
in respect of elementary education. Out of the top 8 states, 5 are southern states (Kerala, Tamil Nadu, Pondicherry, Karnataka and Andhra Pradesh) and the remaining 3 are northern states (Delhi, Chandigarh and Himachal Pradesh). West Bengal has been ranked 32nd in this respect. The value of the index for primary and upper primary level of education for the 21 major Indian States have been shown in figure 3.10 where it is seen that West Bengal ranks just above only two major States namely, Bihar and Jharkhand.

The DISE survey 2005-06 covered 604 districts of the country and collected data from 11, 24,033 schools that impart elementary education across the country. It has been found from the survey that the enrolment of students in classes I to VIII in the year 2005-06 increased considerably (12.28 million over the previous year). However, 180 of the 581 districts have reported a decline in primary enrolment. The Report was thus a blend of success and failure.

The basic principle underlying the computation of an EDI is to know position of a state vis-à-vis other states. The weights in the computation of an EDI are determined by using Factor Loadings and Eigen Values from Principal Component Analysis (PCA). Actually the EDI explains a lot about the regional variations that exist in the country which is true both for Primary and Upper Primary levels of education. As many as 22 school related indicators have been used into the following four sub-groups for constructing the EDI: Access, Infrastructure, Teachers'; and Outcome indicators.

While presenting the EDI for the year 2005-06 it has been stated that considering the different sizes of States and UTs with respect to the population and number of schools, they may be grouped under three categories (Elementary Education in India: Analytical Report 2005-06, NUEPA,New Delhi, 2007) - major states (21 states), states from the north-eastern region (7 states, excluding Assam) and smaller states (7 states). Most of the major states have experience of implementing large scale programmes, such as DPEP, but the same is not true in case of states in the other two groups which practically did not experience any such programme in the past. SSA is the first major programme which has been initiated in these smaller states besides the major states.

Fig-3.11: Educational Development Index 2005-06



NUEPA, 2008

Among the north eastern states Sikkim and Manipur are the two states performing much better than a number of bigger states both in Primary and Upper Primary levels of education. Among the smaller states Pondicherry, Lakshadweep and Chandigarh are maintaining their relative higher EDI values compare to all the Major States both at primary and upper primary level. It may be of interest to note that Chandigarh's overall ranking is 5th (EDI 0.64) at the Primary and 3rd (EDI

0.74) at Upper Primary level. It may be noted here that Arunachal Pradesh with having a substantial population, are lagging far behind among its surrounded states. As per the DISE Data 2006-07, it ranks 32nd position which was 33rd in 2005-06 (NUEPA, Flash Statistics 2006-07).

Among the major States, all the States in the group have the experience of undertaking major programmes, such as the District Primary Education Project, Sarva Siksha Mission etc. except Delhi. Among these, the states from southern part of the country (Kerala, Karnatak, Tamilnadu, Andhra Pradesh) including Delhi, Himachal Pradesh, Gujarat and Maharashtra are the States performing well in the field of elementary education (fig-3.11). Bihar and Jharkhand consistently have been remaining as the two bottom most states so far the EDI values at elementary level is concerned for the year 2005-06 and 2006-07 (NUEPA, Flash Statistics 2006-07). During the same period, West Bengal too, has ranked 19 just above its neighboring two most under developed states. It is a matter of conflict and also a question that, why West Bengal with a moderately higher literacy rate 68.64% (9th among the 21 states in 2001) has been remaining in such a hard reality in the field of elementary school education. This reason itself demands a separate study for this state. However, considering the value of the indices (Access, Infrastructure, Teacher and Outcome) used in constructing the EDI, it appears that in West Bengal, the value of access index is sufficiently higher at primary level. But at upper primary level it remains at the bottom most position (34th as per DISE 2006-07). The value of outcome index is 34 as per DISE 2006-07. Apart from this, the state has very poor infrastructural facilities both at primary and upper primary level (Rank is 29th &31st as per DISE 2006-07). Again, the institutional factors are not only the reasons that may affect child schooling and their performances. Rather some socio-economic factors may be associated for such a dismal result of the State. Thus it is of special interest to study whether the institutional or supply side factors, i.e., the indicators of infrastructure, access to school or teacher related indicators do have any statistical significance with the indicators of school level performance in this very particular state, West Bengal. All these need a specific study within this State at more disaggregated level which is undertaken in the following chapter.

Note

1. Grade Completion Rate is defined as the proportion of students that complete nth Grade in n years.
2. The above methodology of normalization was recently used by NUEPA, New Delhi (http://www.nuepa.org for details- Mehta & A. Siddiqui).
3. For details- Mehta & A. Siddiqui: 'Educational Development Indexes- A Suggsestive Framework For Computation', Department of Educational Management Information System, National University of Educational Planning and Administration, New Delhi, India.
4. In 1991 no census was carried out in J&K, some districts were bifurcated after 1991.
5. 19 districts in India are either pure urban or purely rural in character

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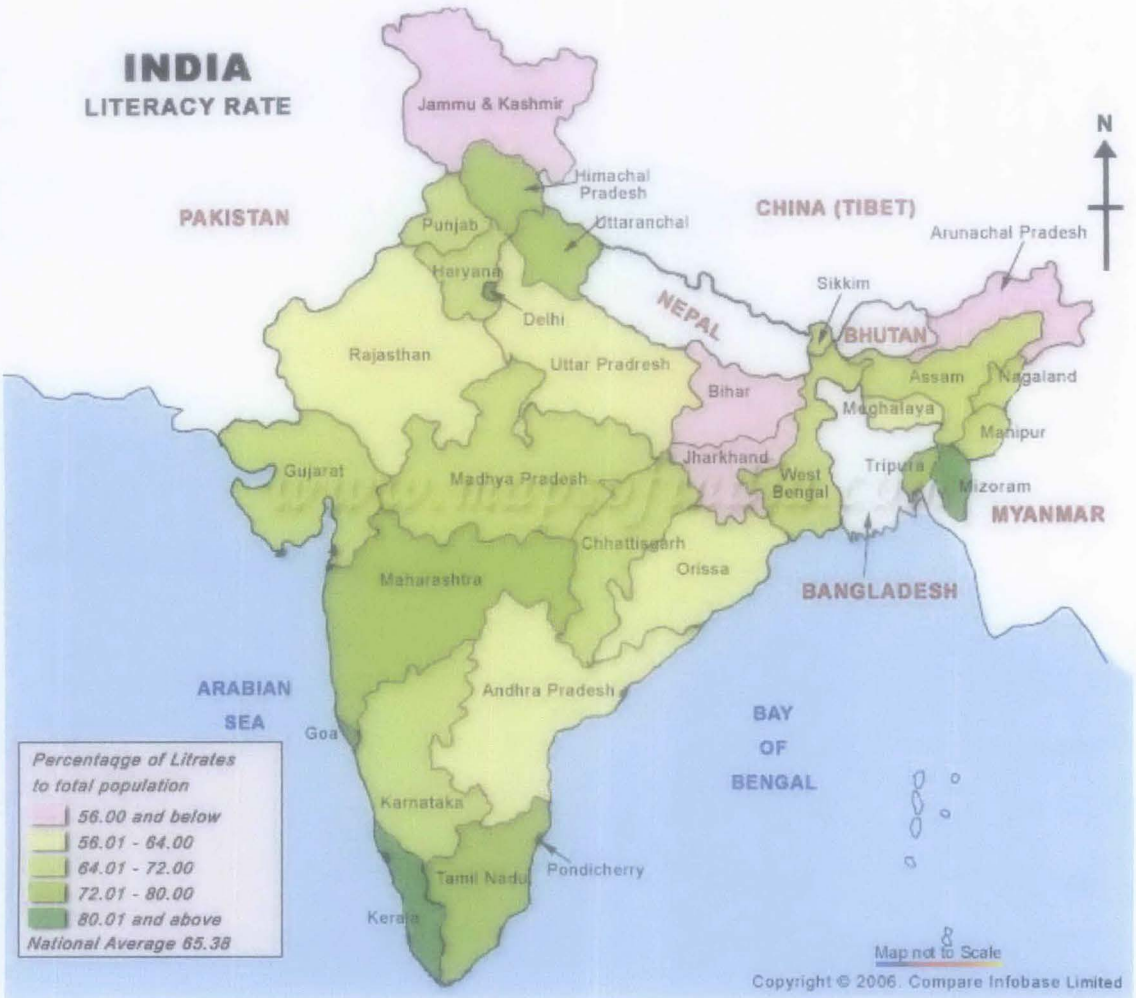
APPENDIX-3.I

Indian States as per Literacy Range



Chapter-4

District Level Variation in Elementary Schooling and Literacy Rate in West Bengal

4. Introduction & Need for the Study

In analyzing the literacy pattern and elementary education in India in the previous chapter, certain specific educational variations has been observed for the state of West Bengal providing sufficient reasons to study the nature and causes of such variations within the state.

The decennial census data on literacy shows that over the last five decades, the literacy rate of West Bengal has been remaining closer to the national average and the overall gain in literacy rate (Person) over the last 50 years (1951-2001) in the state is more or less the same as that of the national level (Figure-4.1). Besides this, as per the literacy data of 2001, the state shows a large variation in respect of educational outcomes. District level literacy rate varies from a lowest of 47.9% in Uttar Dinajpur to a highest of 78.1% in North 24 Parganas (excluding the metropolitan district of Kolkata) with of course a large extent of literacy variation at block and village level too. This captures the central theme of the present study. The state has certain unique characteristics so far as literacy and educational achievements are concerned. They are –

1. The state was in the third position after Kerala and Delhi among the other major States in 1951. Now in 2001, it has come down to the 9th rank among the 21 major States in India.

2. The State could barely manage its position around the National average throughout the last decades.

3. The analysis of literacy achievement index shows that West Bengal being much closer to the country's national average but lies below the average national achievement level.

4. The analysis of principal components in which district literacy indices were constructed shows that, West Bengal has been one of the states where none of the districts ranked in the high LDI group in both 1991 and 2001.

5. It is also stated that so far as the primary completion rate in the Indian States is concerned, West Bengal has been remaining just above the national average and very much closer to the national rate. In respect of dropout rate at primary level, West Bengal occupies 13th position among the major States and it even did worse than Jharkhand, Assam, Bihar, Madhya Pradesh etc.

6. Finally, the analysis of Education Development Index of NUEPA (based on the DISE data 2005-06) categorically stated that West Bengal has been registering itself at the rank 19, just above its neighboring two most underdeveloped states among the 21 major States. Thus the question remains as to why the state of West Bengal with a moderately high literacy rate at 68.64% (9th among the 21 states in 2001) has conflicting reality in the field of elementary school education.

The EDI published by the NUEPA has placed the state as one of the low ranking states in India. The state has barely managed its 32nd rank out of 35 Indian States and Union Territories. The district wise EDI also draws a very sorry picture for the State. In computing the district level EDIs, the indexing and accordingly ranking covers569 districts across 27

States and Union Territories, the rest of the districts could not be considered because of data limitations and non-availability of information on child population. The district specific EDI reveals that none of the districts across nine of the states found a position in the first 143 districts (Top Most Quartile). These states are Arunachal Pradesh, Assam, Bihar, Jharkhand, Madhya Pradesh, Meghalaya, Orissa, Tripura and West Bengal. All the 19 districts of West Bengal have ranked as low performed districts. The national rank of the district in this respect is shown in Table-4.1.

Table - 4.1: District level Educational Development Index in West Bengal

Name of the District	All India Rank	Rank within the State
Kolkata	318	1
Bardhaman	336	2
Hugli	356	3
Paschim Mednipur	366	4
Bankura	388	5
Birbhum	392	6
Haora	409	7
Dakshin Dinajpur	423	8
Cooch Behar	430	9
Nadia	460	10
Jalpaiguri	475	11
Purba Mednipur	476	12
North 24 Parganas	479	13
Siliguri	499	14
South 24 Parganas	501	15
Puruliya	502	16
Uttar Dinajpur	505	17
Murshidabad	506	18
Malda	520	19

Source: - GOWB, 2007

Kolkata has been placed at the top of the list among the 19 districts in the State. However, the all India rank of the district is 318. The 11 districts whose ranks are below 429 are included in the list of 142 Bottom Most Quartile at national level. Five out of six districts of northern part of the state (popularly known as Uttar Banga) have fallen at the bottom most quartile (Table 4.1). Apart from this low performance in the field of elementary education, there is also a large variation in this respect. There is a difference of rank of 200 positions between the high and low performed district (Kolkata and Malda) in the state. This large extent of variation demands an extra attention for focusing the study on this particular state.

All these lead to the conclusion that the state requires a special intervention for bringing it in line with the other better performing states in the country. The problems relating to educational backwardness vary between regions and between groups of people (Sengupta et al, 2001). The present chapter focuses on the particular state of West Bengal and its districts to understand its educational backwardness and the relative backwardness of the districts. All the 17 (incorporating Purba and Paschim Medinipur into one district and excluding the metropolitan district Kolkata) districts of the state are considered as planning units in the district level analysis. Occasional reference is made to the 341 CD blocks in the state and in particular, some specific village level indicators have been added to pinpoint the root of the problem. The studies so far carried out in the concerned area have mostly concentrated either on the most developed states or on the least developed ones (e.g. P.Duraisamy, 1992 on Tamil Nadu citen in Bhatty, 1998; Dreze and Gazdar, 1996 on UP; Unni, Jeemol on Gujarat; Nambissan, Geetha, B, 2001 on Rajasthan; Jabbi and Rajyalakshmi, 2001, on Bihar; Devi, Sailabala 2001, on Orissa). However not much attention has been extended towards this particular state.

4.1 Objectives of the Present Study

Given the challenges that surround the educational development in the state of West Bengal, this chapter gives special emphasis on this particular state with a view to observe the nature and causes of educational development at a disaggregated level. In particular, the present analysis tries to make an attempt-

- To evaluate the trends of indicators relating to primary education and literacy rate for the period from 1951 to 2001 with a special reference to the literacy panorama of 2001

- To review the differential growth with regard to literacy rates across the districts, blocks and some specific villages.
- To ascertain the nature and intensity of some socio-economic factors explaining the Literacy Variation in West Bengal at district and sub-district level.
- To provide an explanation of educational deprivation in the State at elementary level with reference to the Educational Development Index developed by the NUEPA
- To arrive at conclusions on educational variation and deprivation in the state

In order to capture the above objectives, the present chapter has been designed and farmed out into seven sections. Section I has been presented to introduce the theme of the chapter and the need of the present study in brief. Section II describes the general profile of the State along with some important educational indicators in the State with its relative position in India. Section III has tried to draw the district level trends of development in achieving literacy level over the last 50 years (1951-2001) with a special attention to the literacy variation in the state pertaining to the data of 2001. Section-IV has briefly demonstrated the different dimensions of variation in literacy rate. In Section V, an attempt has been made to determine the socioeconomic factors behind literacy variation in the state at district and sub-district level. Section VI has analyzed the related educational indicators reflecting the elementary education in the State and finally Section VII concludes the analysis by specifying its significant observations and limitations of the study and some suggested policy measures.

4.1.1 Methodology and Data Collection

As of 2001 Census, the number of districts in India has increased from 466 in 1991 to 593 in 2001 thereby adding 127 new districts over the last 10 years. The State of West Bengal has 18 districts, 341 community development blocks and 37956 inhabited villages as per the census 2001. Kolkata, being a cosmopolitan district in the State, has been excluded from the present district level analysis. The ensuing analysis is based on secondary data. While analyzing the educational development in the State, CD blocks as a unit of analysis have been considered to obtain a detail picture of the problem. Along with this, the study has tried to cover and analyse the data for some specific villages of particular interest. Thus, the whole analysis will try to throw some light on the educational development in the State covering 17 districts and 341 CD blocks. In the process of analysis, the UNDP Methodology of Range Equalization [UNDP 1990, Haldar 2008] has been adopted to assess the literacy development of the districts for the period between 1951 and 2001. Apart from this, the multiple regression analysis has been attempted for determining the associated socio-economic factors of educational variation and deprivation in this state. The census data of different years along with the data published by the NUEPA have been used. Some other sources have also been used such as Department of School Education, Government of West Bengal, Development and Planning Department, Government of West Bengal, different international agencies like UNDP, UNICEF and UNESCO etc.

4.2 General Profile of the State of West Bengal

The geographical location of West Bengal shows a wide range of diversity. West Bengal is on the eastern bottleneck of India, stretching from the Himalayas in the north to the Bay of Bengal in the south. Two northeastern States- Assam and Sikkim- lie in its northeastern part. In the west, it borders the State of Jharkhand and Bihar and to the southwest, the state of Orissa has its boundary with the. This state has its international border with three countries namely, Bangladesh on its eastern border, Bhutan on its northeastern border and Nepal in the northwest.

Agriculture is the prime occupation in West Bengal. Rice is the State's principal food crop. Other food crops are pulses, oil seeds, wheat, and potatoes. Jute is the main cash crop of the region. Tea is also produced commercially in this state especially in Darjeeling, Jalpaiguri and in a part of Uttar Dinajpur district. However, the service sector is the largest contributor to the gross domestic product of the state, contributing about 51% of the state domestic product compared to 27% from agriculture and 22% from industry. A significant part of the state is economically backward,

namely, large parts of six northern districts of Cooch Behar, Darjeeling, Jalpaiguri, Malda, Uttar Dinajpur and Dakshin Dinajpur; three western districts of Purulia, Bankura, Birbhum; and the Sundarbans area (http://en.wikipedia.org/wiki/ West_Bengal).

Table – 4.2: Socio-economic indicators in India & West Bengal

INDICATORS	WEST BENGAL	INDIA
Geographical Area (2001) in Km^2	88752.00	3065027.00
Population, 2001.	80176197	1028610328
Decadal Growth Rate of population (1991-2001)	17.77	22.66
Density of Population 2001 (Persons per km^2)	903	336
Percentage of SC to total population, 2001.	16.2	23.02
Percentage of ST to total population, 2001	8.2	5.5
Sex Ratio (No. of Females per 1000 Males), 2001.	934	933
(0-6 age) Child population as percentage to total population, 2001.	14.24	15.93
Life expectancy at birth (2001-06)#	66.08	63.87
Infant mortality rate (per 1000 live births) male-female-total, 2000#	54-47-51	67-69-68
Birth rate, 2000. #	20.7	25.8
Death rate, 2000. #	7.0	8.5
Percentage of population lying below the poverty line (1999-2000)*	27.02	26.10
Percentage of Main Workers to total population	28.72	30.43
Percentage of Marginal Workers to total population	8.05	8.67
Percentage of Non- Workers to total population	63.23	60.90
Percentage of Cultivators to Total (Main & Marginal) Workers, 2001.	19.18	31.65
Percentage of Agricultural Labourers to Total (Main & Marginal) Workers, 2001	24.97	26.55
Percentage of Household Industry workers to total workers (main & marginal), 2001	4.1	3.18
Proportion of population earn less than 1$ per day, 2000#	27.02	34.7

Source: Government of West Bengal, 2004; * Government of West Bengal, 2002; # Government of India, 2002-03; # United Nations Statistics, 2006

West Bengal has occupied the position of fourth most populous State in India with a population of 80.18 million as per the Census of 2001. As such, the State constitutes 7.79% of the total country's population having only 2.89% of total area thereby demonstrating itself as the State having highest density of population (903 people per km2) in the country (Table–4.2). However, the decadal (1991-2001) variation of population in the State is substantially lower (17.77%) compared to the national average (22.66%), which indicates that the State is likely to stabilize the excessive population pressure in future. Among the religious communities, Hindus accounted for 72.47% of the total population followed by 25.25% Muslims and 1.67% others reflecting two major communities in the state (Census of India, 2001). Ninety eight percent of the total population speaks one or more of the five spoken languages in the state, viz- Bengali, Hindi, Urdu, Santhali and Nepali, but the mother tongue of 85% of the population is Bengali (Annual Report 2000-01, Department of School Education, GOWB).

According to the latest Census enumeration, the workforce participation rate (Total main and marginal workers as percentage of total population) in the State is 36.77%, marginally lower than the national average (39.10%). The workforce participation rate also reveals that there are 28.72% main and 8.05% marginal workers and the remaining 63.23% are non-workers (Table – 4.2). Among the total workers, 19.18% (31.65%) are cultivators and 24.97% (26.55%) are agricultural labourers thereby reflecting its weak agrarian base compared to the country as a whole (national figure in parenthesis). It also indicates that the persons engaged in agriculture largely belong to the

category of agricultural labourer in the State. In spite of the massive land reforms, the state is far behind the country as a whole in developing the proportion of cultivator that is still much lower than the national average. At national level, a significance progress has been made in the reduction of extreme poverty as percentage of population who earns below $1 per day reduced from 42.3% in 1993 to 34.7% in 2000. The figure of 27.02% for West Bengal (2000) is the latest official estimate published by Government of West Bengal in Human Development Profiles 2007. Presently in West Bengal, more than 20 million people live below poverty level.

4.2.1 Educational Indicators in West Bengal and India

Besides the fact that the literacy rate of the state is marginally higher than the national average, as per the Census 2001, illiteracy exists for 22.98% males and 40.39% females in the age group 7 years and above in the State. A population size (7+age group) of about 2.16 crore is still illiterate of which 1.34 crore are female and this large size of population needs to be literate for making the State fully literate. It may be noted here that total decrease in the number of female illiterates in West Bengal during the last decade (1991-2001) was 11, 31,960 (The Pratichi Education Report, 1, 2002) i.e. a little more than one lakh per year. The report also states that in terms of contribution to the decrease in the number of illiterates in the country, West Bengal ranks 7th position and its contribution is 8.26 percent.

The States ahead of West Bengal in this respect are Andhra Pradesh (16.79), Uttar Pradesh (14.09), Maharashtra (12.48), Rajasthan (11.46), Madhya Pradesh (11.43) and Tamil Nadu (10.66) (figures in the parenthesis shows the percentage contribution). The educational level of rural population in the State shows that it is better at the lower level of education up to the middle school completion. But at stages of high school and above it is considerably below the national average (table-4.3). Again, in spite of its high literacy rate compared to the national average, the median number of years of schooling of the household population in the State (4.7 years) is also lagging behind the national average (5.5 years). Some of the BIMARU States like – Rajasthan, Uttar Pradesh and Madhya Pradesh show comparatively better ranking in this respect (NCERT, 2003).

Accessibility of school within the habitation is quite comparable but the availability of upper primary schools/sections compared to primary schools/sections is very poor in this state. It actually ranks in the bottom position in this respect. Although the dropout rate at primary level is quite high, the apparent survival rate up to grade V and retention rate at primary level

is marginally better as compared to the national average. However, these rates are much better in the advanced states like Kerala, Maharastra, Himachal Pradesh, Karnataka, Tamilnadu etc. The gender aspect in school enrolment is better in this state. As regards the proportion of female teachers in schools, the proportion in the State is low at only 18.66 % at Elementary level in rural areas which is far below the national average (31.27%). Interestingly, it is seen that the female teachers are mostly concentrated in urban areas both for the State and for the country as a whole (Table – 4.3). To add international flavour to the analysis, the proportion of female teachers at primary level is 48.3% in China, 43.3% in sub-Saharan Africa, 77.9% in Europe and 76.7% in Latin America (World Education Report, UNESCO, 1997). This low proportion of female teacher, especially at elementary level may be considered as one of the reasons for non-fulfillment of Constitutional commitment of UEE even after a long period of more than 50 years. These will get special attention in our district level analysis. With regard to the school level amenities such as facility of drinking water, girls' toilet and computer facilities, the position of the state is much lower than the national average. The only point in favour of the State is that it is performed better in acquiring mere literacy.

Table – 4.3: Some Important Educational Indicators in West Bengal and India

INDICATORS	WEST BENGAL	INDIA
Literacy Rate Excluding 0-6 Age Group (In Percentage) – Person	68.64 (18$)	64.84
-- Male	77.02 (19$)	75.26
-- Female	59.61 (19$)	53.67
Decadal Variation In Literacy Rate (1991-2001)	10.94	12.63
Percent Distribution of persons (Rural) aged 7 years and above by level of education (2006-07)#		
Illiterate	29	34.9
Literate Without Formal Schooling	3.1	1.4
Literate But Below Primary	16.9	15.7
Primary School Completed	26.4	17.8
Middle School Completed	15.3	16
Secondary And Above Completed	9.3	14.2
% Of Habitations Having Primary School Within 1 Km 2002*	92.3	87
% Of Habitations Having Upper Primary School Within 3 Km 2002*	79.4	78.1
Gender Parity Index (Enrolment) 2006-07	0.97	0.93
Ratio Of Primary To Upper Primary Schools/Sections 2006-07	5.4	2.5
% of Female Teachers at Elementary Level 2002* Rural-Urban	18.66 - 50.61	31.27 -
% Schools Having Girl's Toilet In School (All Schools) 2006-07	31.47	42.58
% Schools Having Computer In School (All Schools) 2006-07	5.35	13.43
Apparent Survival Rate : Grade V 2005-06	77.16	72.73
Average Drop-Out Rate At Primary Level 2005-06	9.44	8.61
Student-Classroom Ratio : 2005 All Areas : All Managements, All Schools 2005-06@	58	41

Source: # NSS Report No. 527(63/1.0/1):Household Consumer Expenditure in India July 2006 to Jun 2007, Census of India 2001, Final Population Totals, Directorate of Census Operation, Government of West Bengal, 2004; *7th All India School Education Survey NCERT, New Delhi, 2003. @ Analytical Report 2005-06, NUEPA, New Delhi
Note: $ denotes the relative rank of the State

4.3 Literacy Achievement in West Bengal

4.3.1 Progress of Literacy in West Bengal:

Literacy rate (LR) as provided by the Indian census covers the necessary information of each of the household and as such, it may be considered as one of the important educational indicators that also appear to be a reliable data for educational development. It is remarked that "Literacy skills are fundamental to informed decision-making, personal empowerment, active and passive participation in local and global social community" (Stromquist, 2005, p. 12). Considering its coverage and importance, a brief review of the literacy character of the state as per the Indian census data is given below.

The first census in free India was carried out in 1951 and at that time, only one fourth of the total state population was literate. While in 2001, more than two thirds of the total population (7+ age group) was found to be literate in the state. Over the last 50 years almost all the districts has made a literacy jump of more than 30%, but some of the districts recorded a higher jump than the others. In fact, a heterogeneous increase is being observed across the districts of the state. Now the question is how to measure this heterogeneity in literacy development among the districts. A simple difference between a particular period of time does not include the development aspect and also if the simple method of measuring the growth rate [viz. (Y1-Y0)/Y0 X 100] is considered,

some of the least developed districts (e.g. Malda, Uttar Dinajpur) may even register higher rate of growth than the mostly developed districts (e.g. Kolkata, North 24 parganas). In order to get rid of the problem of measurement, the UNDP Methodology of Range Equalization [UNDP 1990, Haldar, 2008] has thus been adopted.

For this, the following formula in measuring the progress of relative achievement of literacy rate is considered-

$$Zi = [\text{Actual } Xi - \text{Min } Xi]/[\text{Max } Xi - \text{Min } Xi],$$

where Xi=Literacy Rate of the i-th district for a particular time point. Zi is an index that measures the relative position of a particular district. It may be called the achievement index of a district.

By using this formula, firstly, the relative position of all the districts at six points of time (viz. 1951, 61, 71, 81, 91 and 2001) has been calculated separately for rural and urban frame. In analyzing the literacy trend, the district as a whole is often taken as a unit of measurement by taking both rural and urban areas within the district. However, it may produce some confusing result. For example, the lowest rank as per the achievement index of rural and total literacy of Uttar Dinajpur district is lowest (i.e. 17) as per Census 2001. However, it ranks 10th in case of urban literacy achievement, which implies that there is a large variation in literacy development in the rural and urban areas of this particular district. In order to capture this rural urban variation, separate ranks of each district have been constructed for rural and urban areas. Based on the values of Zis, each district has been ranked for the six consecutive census years. The result for each district is graphically plotted in the following two figures (Figure-4.1 & Figure-4.2). It may be noted here that Kolkata is entirely an urban district and is therefore not included in the rural framework. Two districts, namely, West Dinajpur, 24 Parganas were bifurcated after 1990, and as such, the data up to 1981 was the same for Uttar Dinajpur and Dakshin Dinajpur and similarly for North and South 24 Parganas.

Both the rural and urban areas of Darjeeling district have maintained its relatively better rank throughout the five consecutive decades of time (1951-2001). The urban areas are marginally better compared to the rural areas although there has not been much rural urban gap in literacy achievement throughout the period under consideration.

In Jalpaiguri, the index became lower and accordingly the relative position of the district appeared to be deteriorated after 1971 both for the urban and rural areas. This deterioration is much worse in the urban areas compare to its rural part. Kochbehar being a relatively better-developed district in respect of urban literacy achievement index is comparatively in middle rank (10 in 1951 and 8 in 2001) so far the rural areas are concerned. Uttar Dinajpur is a newly bifurcated district after 1991(part of West Dinajpur). Its relative position in respect of urban literacy rate (10) is comparatively better than its rural part (lowest i.e. 17). Dakshin Dinajpur is also a bifurcated district (part of West Dinajpur) and in 2001 it urban literacy index positioned it at the fourth rank but the rural rank of the district is comparatively poor (11). In Malda district, a continuous bottom most rank is being observed in respect rural literacy rate while there is a decreasing trend in achievement of urban literacy has been seen. Both the rural and urban rank of Murshidabad district is much higher thereby reflecting its relative worse position throughout the last 50 years. The policy measures that have been taken in this district do not appear to yield any positive result.

The same is true for Birbhum district also. The trend of literacy achievement of Bardhaman district compare to the other district, specially after 1981 in urban areas, have been deteriorating in spite of taking enormous measures to make this district fully literate. Although it's rural part has somehow managed the fourth to seventh rank throughout the last 50 years. The comparative position in achieving the rural literacy rate for the districts Bankura and Purliya is almost remaining the same throughout the last 50 years and no positive development is being noticed during the period. Mednipur, Nadia, North 24 Parganas and Hugli are the districts of West Bengal where both rural and urban achievement in literacy rate have been gradually becoming better during the last 50 years (1951-2001). Along with this, the district Haora has also shown the same trend in its urban part (it is a semi urban district). These five districts along with the northern Darjeeling district have been reflected as the better developing districts in the state. The policy

measures adopted in the whole part of north Bengal (excluding Darjeeling) along with Puruliya, Birbhum and Bankura does not appear to be much enhancing in developing the literacy rate of these areas.

Fig: 4.1: Trend of Rank as per the Achievement Index of Literacy Rate across the Districts of West Bengal (Urban): 1951-2001

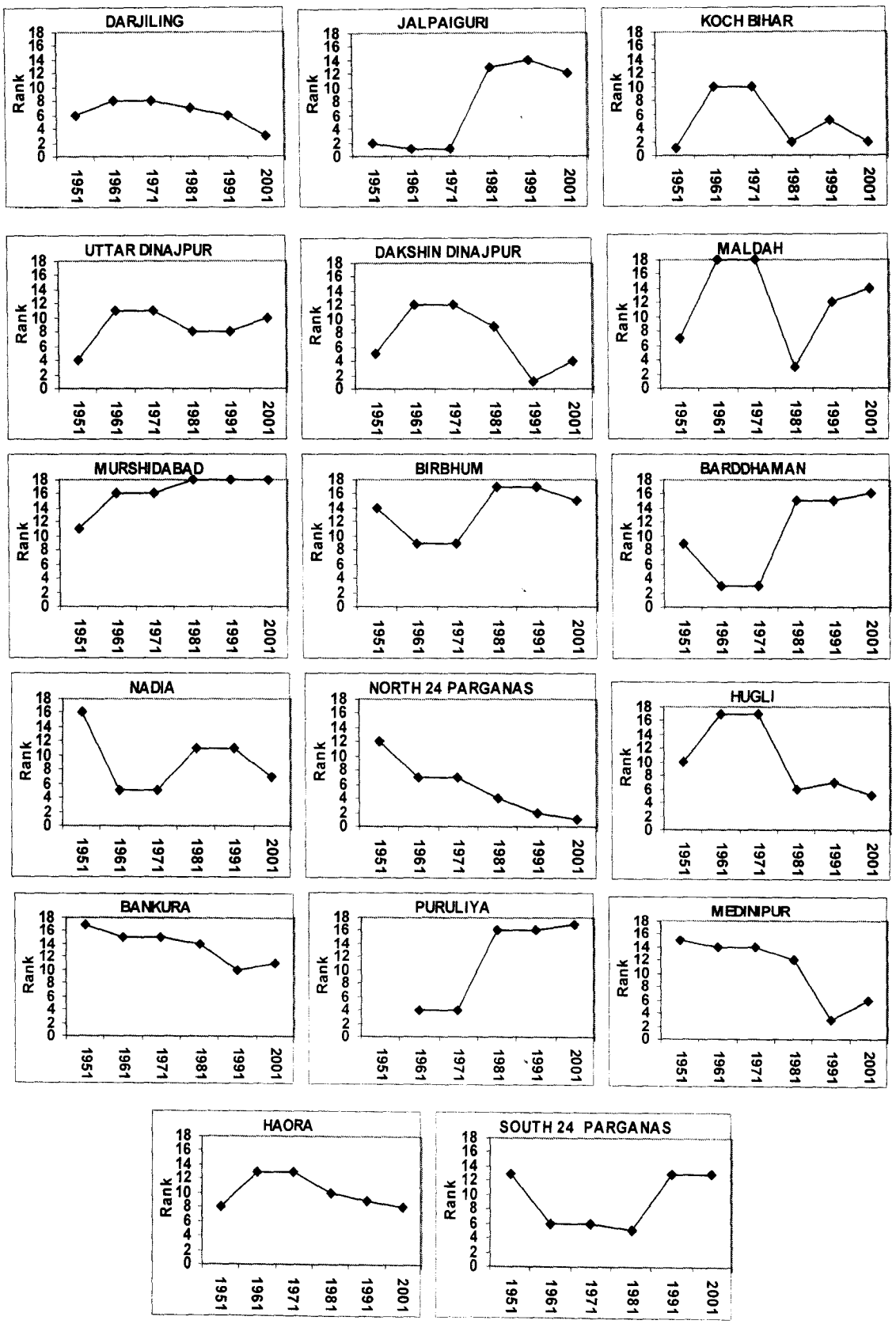
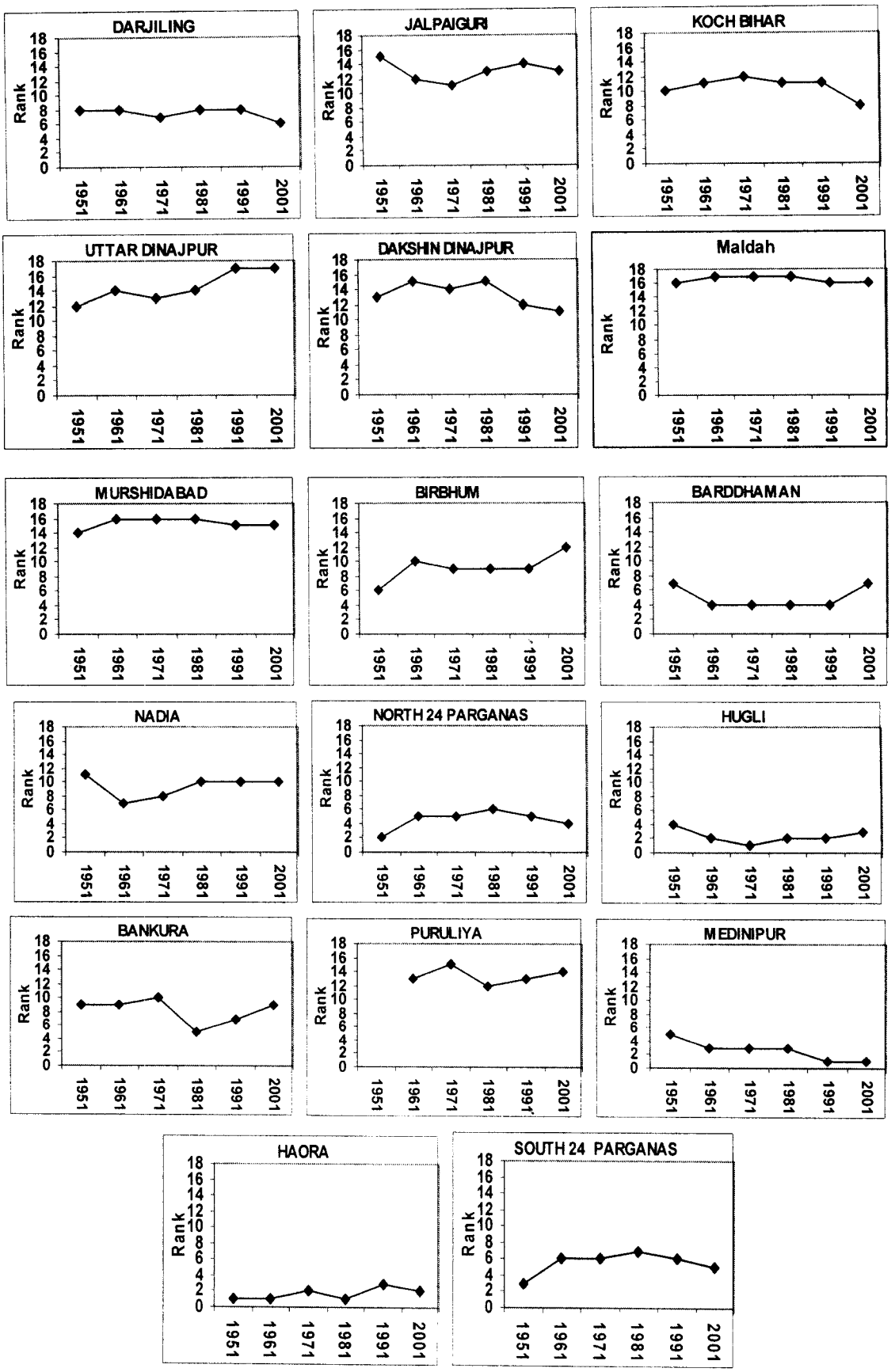


Fig: 4.2: Trend of Rank as per the Achievement Index of Literacy Rate across the Districts of West Bengal (Rural): 1951-2001

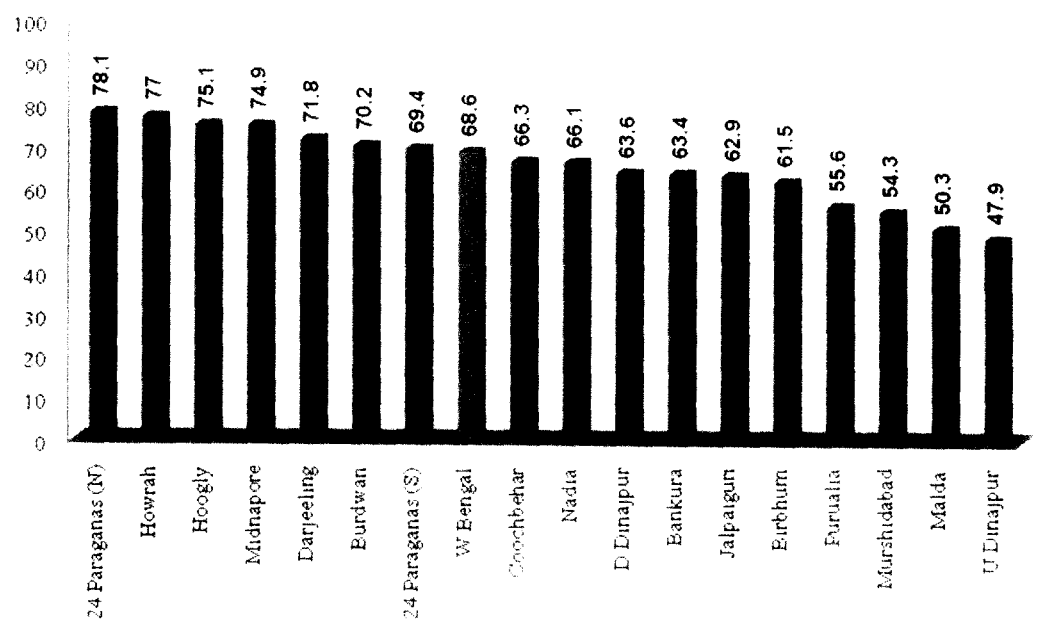


In all the rank analysis shows that Murshidabad, Maldah and Uttar Dianajpur is the three districts whose rural rank in literacy achievement during the last 50 years almost remain in the bottom position. So far the urban trend of literacy achievement is concerned, Murshidabad and Maldah again retain at the bottom most position throughout the census periods. Uttar Dinajpur in this respect is well ahead compare to the above two districts.

4.3.2 Literacy Spectrum of the Districts of West Bengal, Census 2001

As per the Census 2001, the State has its 66.8% of population as literate thereby leaving 33.2% people illiterate. So far the district level literacy rate is concerned, North 24 Parganas has the highest LR (78.1%) and Uttar Dinajpur with a literacy rate of 47.9% has been registered at the bottom most position in this respect. The above two districts maintain their respective position in respect of female literacy rate too. As per the Census 2001, among the 17 districts, 10 districts have the literacy rate below the state average (Fig-4.3) and out of these 10 districts, five are from the northern part of the State which is popularly known as North Bengal or Uttar Banga. It may be noted here that the Uttar Banga region has six districts of which 5 are lying below the State average literacy rate.

Fig-4.3: District Literacy Rate in West Bengal, 2001



Source: Census of India 2001, Final Population Totals, West Bengal, Directorate of Census Operation, West Bengal, 2004

4.3.3 Gender bias in literacy rate

A close looks at the regional and gender aspect of literacy rate as revealed in Census 2001 is undertaken next. The district wise regional pattern and gender reflection of literacy rate is shown in Table- 4.4.

It has been said that female illiteracy is a problem not just for the girls and women themselves; rather it is a problem for the society as a whole. In this context Dreze and Sen (2002) remarked, 'Women's empowerment can positively influence the lives of not only women but also of men and of course those of children'. In India, it is well documented that there is a gender gap in educational status irrespective of which particular index of educational attainment is used. Accordingly, all the States and Union Territories belonging to India have also been suffering from

this discriminating problem. In our focused area (West Bengal), the male-female literacy gap is 17.41% which is significantly lower than the national average (21.59%) as per Census 2001.

The traditional approach of calculating gender differential in literacy rate is the simple mathematical difference between male and female literacy rate. Based on this approach, the gender gap for the last six decades has been calculated and depicted in table 4.4. It has been shown earlier that all the districts has been experiencing a considerable increase in literacy rate for both male and female with of course some variations. But it is seen from the trend of gender gap (column- 2 to 7 Table 4.4) that some districts are found where the gap has increased (Nadia, Jalpaiguri, Maldah, Bankura, Medinipur) in spite of a substantial increase in literacy rate over the last six decades. Again, if we look at only 2001, it is seen that there is a large variation in male-female literacy gap across the district and this varies from the highest in the district of Purulia at 37.2% to the lowest in 24 Parganas (N) at 12.2% point (column 7 of able- 4.4).

However, this itself does not reflect anything more than the relative positions of the districts in terms of gender differentials in literacy. For example, Murshidabad with a gender gap of 13.1% has maintained a relatively better position in respect of gender gap than all other districts except North 24 Parganas and Nadia. But, the literacy rate of Murshidabad is lower than other districts except Uttar Dinajpur and Malda (Fig-4.3). Similar situations are present in some other districts too (Nadia, Malda and Birbhum). Thus, the measure of gender gap in literacy rate is not sufficient to explore the literacy achievement of a particular district.

Table- 4.4: Gender Aspect in Literacy Rate: 1951-2001

Districts/	Gender Gap (MLR - FLR)						Gender Disparity Index (MLR - FLR)/TLR*100					
State	1951	1961	1971	1981	1991	2001	1951	1961	1971	1981	1991	2001
1	2	3	4	5	6	7	8	9	10	11	12	13
Darjiling	24.0	28.2	21.0	21.9	19.2	17.1	105.7	83.7	54.6	45.8	33.2	23.8
Jalpaiguri	13.8	19.8	18.8	19.3	22.8	20.6	96.6	85.4	65.8	57.7	50.6	32.8
Cooch Behar	20.0	26.0	22.4	23.5	24.0	19.8	116.5	102.5	84.5	67.6	52.5	29.9
Uttar Dinajpur	**18.8**	**22.1**	**22.3**	**21.6**	**22.4**	**22.0**	**134.0**	**107.2**	**82.4**	**69.7**	**64.8**	**45.9**
Dakshin Dinajpur	18.8	22.1	22.3	21.6	21.4	18.2	134.0	107.2	82.4	69.7	46.2	28.5
Maldah	13.1	18.7	18.7	19.8	20.7	17.6	112.3	112.2	89.7	74.5	58.1	34.9
Murshidabad	14.9	18.1	17.1	16.1	16.9	13.1	101.5	93.5	72.2	55.8	44.0	24.1
Birbhum	24.0	25.0	21.2	20.6	22.1	19.3	120.6	94.0	67.4	53.5	45.5	31.5
Barddhaman	22.6	23.9	20.3	20.5	19.7	17.7	104.0	68.6	50.1	42.7	31.8	25.2
Nadia	6.9	20.5	17.3	16.3	15.6	12.7	39.7	62.9	46.7	38.9	29.8	19.2
North 24Parganas	28.1	27.7	23.9	22.3	16.7	12.2	101.0	72.6	53.6	42.7	25.0	15.6
Hugli	26.1	27.8	23.0	21.1	18.9	15.4	93.8	68.0	50.4	38.6	28.3	20.5
Bankura	16.5	30.9	27.0	30.7	30.2	27.3	102.9	113.9	87.0	71.3	58.0	43.1
Puruliya	NA	28.5	30.1	36.2	38.9	37.2	NA	138.9	119.8	107.6	89.9	67.0
Medinipur	17.3	34.5	30.1	29.6	24.6	20.5	81.2	107.0	78.4	61.1	35.6	27.4
Haora	27.3	28.6	23.6	21.7	18.3	13.1	82.7	66.7	50.0	37.6	27.0	17.0
South 24Parganas	28.1	27.7	23.9	22.3	27.9	20.2	101.0	72.6	53.6	42.7	50.6	29.1
WEST BENGAL	**21.5**	**26.3**	**23.0**	**22.6**	**21.3**	**17.4**	**86.1**	**76.3**	**59.2**	**48.8**	**36.8**	**25.4**

Source: Calculated from GOWB, 2004

In order to capture the literacy achievement while identifying the underlying gender bias more accurately, a Gender Disparity Index in Literacy Rate (GDLR) has been constructed in addition to the simple Gender Gap in Literacy Rate (GGLR). A number of indices have been suggested by various researchers (Naik, J, P., 1971; Tilak JBG, 1983, Kudu et el, 1986) to define and discuss the disparity in literacy rate by sex. In the present study, the following indexing method has been applied as proposed by Tilak -

$$D= \{(MLR-FLR)/TLR\} X100;$$

Where, TLR= total literacy rate, MLR= male literacy rate and FLR= female literacy rate. Being simple to calculate and based on all the three parameters, this index is also supposed to describe the overall achievement in addition to simple male female difference.

Following this formula, the district-wise gender disparity index has been calculated and presented in columns- 8 to 13 of Table- 4.4. It is seen from the table that all the districts have narrowed their gender difference during the period 1951-2001. It is also found that the districts with larger Gender Disparity Index than the State average are also showing fairly lower overall literacy rate except for only two districts, namely Murshidabad and Nadia. Based on this index, Puruliya has been found with a highest index value (66.98 in 2001) followed by Uttar Dinajpur (45.89) and Bankura (43.08) thereby suggesting the most female disadvantage in these districts. The female literacy rates are the same (36.5% in 2001) for both Uttar Dinajpur and Puruliya (lowest in the district), but the male and consequently the total literacy rate (73.72% and 55.57%) in Puruliya is much higher than Uttar Dinajpur (58.48% and 47.9%). This implies that the females in Puruliya are excluded from the overall educational development process.

4.4 Decadal Variation in Literacy Rate

The measure of decadal increase in literacy rate has substantial importance in analyzing the literacy character of any region. In this respect, growth of literacy in West Bengal is not satisfactory and it recorded an increase of 10.94% in total literacy rate with a larger increase in female literacy rate than the male counterpart. This decadal variation is substantially lower than the national average of 12.63%. The female edge is seen throughout the districts in the State (Table- 4.5) as well as across the State and Union Territories in India (Varshney, 2002). Secondly, the increase in literacy rate in the rural areas of the state (12.92%) is much higher than the urban areas (5.98%). This holds true across the districts too.

Again, negative association is observed between the decadal (1991-2001) variation in literacy rate and the literacy rate of 1991 at both district and subdistrict level. This implies that the region with high literacy rate recorded relatively smaller increase in literacy rate during the last decade. However, Uttar Dinajpur with lowest literacy rate in 1991 could hardly record a literacy jump of 15.08% in the rural areas and 6.01% among the urban population. Exactly nine districts have been found where the literacy jump during the last decade is found to be higher than Uttar Dinajpur. We have some evidence at the State level too. At the State level, Rajasthan has achieved the highest decadal increase in literacy rate (22.48%) preceded by Chattisgarh (22.27) Madhya Pradesh (19.44%), Andhra Pradesh (17.02%), Uttar Pradesh (16.65%) Uttaranchal (16.65%). It may be noted that these are the states with having substantially lower literacy rate in 1991.

On the other hand, Himachal Pradesh, Maharashtra, Tripura and Punjub are the examples where decadal increase in LR has been recorded higher than West Bengal with having a literacy rate (1991) higher than West Bengal (Varshney, 2002). Thus it is not very easy to generalize that the regions with lower LR has registered a larger increase in LR during the last 10 years. One thing which appears to be clear and also significant from the decennial Census data of 1991 and 2001, is that all the 35 States and Union Territories as well as the districts of West Bengal have registered higher increase in female literacy rate than male literacy. This finding suggests an indication of bridging the gender gap in literacy in near future. It is thus necessary to identify the factors underlying this higher increase in female literacy rate and enhance the influencing capacity on society to have a literacy picture free from gender bias.

Table- 4.5: Decadal Variation in Literacy Rate 1991-2001

	Rural		Urban			
State / District	Person	Male	Person	Male	Person	Male
Darjiling	16.83	16.16	17.86	6.52	5.86	7.54
Jalpaiguri	19.23	18.54	20.25	8.95	7.4	10.78
Cooch Behar	21.38	19.33	23.82	7.95	7.75	8.22
Uttar Dinajpur	15.08	15.08	15.36	6.01	5.52	6.77
Dakshin Dinajpur	19.42	17.85	21.25	3.35	2.36	4.53
Maldah	15.19	13.78	16.81	6.17	4.62	8.02
Murshidabad	16.76	14.85	18.9	7.54	6.59	8.63
Birbhum	13.28	11.99	14.7	10.23	9.04	11.84
Barddhaman	9	8.06	10.15	6.53	6.33	7.37
Nadia	15.76	14.4	17.4	7.88	6.25	9.57
North 24 Parganas	15.71	12.88	18.87	6.71	5.65	8.15
Hugli	8.73	6.88	11.01	6.79	6.27	7.7
Bankura	12.03	10.64	13.5	6.52	4.76	8.55
Puruliya	12.92	12.39	13.67	4.82	3.33	6.82
Medinipur	5.68	3.64	7.95	4.49	3.55	5.83
Haora	11.53	8.51	14.94	7.3	5.86	9.37
South 24 Parganas	15.1	11.34	19.26	7.82	6.15	10.06
WEST BENGAL	**12.92**	**11.08**	**15.04**	**5.98**	**4.94**	**7.49**

Source: Calculated from 'Census View, Directorate of Census Operation, GOWB, 2004

4.4.1 Dimensions of Variation in Literacy Rate

Literacy rate is an average concept and has its own limitations. This average concept may not be very representative of the wide disparity in literacy within a particular region. For example, the literacy rate of West Bengal is 68.6% does not mean that each of the districts has been maintaining this rate. The district of North 24 Parganas recorded 78.1% of population as literate, while Uttar Dinajpur could hardly manage a 47.9% literacy rate (as per Census 2001) thereby showing a 30.2% of variation in this regard.

Similarly, if we go through the block of a particular district or the villages of a particular block or the families of a particular village we will certainly get the same picture. Based on literacy rates of the 341 CD blocks under the districts of West Bengal, it is seen that the highest literate block in the State is Serampur Uttarpara under Hoogly district with a literacy rate of 84.51% and the least literate block is Goalpokhar-I under Uttar Dinajpur district having only 31.6% of adults as literate. Thus, a disparity of 52.91% in literacy rate is observed if we consider all the CD blocks in the State as a whole. Inter block disparity in literacy for each district is graphically presented in Figure- 4.4.

Inter block variation is highest in the district of Midnapore (28.52%) and Dakshin Dinajpur has the least variation (13%) in literacy. From this analysis however, it is not easy to generalize that high block level variation in literacy rate in any district indicates its relative disadvantaged literacy scenario. The coefficient of correlation between PLR and block level variation in LR for the districts is thus calculated and found to be negative, but with a small magnitude of correlation (-0.26).

For better understanding of this variation, we have constructed an index of variation as follows-

Index of Variation in literacy rate = {(Max. LR-Min. LR) / Total LR} X 100

Following this formula, Block level Index of Variation in literacy rate for each district has been calculated and represented in figure-4.5. This index of variation shows a strong negative correlation (-0.75) with the total literacy figure at district level. Thus, it appears that this index is more indicative than just a simple gap between highest and lowest literate block, for explaining the literacy development.

Fig- 4.4: Block Level Variation in Literacy Rate, 2001.

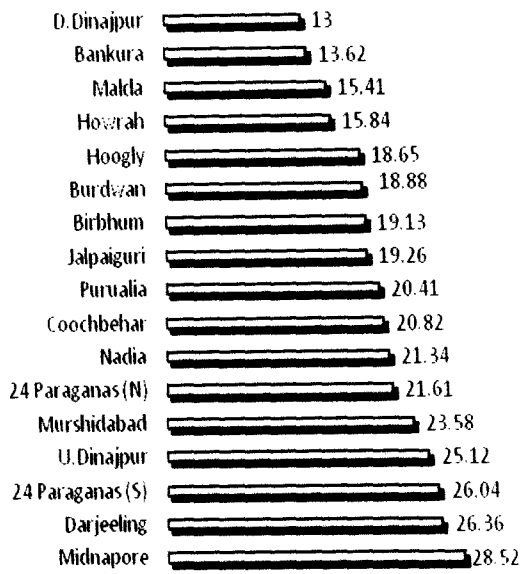
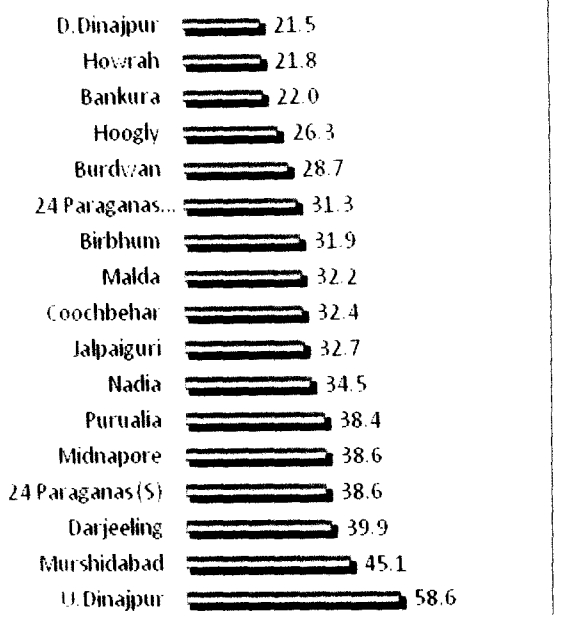


Fig-4.5: Block level Index of Variation in Literacy Rate, 2001



Source: calculated from Directorate of Census Operation, West Bengal, 2004

4.4.2 Literacy Variation at Village Level: Educationally Deprived Villages in Rural West Bengal

The prime objective of 'Education for All' is not just to maintain a moderate literacy rate. In order to have an educationally stable social order, it is necessary to minimise regional variation in literacy rates at micro level with an uniform spread in education amongst the population. For this purpose, an attempt has been made to see the literacy variation in West Bengal at village level. In West Bengal there are 37, 956 populated villages in the State as per Census 2001. The villages under 17 districts have been arranged by their literacy rates. After calculating the literacy rate of each of the villages in West Bengal, the villages with a literacy rate below 25% are identified and termed as Educationally Deprived Villages in the State. As such, it is found that 843 villages in the State show a minimum of 25% literacy rate. These 843 villages altogether comprise a population size of 462827. Out of this population, only 67743 are literate thereby showing a literacy rate of 19.1% in aggregate (Table- 4.6). Again, out of these 67743 literate persons, only 19282 are females. In absolute percentage, 26.7% are males and 11.1% females are literate in these villages.

The distribution of these educationally backward villages throughout the districts is depicted in Table-4.4. Uttar Dinajpur with 207 (25% of total 843 deprived villages) villages in this category tops the list, which apparently suggests that the educational deprivation is mostly concentrated in the districts where literacy rate is very low. But, Midnapur with a literacy rate (Rural) of 73.9% has 123 educationally deprived villages while Coochbehar and Jalpaiguri with 2 villages each, 6 villages in South 24 Pargana and 27 in Dakshin Dinajpur – these districts have literacy rates much lower than Midnapur. As such, the linear association between the average district level rural literacy rate and overall literacy rate of the respective deprived villages within each district has been calculated and found negative with a very low magnitude (-0.19). The share of Schedule

Caste and Tribes in these deprived villages also indicates that the deprivation is more prominent for the tribes compared to the castes.

Table- 4.6: Educationally Deprived Villages in West Bengal

	No. of Village	Population	Literate	PLR	MLR	FLR	WPR (F)	SC	ST
1	2	3	4	5	6	7	8	9	10
Burdwan	10	1361	226	20.5	31.4	8.7	46	32.8	56.6
Birbhum	55	15818	2268	17.8	24.9	10.4	41.6	19.6	60
Bankura	72	13858	2301	20.2	30.4	9.6	50.1	56	19
Midnapore	123	16194	2548	19.2	28.4	9.9	51.7	22.5	52.3
Howrah	1	196	22	13.9	18.3	9.2	20.4	100	0
Hoogly	1	81	15	22.1	21.6	22.6	39.5	13.6	0
24 Paraganas (N)	2	277	37	16.4	19.3	13.1	26	74.7	0
24 Paraganas (S)	6	47785	7417	19	27.8	10	47.4	32.2	44.7
Nadia	14	7098	1211	20.6	27.3	13.5	26.7	14.2	17.9
Murshidabad	57	59083	9400	20.8	27.5	13.8	33.8	5	2.9
U.Dinajpur	207	235605	33924	19.1	27.4	10.4	27.5	9.7	7.7
D.Dinajpur	27	7112	1148	20.2	28.4	11.9	49.6	29.7	53.8
Malda	154	120289	17114	18.3	24.2	12.2	36.5	12.1	19.2
Jalpaiguri	2	432	76	23.2	30.4	16.3	21.3	13.7	11.8
Darjeeling	22	5969	892	18.1	24	11.9	31.6	20.1	64.3
Coochbehar	2	436	35	10.5	14.2	5.6	7.7	19.3	17.2
Purualia	88	26803	3943	18.2	30.4	5.8	52.5	8.6	65.2
Total of 843 Vills.	843	462827	67743	19.1	26.7	11.1	32.5	10.2	

Note: * West Bengal; Female Work Participation Rate = (Total Female Workers/ Total Female Population*100)
Source: Calculated from 'Census View, Directorate of Census Operation, GOWB, 2004

Looking into the problem of educational deprivation at another level that indicates the presence of 43 villages with a population size of at least 200 where not more than five women in each of the respective villages are literate (Appendix-II). These 43 villages have been termed as Educationally Dying Village. Most of these villages are concentrated in the districts of Uttar Dinajpur (12), Puruliya (8), Malda (6) and Murshidabad (5) where the other indicators of literacy deprivation are also very stark. These 43 villages altogether comprise 16495 persons of which 1074 males and only156 females are literate. Altogether, 39.89 % of the total population of these 43 villages belongs to Schedule Tribe as opposed to only 13.97 % Schedule Caste. Thus it appears that educational deprivation is more prominent to the tribes in West Bengal. Although the religious population distribution is not available at village level, the concentration of these Educationally Deprived Villages and Educationally Dying Villages in three muslim dominated districts (Uttar Dinajpur, Murshidabad and Malda) indicates that deprivation is also related to this particular religious group of population.

In the villages specified above, 50% of the villages do not have any primary school within them. The coverage of primary school per 1000 population becomes 1.24 that is much lower than the State average coverage (6.71) in this respect. Thus it indicates that the access to school may be one of the causes of such a deprived educational picture. Secondly, out of the total population of these villages, 50.7 percent are non-worker thereby depicting the low-income status in aggregate. Hence, the poverty factor may be held responsible for the low educational status. Thirdly, the deprivation is more apparent for the women and the schedule tribe section of the population. Again, out of the total workers (Main+Marginal), 82% are engaged in agriculture of which 50.2% are agricultural labourers and 31.8% are cultivators. The absolute dependency on agriculture has been found in certain villages (100%). As such, the study also reflects the absolute dependency on agriculture as one of the significant factors explaining the abysmally lower literacy development in the villages.

4.5 Factors Explaining the Literacy Variation in West Bengal: Multiple Regression Analysis

4.5.1 Methodology & Data Collection

The primary task following the forgoing analysis is to analyze the causes of such differential performances in literacy development and elementary education in the state. Two types of variables are identified by researchers, viz., the institutional variables such as basic school amenities, school infrastructures, indicators pertaining to quality education, and the socio-economic household related variables. Considering the availability of data at district and block level, this section will now deal with the problem of identifying the factors influencing the literacy variation in the state and their explanatory power. For this, a series of variables (both supply side institutional factors and demand side socio-economic factors) have been assimilated in the multiple regression analysis where the 17 districts as well as the 341 blocks of West Bengal are taken separately as unit of analysis. Thus the value of both the dependent and independent variable is associated with a region/area, either at district or sub-district (block) level.

Among the demand side socio-economic variables, the proportion of agricultural labourers (main & marginal) to total workers (AGRLB) and proportion of cultivators (main & marginal) to total workers (CULTV) are assumed to represent occupational diversification and are included at district and block level regression analysis. Female work participation rate (FWPR) is also included to measure its direction and explanatory power in influencing the literacy rate. In order to assess the explanatory power of the economic status of a region (district/block), proportion of households having no assets (HHNOASST) is included.

Among the institutional factors, two quality factors namely pupil teacher ratio at primary level (PTRPRI) and proportion of female teacher at primary level (FEMTCH) and two access factors namely proportion of habitation/villages having school both for primary and upper primary within them (PRISCH & UPRISCH) have been incorporated. It may be noted here that the availability of primary as well as upper primary school has been considered as explanatory variables as because the coverage of upper primary school in the State is very poor compared to the other States in the country. This acute deficiency in upper primary school has also been noticed in the recent DISE data published by the National University of Educational Planning and Administration (NUEPA, 2008) where the State is categorically assigned with the lowest ratio of upper primary to primary school.

All these explanatory variables are regressed on two dependent variables - male and female literacy rate (MLR & FLR) to assess the literacy character at district and block level. The explanatory variables are assumed to be linearly associated with each of the dependent variables. In order to tackle the problem of multicollinearity among the regressors, the variance inflation factor (VIF) of each of the regressors has been calculated. It may be noted here that VIF is defined as VIF=1/(1-r2ij) where rij is the simple correlation coefficient between two regressors. VIF shows how the variance of an estimator is inflated by the presence of multicolinearity. It is clear from the definition of VIF that as rij approaches 1 (i.e. regressors become collinear), the value of VIF approaches infinity and if there is no collinearity between the regressors, the value of VIF will be 1. Within this range, as a thumb rule, it is suggested that if the value of VIF of a regressor exceeds 10, then that variable is said to be highly collinear (Kleinbaum et al 1988). This thumb rule is followed in the regression analysis to overcome the problem of multicollinearity in particular. The entire analysis is based on secondary data collected primarily from Census of India, 2001.

4.5.2 Regression Results and Analysis

The summary of the regression results is provided in tabular form in Tables 4.7 (district level) and 4.8 (block level). An analytical exposition on the data is presented below.

Asset holding/Income level

Several Indian studies (NSSO, 1989; Panchamukhi, 1991; Sipahimalani, 1994; NCAER, 1996; Basu, 1997; Bhatty, 1998; PROBE Team, 1998; Devi, 2001; Krishanji, 2001; Nambissan and Sedwal, 2002; Dholakia, 2003) have tried to establish that economic backwardness is indeed a significant factor in explaining the low literacy rates and lower educational attainment among all segments of population. There are also many evidences from the studies of different countries in this respect (Lave et al, 1981; Psacharpoulos et al, 1989; King and Lillard, 1987; Knodel and Wongsith, 1990; Tansel, 1997).

The present analysis incorporates proportion of households having no specified assets (as per census definition) as a proxy of income of the households. In the block level regression analysis as well as in district level, holding of no assets by the household bears a significant negative impact on both male and female literacy rate.

Occupational Diversification

Beyond the level of income, the source of income or the composition of income has significant influence on literacy rate and child schooling. Sarthi Acharya (2001), while investigating into the inter-district and inter-tehsil variation in literacy rates in rural Maharastra and Madhya Pradesh, has found some interesting results. Acharya measured the occupational diversification as the percentage of workers in non-agricultural activities and tested it on literacy rates. This percentage is found to be positively significant in raising both the male and female literacy rates in the two states. However, the variable appears to be more enhancing (i.e. assuming larger magnitude) in raising female literacy rates than male literacy rates. This trend is however, not found in Madhya Pradesh. Similar results are also found when analyzing the enrolment pattern of children in the studies carried out in India (Jeemol Unni's, 1998 in rural Gujarat; Jabbi and Rajyalakshmi's, 2001 in Bihar).

International studies (Psacharpoulos et al., 1989 in Brazil) suggest that the opportunity cost of schooling is high for children from agricultural sector and so they typically had low enrolment rates, high dropouts and poor performance in school. Hamid Shahnaz (1993) in a study on urban Pakistan has observed that children from non-agricultural families have consistently better schooling outcomes. These findings in some alternative dimension have been supported in our country along with some other country studies (Pandey, 1990; Devi, 2001; Ravi Srivastava , 2001; Knodel et al, 1990).

In order to capture the impact of occupational diversification on literacy, the proportion of agricultural labourers (main & marginal) to total workers (AGRLB) and proportion of cultivators (main & marginal) to total workers (CULTV) are regressed on literacy rate both at district and block level.

In the present analysis, both the variable shows a significant statistical bearing with literacy rate (male & female). However, importantly, the regression result indicates that literacy rate will have a decreasing trend if the proportion of agricultural worker (AGRLB) in total work force increases and vice-versa. While the opposite direction is seen in case if there is an increase in cultivators in the total workforce. Thus, it appears from this study that redistribution of land among the landless workers who are still depending on agriculture may be a policy measure for the educational development.

Female Work Participation Rate (WPRF)

Most of the Indian studies (Pandey,1990; Jeejeebhoy,1993; Krishnaji ,2001 and Mukhopadhaya, 1994) established the negative effect of WPRF on literacy and enrolment. This is partly because the daughters have to shoulder the responsibilities of household chores and sibling care and partly because the lack of maternal attention and supervision discourages children's schooling. Some other studies established it as a positive enhancing factor. It may be due to the fact that the additional resources from mothers' earnings can overshadow the negative impact of mothers' absence from home (Psacharpoulos et al, 1989; Tansel, 1997). Sengupta et al (2002), for West Bengal, have found an important result in a village level study. While they find mothers' work participation to have a significant inverse relation to daughters' school enrolment, however, it is

not significant in impacting grade completion. However, the factor does not appear to have a significant impact on the probability of dropout or retention in school.

Table-4.7: District Level Regression Result

	Dependent Variable: MLR		Dependent Variable: FLR	
	Unstandardized Coefficients B	t values	Unstandardized Coefficients B	t values
(Constant)	96.574	4.6	52.881	2.153
HHNOASST	-.503***	-3.728	-0.356**	-2.255
FWPR	-0.368	-0.882	-0.644	-1.318
CULT	.612***	3.94	0.353*	1.944
AGRLB	-.469*	-2.064	-0.454	-1.707
PTRPRI	-.320***	-3.898	-0.123	-1.28
HABPRI	-0.085	-0.544	-0.207	-1.13
HABUPRI	0.137	1.017	0.346*	2.203
FEMTCHPRI	0.401	1.75	0.667**	2.489
R^2	0.926		0.938	
Adj. R^2	0.852		0.876	
Std. Error of the Estimate	3.23829		3.78805	
Durbin-Watson	3.028		2.517	

Table-4.8: Block Level Regression Result

	Dependent Variable: MLR		Dependent Variable: FLR	
	Unstandardized Coefficients B	t values	Unstandardized Coefficients B	t values
(Constant)	81.758	16.458	74.055	13.207
CULTV	0.271***	6.491	0.064	1.368
AGRLB	-0.238***	-5.886	-0.287***	-6.293
FWPR	-0.320***	-4.355	-0.698***	-8.421
VILPRISCH	-0.050	-1.327	-0.122***	-2.880
HHNOASST	-0.369***	-6.735	-0.337***	-5.458
HHBNK	0.315***	5.106	0.252***	3.620
VILLUPSCH	0.211***	4.686	0.351***	6.894
BUSCON	-0.017	-0.571	0.015	0.442
R^2	0.481		0.511	
Adj. R^2	0.468		0.499	
Std. Error of the Estimate	7.229		8.159	
Durbin-Watson	0.550		0.592	

Note: *** significant at 1% level, ** at 5% and * at 10%

In secondary data analysis, this rate also appears to have a depressing effect on both male and female literacy at block level analysis. However, interestingly, the coefficient is much higher in case of explaining the female literacy rate. This suggests that the absence of a female member in a family is substituted by the presence of another female member and thus the mother's absence does not have a very strong depressing impact on male literacy. This, in a sense, implies that mother's absence owing to her involvement in the labour market restricts the younger female child from attending school or be educated.

In addition to this, the data shows that there are 47.01% of total male workers in the state working as main workers (as per Census 2001). The same is only 9.12% in case of female workers. Alternatively, the lower proportion of the females to work as main worker in the labour market also precipitates the lower literacy rate of the female in this state. At the same time, percentage of agricultural labourers to total (main + marginal) workers is considerably higher for the female workers (32.18%) compared to the male workers (22.69%). This suggests that an increase in the WPRF will lead to increased participation of female workers as agricultural labour where educational qualification is redundant. Uneducated mothers are generally assumed to be unaware about the future educational benefit of their children. Their earnings are also not expected to be at a level that will overpower their absence.

Banking Facility

In order to capture the level of consciousness of the households, especially the economic consciousness, proportion of households availing banking facility (HHBNK) has been incorporated at block level analysis. It may generally be assumed that this explanatory variable should have a positive impact on literacy rate. In the regression analysis, the statistically positive impact of this variable has been found to exist for both male and female literacy rate at block level.

School Availability

The necessity of getting proper access to school to enhance schooling outcomes and adult literacy rates, especially for girls, has been supported by a number of studies. Vimala Ramchandran and Aarti Saihjee (2002) on the basis of desk review of DPEP and qualitative micro studies in six states of India (Madhya Pradesh, Chhattisgarh, Andhra Pradesh, Haryana, Karnataka and Tamil Nadu), focused on the issue that the presence of a functional upper-primary and secondary schools exert a significant influence on childrens' and parents' motivation to continue their education. This is of great importance for girls and children from very poor families. The micro studies also reinforce these very significant findings of desk review. In analyzing the attitude of rural parents of Punjab, Thind and Jaswal (2004) reported the non-availability of school within a reasonable distance, as an important cause for not sending the girl child to school.However, the contribution of Varghese in PROBE report (1999) noted that the positive association between school facilities and pupil achievements is stronger in the educationally backward regions (e.g. MP, Orissa). It does not appear to be significant in Kerala and weak in other educationally advanced states.

The present study in this respect has found an interesting result. In district level, the proximity of school within the habitation is applied and a primary school within it and an upper primary school within a distance of 3 kilometers have been taken as a measure of availability of school. It is found from the regression result that it is only the availability of upper primary school that has a positive impact in enhancing the female literacy rate. However, the presence of upper primary school within the village is statistically significant and exerts its positive impact both on male and female literacy rate at block level providing an edge in enhancing the female literacy rate. The presence of primary school although has been found to be insignificant at district level for enhancing the literacy rate, but it quite unexpectedly shows a negative impact on female literacy rate at block level. The result in this respect indicates that access to upper primary school within a reasonable distance has a great positive impact in enhancing the female literacy rate.

Female Teacher

India has an acute shortage of female teachers and it is an area of concern and debate (Bhatty, 1998; Pratichi Education Report, 2002). Srilanka with 82 percent of female teachers shows 87 percent FLR in 1995; while in India, only 41.86 percent teachers are female at all stages (NUEPA 2008, Haq and Haq, 1998). Rao and Reddy (2003) in a study in Andhra Pradesh, by using the secondary data at the district level, observe that proportion of female teacher has a strong positive impact on overall FLRs. Sailabala Devi (2001) in her village level study in Orissa observes that proportion of female teacher significantly increases the probability of school enrolment for girls than boys. Thind and Jaswal (2004) find similar results in rural Punjab.

Because of the unavailability of data, the variable is used only at district level regression analysis and the result is found to be illuminating. The proportion of female teacher at primary level is significant for enhancing the female literacy rate, no such statistical significance is being found for enhancing the male literacy rate. If one compares the magnitude of explanatory power of this variable, its influence is considerably stronger for female literacy rate.

4.6 Elementary Education in West Bengal: An Alternative Interpretation

The Educational Development Index as published by NUEPA placed the state of West Bengal at 32nd rank out of 35 Indian States and Union Territories: It is mentioned earlier in our previous section that none of the districts could maintain a rank at the upper most quartile (143 districts) at national level. Kolkata, which is placed at the top of the list among the 19 districts in the state, had hardly managed the all India rank of 318 in this respect. It may be noted here that EDI is an index prepared purely based on 22 indicators/23 indicators (2005-06/2006-07) related to the elementary level education. On the other hand, the Indian Census placed the State in the middle most position on the basis of literacy rate. This paradoxical finding requires further exploration. However, first, a brief review of the data released by NUEPA in constructing the EDI is presented here. Along with this, an attempt has been made to find the correlates of such a disappointing educational picture of the state.

4.6.1 Review of Educational Indicators

Elementary Education in India is meant for eight years of schooling at the beginning stage of school education. This elementary level consists of two stages- primary and upper primary education. In some states, primary education includes first five years and in some other states it is the initial four years of schooling. In West Bengal, primary education includes up to grade 4 where four years of initial level of schooling is being imparted and the next four years of schooling, i.e., from grade 5 to grade 8 is known as upper primary level of education. A brief scenario of elementary education of the state showing different category of schools, teachers and enrollment at various schools is presented in Table 4.9. Out of total 59,223 schools, government managed schools cover 89% and the remaining 11% are privately managed. The national figure for the same is 83.14%. This indicates that government involvement in school management is dominant in the state. Private schools numbering 73% (4,693) are located in rural areas thereby reflecting its rural bias too.

Out of total 52790 (Government run) schools, 94% of the schools are in the category 'Primary Only', which means 94% of total schools, are imparting education up to class IV. The national average in this respect is only 71.04%. Out of the remaining 29% of total government schools in India, 16.03% are primary integrated upper primary school. But in West Bengal, such type of primary integrated upper primary schools is negligible at 0.55% only. This brings forth a number of imponderables in elementary education. After the completion of primary cycle of education, the students are to be re-enrolled in another school at which he/she finds it difficult to cope with the learning environment of a new school. More often than not, the distance of the upper primary school from the village keeps away children from enrolling, especially the girl children. This is because the coverage of upper primary school in the state is very poor and it was stated earlier that the ratio of primary to upper primary schools in the state is the lowest among all the Indian states. All these contribute to the low performance at the upper primary education in the state.

Again, out of total enrolment (7199489) in government school, 80% are enrolled in the category of primary only and 16% are in the category of upper primary with Secondary/ Higher Secondary. As far as the number of teachers in different schools is concerned, the above mentioned two types of schools again dominate the others too. Thus, it is seen that mainly two category of educational institutions may be significant in describing the primary and upper primary education in West Bengal. One is the institution imparting only primary education and second is the institution imparting upper primary with secondary or higher secondary education in West Bengal.

Table- 4.9: Educational Indicators in West Bengal, 2005-06

	Primary only	Primary with Upper Primary	Primary with Upper Primary & Secondary/ Higher Sec.	Upper Primary only	Upper Primary with Sec./ Higher Sec.	No response	Total
Government schools	49379	291	135	604	2177	204	52790
Private schools	143	29	177	1198	4886	0	6433
Govt. schools: Rural	42705	175	67	532	1718	4	45201
Government teachers	150987	1160	1550	3835	21294	68	178894
Private teachers	522	207	1641	6958	46056	0	55384
Private schools: Rural	88	13	119	1004	3469	0	4693
Enrolment in Govt. school	7199489	58622	71652	206369	1411650	2950	8950732
Enrolment in Pvt. School	26449	8672	90947	402520	3113013	0	3641601
Enrolment in Govt. school : Rural	6211720	36728	33001	184609	1151414	340	7617812
Enrolment in Pvt. school. : Rural	11299	5282	66452	357245	2401246	0	2841524

Source: State Report Cards 2005-06, NUEPA http://www.dise.in//

4.6.2 District level Performance Indicators

According to the Census 2001, West Bengal comprises 18 districts. However, the latest data on the State includes 19* districts subsequently after 2001. Along with this, the school related DISE data considers Darjeeling administrative district as two separate education district - Darjeeling (Hill areas) and Siliguri (non-hilly areas). In the present district level analysis, Kolkata has been excluded as a district because of its metropolitan nature. Thus, school level indicators are shown for 19 districts in this state. It is seen in the earlier section of this chapter that all the districts of the northern part of the State except Darjeeling (Uttar Banga) along with Purulia, Birbhum, Bankura and Nadia were below the state average literacy rate in 2001. In this section, attempt has been made to assess the district wise school level achievement attributes (Table-4.10).

Enrolment Ratio (both GER & NER) is an achievement attribute which describes the proportion of children who have remained within the educational system. As per DISE 2005-06, the district level net enrolment ratio (NER) of West Bengal reveals quite puzzling result. All the districts that were below the state average literacy rate in 2001, have maintained the NER level above state average at primary school level. However, at upper primary level, no such consistent trend is noticeable. On the contrary, the correlation coefficient between literacy rate (person) and NER at upper primary level is found to be positive and significant. This apparently suggests that enrolment pattern in upper primary section is being given more importance in the state.

Universal enrolment at primary level is the initiation to the process by which one can ensure universal elementary education. Elementary education consists of eight years of schooling and unless and until all the children who are enrolled at the primary level complete their formal education of eight years up to upper primary stage of education, it will not be possible to achieve the goal of universalisation of elementary education. Thus, completion of the primary education cycle or basic education cycle is a much more critical issue than bringing more and more children into the fold of education. For this, some other performance indicators are suggested. Transition of children from one stage to another stage of education is an important indicator. In this respect a

series of transitional stages has been suggested. In a recent study, Divya Vaid (2004) has used the following educational transition stages –

- From illiterate to primary school
- From primary school to middle school
- Given middle school to high school
- Given high school to any college

While analyzing the above table, focus is made on the second stage of transition i.e. from primary to upper primary. The transitional year from primary to upper primary (i.e. from class IV to V) is very crucial year in the elementary education cycle. After completing the four years of primary schooling, the parents have to take decision to send their children at upper primary school. So far as the accessibility of school is concerned, the upper primary schools are situated at a certain distance from the village where the children reside. It has earlier been stated that the availability of upper primary schools compared to primary schools in this state, is very poor (lowest in India). As such, hardly 80% of the children of grade IV in this state transit to the beginning year of the upper primary cycle of education (Table-4.8). The remaining 20% are either repeater or they drop out of school. DISE data for the same year shows that 6.4% of the children are repeaters and 15.2% of the children dropped out in this grade-IV. District wise data shows that there is not much variation in transition rate of children from primary to upper primary section, rather the rate is closer to the state average except for Siliguri and Darjeeling district.

Table- 4.10: School level Performance Indicators in West Bengal: 2005-06

	Gross Enrolment Ratio- Primary	Net Enrolment Ratio- Primary	Gross Enrolment Ratio- Upper Primary	Net Enrolment Ratio- Upper Primary	Transition Rate fromPrimary to Upper Primary	Retention rate (RTNR)
Darjeeling*	44.9	32.8	40.5	20.3	47.1	22.2
Jalpaiguri	95.8	89.2	108.4	48.5	79.1	42.1
Coochbehar	102.2	98.8	130.5	62.6	75.0	54.3
U.Dinajpur	117.6	100.0	80.6	39.7	78.0	26.4
D.Dinajpur	100.6	97.4	110.8	57.0	79.7	41.5
Malda	120.3	100.0	95.3	44.9	77.7	46.9
Murshidabad	103.0	100.0	108.7	51.1	70.5	68.3
Birbhum	96.2	96.7	106.3	50.1	68.1	70.4
Burdwan	74.6	74.9	95.9	47.7	78.9	69.3
Nadia#	103.6	82.3	64.6	47.5	80.6	NA
24 Paraganas (N)	60.8	63.7	88.9	45.1	86.5	66.1
Hoogly	74.0	71.9	94.9	46.9	66.8	66.8
Bankura	91.2	91.7	104.4	51.2	76.7	72.5
Purualia	104.7	97.2	90.8	45.6	80.0	51.8
Midnapore (E)	37.9	37.8	55.2	26.1	89.5	68
Howrah	70.3	72.6	95.8	48.0	87.8	78.6
24 Paraganas (S)	88.3	89.0	100.0	50.1	75.9	53.4
Midnapore (W)	NA	NA	NA	NA	84.9	75.3
Siliguri	NA	NA	NA	NA	100.0	46.6
West Bengal	**104.5**	**82.8**	**66.2**	**48.7**	**79.6**	**58.25**

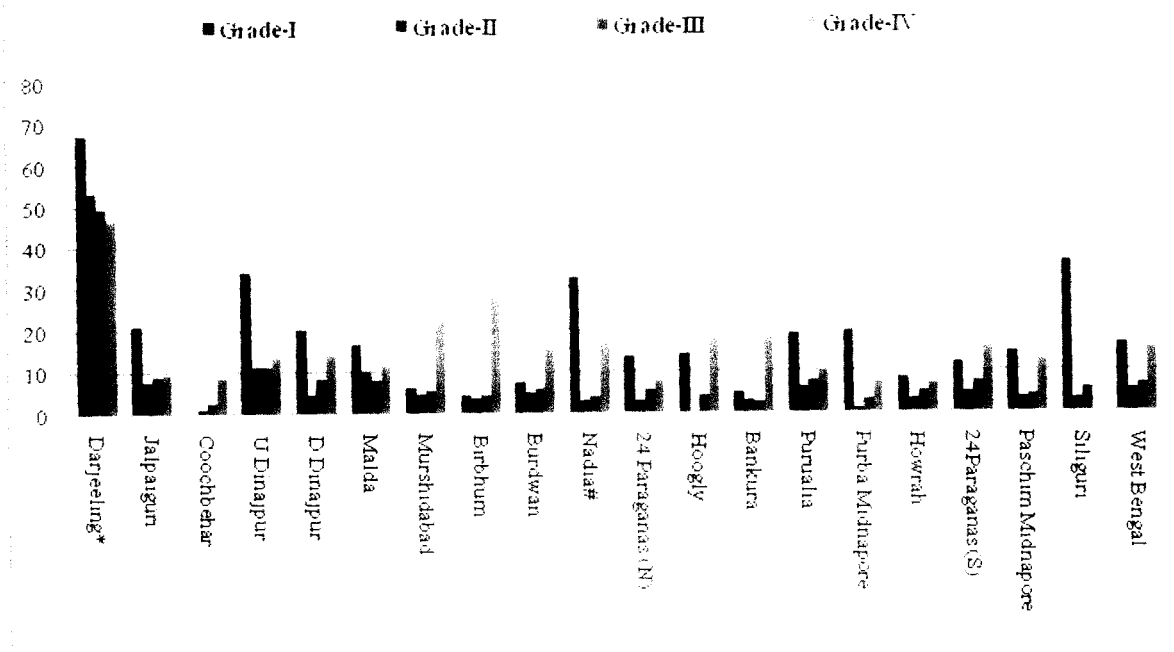
*excluding the Siliguri subdivision, # data for 2004-05

Source: District Report Card 2005-06 and State Report Card 2005-06, NUEPA, 2007 http://www.dise.in//

Retention rate at primary level is another indicator of school performance which defines the proportion of enrolled children in grade-I that has reached the final grade (IV) of primary level within the specified years. As per DISE 2005-06, the district Howrah performs best in this respect

(table-4.7) followed by Paschim Midnapore and Bankura. The districts of North Bengal occupy the bottom positions in the list.

Fig- 4.6: Dropout Rate in West Bengal 2005-06 (Primary Level)



*excluding the Siliguri subdivision, # data for 2004-05
Source: District Report Card 2005-06 and State Report Card 2005-06, NUEPA, 2007

The district wise dropout rate has been sketched in Fig- 4.6 where it is seen that the trend of dropping out of school is more prominent in two particular stages - at the beginning year, i.e., in grade-I and at the final year of primary education, i.e., in grade-IV. In 13 out of 19 districts, the dropout rate recorded to be highest at the beginning year of primary education. However, some of the districts have performed well and have retained the students within the education system. Almost all the districts of Dakshin Banga are in comparatively better position. This makes it abundantly clear that North Bengal suffers from acute educational deprivation.

4.6.3 Factors influencing Educational Achievements and their Implications

Internationally, two popular indices [Human Development Index (HDI) of UNDP and Education for All (EFA) Development Index (EFA-DI) of UNESCO] pertaining to the level of human development of different countries have been used for cross-country comparison. Both these indices measures only the outcome related indicators. The HDI includes adult literacy rates and combined gross enrolment ratio for primary, secondary and tertiary schooling as indicators of educational development. On the other hand, EFA-DI incorporates (i) total primary net enrolment ratio; (ii) adult literacy rate; (iii) survival rate to Grade V; and (iv) average of three gender parity index for primary education, secondary education and adult literacy, with each being weighted equally (NUEPA, 2008a; UNESCO, 2007).

In India, the educational development index (EDI) has recently been published by NUEPA in association with the MHRD, GOI. The Working Group on EDI has considered three access related, five infrastructure related and six teacher related indicators along with nine outcome related indicators in the process of construction of EDI (Appendix-II). It may be said that the indicators used in constructing the EDI, are of mainly two types- one is achievement attribute that includes the nine outcome related indicators and the second is enabling attribute incorporating three sets of components – accessibility of school, school infrastructure, and teacher related indicators (Appendix-II). It may be noted here that, there are certainly other enabling attributes (socio-economic) which have a close statistical bearings with the outcome related indicators and

which have not been included in constructing the EDI. Early studies of the determinants of pupil achievements in developed countries suggested that school-related indicators were not significant enough in explaining the variations in pupil achievements. Household-related factors were found to be more important. However, more recent studies based on improved statistical methods conclude that, school-related factors too have a strong influence on pupil achievements (Varghese, 1999).

In view of the above, it may be assumed that there should be a relation between the enabling attributes and achievement attributes. A multiple regression analysis is carried out in this section in order to assess the problem of educational deprivation in West Bengal. For this, a selected number of enabling indicators are used here as explanatory variables and some selected achievement indicators as dependent variable in the regression equation. The explanatory variables are Ratio of Primary to Upper Primary Schools/Sections (PRIUPRI), Average Student-Classroom Ratio (ASCR), Schools with Student-Classroom Ratio > 60 (SCR), Schools with Girl's Toilet (TOILETG), Pupil-Teacher Ratio (PTR), Single-Teacher Schools (in schools with more than 15 students, SINGTCH) and Percentage of Female Teachers (FEMTCH). These variables are regressed on Gross Enrolment Ratio (GER), Drop-out Rate (DOR), Gender Parity Index in Enrolment (GPIER), Percentage of Appeared Children passing with 60 per cent and above Marks both for boys and girls (PASSBOY & PASSGIRL). The regression result is presented in Table 4.11.

The ratio of primary to upper primary schools/sections (PRIUPRIR) is an access component which is expected to be inversely related to educational development. In the present regression analysis, it also exerts the same effect on the indicators relating to the educational outcomes. It is found that PRIUPRIR is an important variable and has important bearings more specifically on the outcome related indicators relating to the primary education than upper primary education. It signifies that the availability of adequate number of upper primary schools can retain the children who are enrolled in grade-I up to the final grade (IV) of primary level within the specified years. At the same time, it has sufficiently larger impact on the quality of result both for boys and for girls at primary level. It has earlier been stated that West Bengal has the largest ratio of primary to upper primary schools/sections as per latest data of NUEPA. This high ratio (5.4 as compare to national average of 2.5; Flash Statistics, 2006-07) does not only adversely affect EDI of NUEPA, it also affects other indicators that simultaneously decreases the absolute value of the index too. It thus appears that the establishment of new upper primary schools is highly in need to augment the development of education, especially for primary education, in this state.

The proportion of schools with student classroom ratio 60 and above is an infrastructure related indicator which reflects upon the student-load in a classroom. The teaching - learning environment may be disturbed owing to the presence of excess number of students in a classroom and accordingly its negative impact on education is assumed. An interesting result has been found in the present analysis. At primary stage, it has impact only on enrolment ratio (GER). The direction of impact (positive) is opposite to the underlying assumptions of NUEPA. It may be said here that GER is an outcome of educational process which is quantitative in nature. Owing to the introduction of some recent government policies (e.g. arrangement of cooked mid-day meal, supply of free text books up to class VIII, preparation and maintenance of child register, enrolment drive etc), the enrolment rate across all the states in the country has been increased (Analytical Report 2006-07). In addition to this, in West Bengal, no detention policy has been adopted at primary level. These are not included along with the socio-economic indicators in this analysis. All these may have larger positive impact on GER than the negative impact of percentage of schools with student classroom ratio 60 and above (SCR). But, SCR is not significant in affecting the GER at upper primary level. It may be noted here that there is no hard and fast rule for detention at upper primary level in the state. Apart from this, the SCR has its assumed negative impact on the qualitative outcome related indicators (GPIENR, PASSBOY and PASSGIRL). One thing that is noticeable here is that the indicators have its impact only at upper primary level. At primary level, the SCR has no statistically significant impact on outcome related indicators as such.

School without Drinking Water Facilities, Average Student-Classroom Ratio (ASCR) and Schools with Girl's Toilet are other three indicators under infrastructure category that are included in computing EDI by the Working Group of NUEPA in this respect. The first two indicators have been designed to have its negative impact while the last one is positive in nature. We have also incorporated these three indicators in the multiple regression analysis. The proportion of Schools with Girl's Toilet only exerts its positive impact on GER at upper primary level. Secondly, ASCR is also found to be significant with a positive impact on GER at upper primary level that seems to be confusing indeed. One explanation may be added here is that higher the number of enrolled children at any stage will lead to a higher GER in that stage too. Now, if the number of classrooms does remain constant at that time, evidently there will be a higher average student-classroom ratio (ASCR). In all other cases, the indicators have been remained insignificant. It should be noted here that Drinking Water Facilities is excluded from the regression equation framed for primary level because of escaping from the problem of multicollinearity after following the VIF rule which is discussed in the earlier section of this chapter. This implies that such indicators do only have their own impact in the process of computing the EDI, they do not show any further enhancing effect on other indicators related with the construction process of EDI.

Among the indicators related with the teacher category, Pupil-Teacher Ratio (PTR) and Percentage of Female Teachers (FEMTCH) have been included in our district level analysis. The PTR does not appear to be significant in affecting any of the achievement attributes at any of the stages of education in question. Unexpectedly, FEMTCH puts forth a negative impact on the achievement attributes. Only the gender related outcome indicator (Gender Parity Index in Enrolment) is found to be positively influenced by FEMTCH. It implies that female teacher is much more effective in retaining the girl children at school. However, it is not significant at the upper primary level of education.

It may be worth to note here that due to the limited number of observations (19 education district excluding Kolkata) and due to the non-availablity of the data at block level, a limited number of explanatory variables have been used in the present district level analysis. To obtain a clearer picture, analysis of district level of the country followed by block of a particular state and finally inter school analysis of a particular district will be more appropriate, which is beyond the scope of the present study.

Table-4.11: Regression Result- Institutional indicators

Regression Result- Primary

Dependent Variable:	Explanatory Variables						
	SCR	TOILETG	PTR	FEMTCH	PRIUPRIR	SINGTCH	ASCR
GER	1.217**	NS	NS	-1.872***	NS	NS	NS
DORPRI	NS	NS	NS	NS	NS	NS	NS
RTNRPRI	NS	NS	NS	-1.567**	-13.354**	NS	NS
GPIENR	NS	NS	NS	0.191**	NS	NS	NS
PASSBOY	NS	NS	NS	-0.864**	-6.337**	NS	NS
PASSGIRL	NS	NS	NS	-0.645*	-5.638**	NS	NS

Regression Result- Upper Primary

Dependent Variable:	Explanatory Variables						
	SCR	TOILETG	PTR	FEMTCH	PRIUPRIR	DWFCLTY	ASCR
GER	NS	1.091**	NS	NS	NS	NS	1.124**
GPIENR	-0.327*	NS	NS	NS	-5.038**	NS	NS
PASSBOY	-0.309**	NS	NS	NS	NS	NS	NS
PASSGIRL	-0.247*	NS	NS	NS	NS	NS	NS

Note: *** significant at 1% level, ** at 5% and * at 10%, NS indicates not statistically significant.

4.7 Concluding Observations

The previous chapter explored achievements in literacy rate and elementary education in India that was found to be lagging far behind the advanced nations of the world. It was also observed that, over the last fifty years (1951-2001) some of the Indian States have fared better in this respect, while some other states are yet to get even closer to the international norm. West Bengal was found to be a typical state in this regard. Its literacy rate is close to the national average and it lies in the middle-most position among the Indian states. However, its rank with respect to the development of elementary education scenario is very deplorable. It lies almost at the bottom position in this regard. Observing such typicality, the state deserved a special focus and the present chapter provides the detailed educational scenario of this particular state.

Some of the important observations and findings of this chapter are summarised below to aid in further in-depth analysis of the state's elementary educational scenario.

As per the Census 2001, the district of Uttar Dinajpur in the State, is at the bottom most position in this respect with a literacy rate of 47.9%. The district wise rank analysis of literacy achievement shows that Murshidabad, Malda and Uttar Dinajpur are the three districts whose rank in literacy achievement (rural) over the last 50 years have been in lower rungs. It is found from the correlation analysis that the female literacy has a strong influence on the overall literacy of a region. Uttar Dinajpur having the lowest female literacy rate also has the least overall literacy rate too. Block level Index of Variation in literacy rate for the district is found to be the highest, which suggests that regional variation is also a major problem in this district.

Out of the 843 villages in the state with a minimum of 25% literacy rate, Uttar Dinajpur with 207 villages in this category tops the list, which implies that educational deprivation is mostly concentrated in this particular district. The share of Schedule Caste and Tribes in these deprived villages also indicates that the deprivation is more prominent for the tribes compared to the castes. Although the population distribution by religion is not available at village level, the concentration of these educationally deprived villages in the three Muslim dominated districts (Uttar Dinajpur, Murshidabad and Malda) indicates that deprivation is also of this particular religious segment of population. It is also found that the region with relatively lower literacy rate recorded higher increase in literacy rate in the last decade. However, Uttar Dinajpur with lowest literacy rate in 1991 could barely manage a literacy jump of 15.08% in the rural areas and 6.01% among the urban population. Nine districts in the state have been found where the literacy jump in the last decade is found to be higher than Uttar Dinajpur. Thus it appears that the district has some unique socio-economic characteristics that may be responsible for such a disappointing literacy achievement over the past decades. This paves the way to look into educational scenario of the district of Uttar Dinajpur in detail which has been undertaken in the next chapter.

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APPENDIX-4.I

Achievement Index in Literacy Rate across the districts between 1951 and 2001

	1951	1961	1971	1981	1991	2001
WEST BENGAL	0.200	0.343	0.409	0.521	0.693	0.857
DARJILING	0.166	0.332	0.403	0.545	0.697	0.905
JALPAIGURI	0.039	0.173	0.254	0.327	0.503	0.770
KOCH BIHAR	0.082	0.206	0.223	0.348	0.513	0.822
UTTAR DINAJPUR	0.035	0.135	0.231	0.291	0.345	0.545
DAKSHIN DINAJPUR	0.035	0.135	0.231	0.291	0.523	0.782
MALDAH	0.000	0.074	0.138	0.223	0.360	0.581
MURSHIDABAD	0.045	0.116	0.180	0.258	0.400	0.642
BIRBHUM	0.124	0.224	0.297	0.403	0.555	0.750
BARDDHAMAN	0.151	0.348	0.434	0.545	0.756	0.881
NADIA	0.086	0.314	0.380	0.455	0.615	0.820
NORTH 24 PARGANAS	0.243	0.398	0.496	0.609	0.830	1.000
HUGLI	0.243	0.440	0.510	0.647	0.830	0.955
BANKURA	0.066	0.233	0.291	0.472	0.608	0.779
PURULIYA		0.133	0.202	0.331	0.476	0.661
MEDINIPUR	0.145	0.310	0.403	0.555	0.868	0.952
HAORA	0.321	0.470	0.534	0.693	0.842	0.984
SOUTH 24 PARGANAS	0.243	0.398	0.496	0.609	0.654	0.870

APPENDIX-4.II

Educationally Dying Villages in West Bengal

Sl.No	District	Name of the Village	Population 7+ age group	Literate Person	Literate Male	Literate Female	Primary School	Dependency on Agriculture
1	***U. Dinajpur***	***Chitaur***	***311***	***0***	***0***	***0***	***0***	***74.0***
2	U. Dinajpur	Kantigachh	408	9	7	2	0	100.0
3	U. Dinajpur	Chirua	324	34	32	2	0	96.5
4	U. Dinajpur	Narayanpur	418	19	17	2	1	69.9
5	U. Dinajpur	Piralipara	197	16	14	2	0	79.5
6	U. Dinajpur	Chota Shikarpur	303	25	21	4	0	99.5
7	U. Dinajpur	Chiranch	697	16	12	4	1	81.0
8	U. Dinajpur	Belbari	182	14	10	4	1	93.3
9	U. Dinajpur	Pariharpur	203	25	20	5	0	99.0
10	U. Dinajpur	Uttar Talbari	339	44	39	5	1	98.9
11	U. Dinajpur	Negura	162	30	25	5	0	69.7
12	Birbhum	Udaypur	598	7	5	2	1	94.7
13	Birbhum	Bangram	577	5	2	3	1	100.0
14	Birbhum	Maligram	213	32	27	5	0	98.8
15	Birbhum	Milanchak	285	37	32	5	0	54.6
16	Birbhum	Kusumakandar	220	22	17	5	1	98.8
17	***Puruliya***	***Poradi***	***370***	***54***	***54***	***0***	***1***	***13.5***
18	***Puruliya***	***Bangrisamil Alias***	***182***	***3***	***3***	***0***	***1***	***92.2***
19	Puruliya	Kalha	227	14	11	3	0	49.6
20	Puruliya	Shilingda	234	82	79	3	1	28.6
21	Puruliya	Sitarampur	212	57	53	4	1	78.6
22	Puruliya	Pitidiri	413	66	62	4	1	51.5
23	Puruliya	Brindabanpur	417	66	62	4	1	99.2
24	Puruliya	Bhunighra	320	89	84	5	1	99.2
25	Puruliya	Satsayerdih	569	53	48	5	1	99.8
26	Puruliya	Senkebasa	274	43	38	5	1	86.3
27	Nadia	Chak Madandanga	199	31	26	5	2	93.5
28	***Murshidabad***	***Panchberia***	***197***	***0***	***0***	***0***	***0***	***44.8***
29	Murshidabad	Arazi Gorsa	189	10	7	3	0	20.8
30	Murshidabad	Par Debidaspur	183	39	34	5	0	60.8
31	Midnapur	Bandadhara	168	39	36	3	0	98.4
32	Midnapur	Bara Rajgram	257	38	11	3	0	78.5
33	Midnapur	Luti Jhuri	248	69	56	4	0	100.0
34	Midnapur	Ektali	195	46	35	5	0	100.0
35	Midnapur	Majurdima	204	70	48	5	1	68.5
36	Malda	Ratanlalpur	494	14	13	1	0	96.7
37	Malda	Raghabpur Gujia	342	30	26	4	0	99.4
38	Malda	Saidpur	210	13	9	4	0	100.0
39	Malda	Jot Maniram	227	41	37	4	1	100.0
40	Malda	Lakshmi Kandar	302	20	16	4	0	99.4
41	Koachbehar	Jhar Singheswar	302	27	23	4	0	100.0
42	Darjeeling	Tharu Bhita	190	35	31	4	0	4.2
43	Bankura	Soul Ponamara	212	41	36	5	0	98.6
	TOTAL	**43 Villages**	12774	**1425**	**1218**	**151**	**20**	82.0

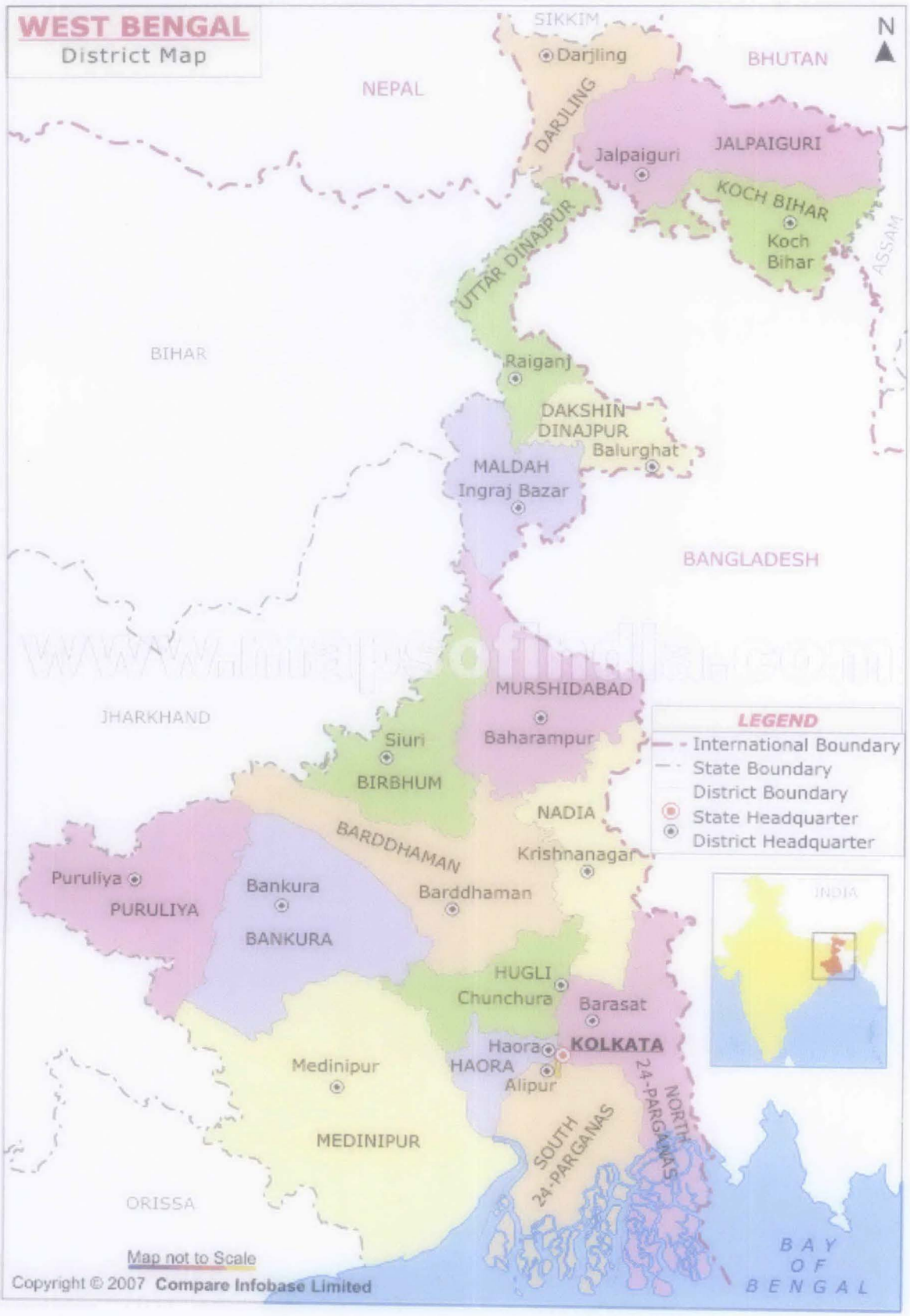
APPENDIX-4.III:

Indicators Used in Computing EDI

Components	Indicators	Type of indicators	Attributes
ACCESS	Percentage of Habitations not Served	Negative	ENABLING
	Availability of Schools per 1000 Population	Positive	
	Ratio of Primary to Upper Primary Schools/Sections (only at Upper Primary stage)	Negative	
INFRASTRUCTURE	Average Student-Classroom Ratio	Negative	
	Schools with Student-Classroom Ratio > 60	Negative	
	School without Drinking Water Facilities	Negative	
	School with Boy's Toilet	Positive	
	Schools with Girl's Toilet	Positive	
TEACHERS	Percentage of Female Teachers	Positive	
	Pupil-Teacher Ratio	Negative	
	School with Pupil-Teacher Ratio > 60	Negative	
	Single-Teacher Schools (in schools with more than 15 students)	Negative	
	Percentage of Schools with 3 or less Teachers	Negative	
	Teachers without Professional Qualification	Negative	
OUTCOMES	Gross Enrolment Ratio – Overall	Positive	ACHIEVEMENT
	Scheduled Castes : Gross Enrolment Ratio	Positive	
	Scheduled Tribes : Gross Enrolment Ratio	Positive	
	Gender Parity Index in Enrolment	Positive	
	Repetition Rate	Negative	
	Drop-out Rate	Negative	
	Ratio of Exit class over Class 1 Enrolment (primary stage only)	Positive	
	Percentage of Passed Children to Total Enrolment	Positive	
	Percentage of Appeared Children passing with 60 per cent and above Marks	Positive	

Source: Analytical Report 2005-06; 2006-07, NUEPA, New Delhi.

APPENDIX-4.IV



Chapter-5

Differential Educational Attainment of the Blocks of Uttar Dinajpur District

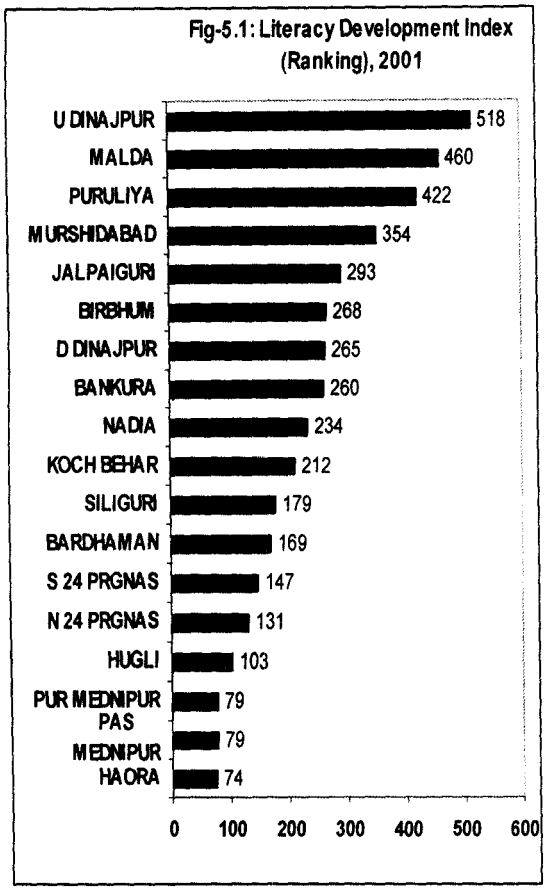
5. Introduction: Educational Perspective

The review of educational development in India and the analysis of state level literacy trend and educational development, undertaken in the previous chapters, identifies West Bengal as one of the educationally backward states in India. Again, in order to identify the educationally deprived area of West Bengal, an inter-district analysis has been carried out in the previous chapter. West Bengal was ranked at 32nd and 33rd as per the Educational Development Index (EDI) constructed by the NUEPA for the year 2005-06 and 2006-07 respectively (NUEPA 2007, 2008). The district wise EDI also brings forth a painful picture for the state. All the 19 districts of West Bengal have been ranked as lowly performed district. Malda being at the bottom-most position among the districts in this respect is closely followed by Murshidabad and Uttar Dinajpur respectively. The Literacy Development Index (LDI) presented earlier also shows that none of the districts in West Bengal could maintain the high LDI category. Nine out of 17 districts remain as lowly performed districts while the others show average performance as per the selected literacy characters of 2001.

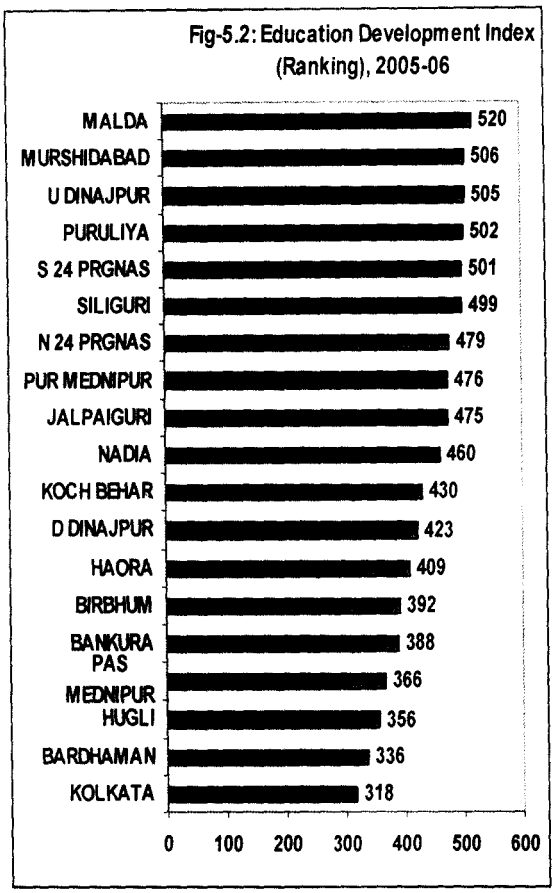
Besides this average deprivation, district level variation is also very high in the state. The performance of the district as per the indicators related to elementary education in the state and the literacy characters is detailed out in Figures 5.1 & 5.2. Considering Figures 5.1 & 5.2, the districts of Malda, Murshidabad, Uttar Dinajpur and Puruliya have been found to occupy the lowest ranks as per both the LDI and the EDI. The standard deviation of the ranks related with LDI (133.8) is much higher than EDI (59.2). This signifies that district wise variation in literacy attainment in the state is much more dominant than variations in educational development at elementary level.

The present chapter focuses on the district of Uttar Dinajpur, the least literate district in the state and ranked at 518 out of 593 districts in India in terms of literacy rate. At the same time, it is placed at the rank 505 out of 569 districts for which EDI has been calculated. Moreover, the Government of India has identified some districts that need special focus on the basis of the number of out-of-school children and districts with a higher concentration of Scheduled Castes and Scheduled Tribes population. Uttar Dinajpur has been found as one such district that has high concentration of Scheduled Castes and having more than 50000 out of school children in the year 2005-06 (http//www.educationforallinindia.com/special-focus-districts.htm).

Apart from this, the report of the Sachar Committee (GOI, 2006) has identified top 100 districts (by size of Muslim Population, 2001 Census) amongst which Uttar Dinajpur occupied 16th position as per its size of Muslim population (absolute). Short-listing the top 20 districts among which 09 districts are present in West Bengal, the socio-economic indicators of the Muslim population like, dependency on agriculture (80% of the total worker), Female literacy rate (25.5%), size of the urban population (2.1%) etc., are mostly staggering in this particular district.



Source: Calculated from the Census Data 2001.



Source: Calculated from NUEPA, 2007

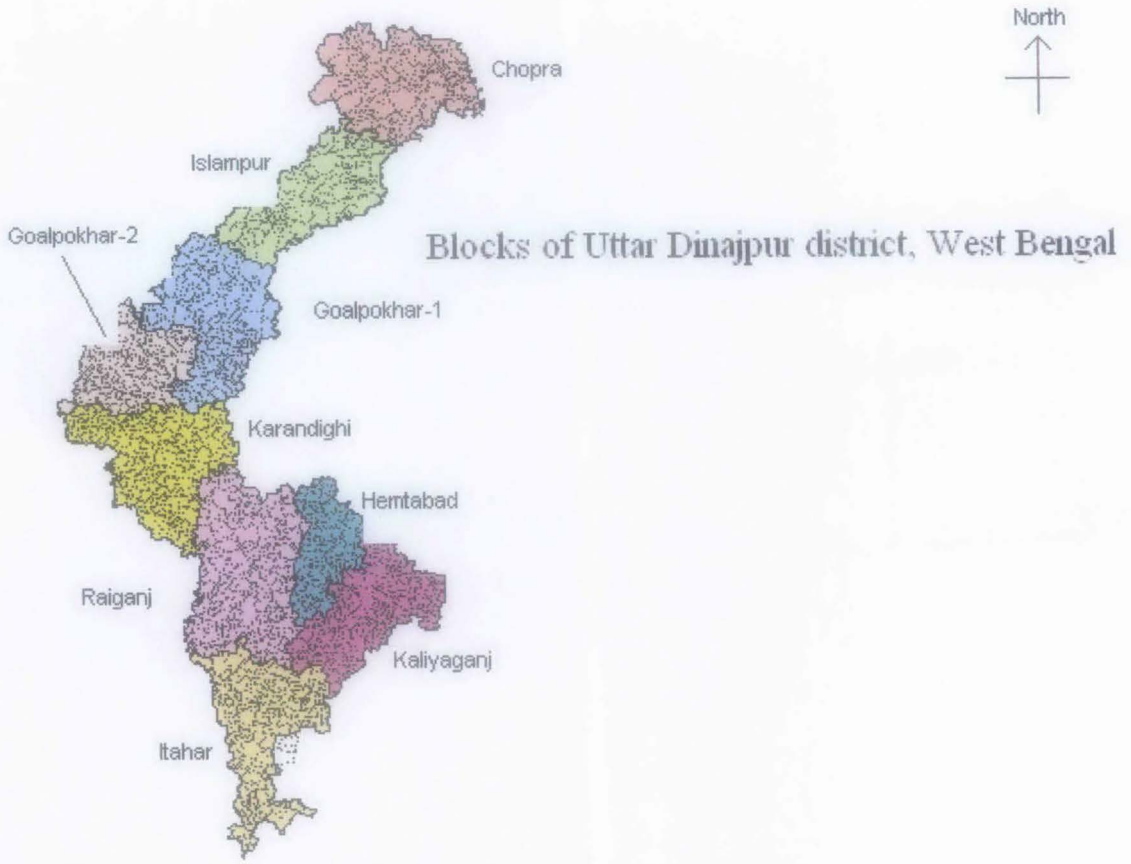
5.1 An Outline of the District

The origin of this district bears connection with the partition of India at the dawn of independence in 1947. The Dinajpur district of undivided Bengal had been split into two parts subsequent to this partition, one part being named West Dinajpur which was incorporated in the province of West Bengal in India and the other part as Dinajpur in East Bengal of Pakistan. Since then, the district West Dinajpur was an undivided district until 1992. In order to facilitate the administrative setup, the West Dinajpur district was again divided into two districts, namely, Uttar Dinajpur and Dakshin Dinajpur w.e.f. 1st day of April, 1992. Thus Uttar Dinajpur is a newly bifurcated district of West Bengal since 1992. The district is situated in the northern part of the state of West Bengal having borders with the neighboring country Bangladesh on the east, the state of Bihar on the west and by three other districts of West Bengal namely Darjeeling, Malda and Dakshin Dinajpur, on the north and south.

The area of the district is 3140 square km. Road transport is the primary means of communication of this district. A small part of the district is connected by the Northern Frontier Railways. The National High Way No 34 and 31 passes through the district and connects the greater area of the district.

The district is purely agrarian in nature. However, after the partition of the district in 1947, the less fertile lands have come over to the Indian state. The principal crops are Aman (winter rice), Bhadoi (autumn rice), jute, rape, mustard, and sugarcane. The district is the main producer of jute in the state. Islampur Subdivision plays a significant role in this respect. It may be noted here that the district has two subdivisions, namely Raiganj and Islampur. In recent times, Boro is extensively cultivated by using irrigated water. Among all the districts, it is one of the most backward districts so far as industrialisation is concerned. Some small rice mills and mini oil mills are scattered in the district. Recently, two cold storages have been

established under private entrepreneurship at Islampur sub-division. This has helped the vegetable growers to store their commodities.



Source: Office of the District Magistrate, Uttar Dinajpur, http://uttardinajpur.nic.in/

Two communities dominate the religious pattern of the district population. Hindus are 51.72 and the Muslims comprise 47.86% as per the 2001 census. It has substantial proportion of Schedule Caste population (27.7%) and 5.1% Schedule Tribe population. Two important rivers run through the district. Among these, the Mahananda forms the north-west boundary of the district and it segregates the district from Darjeeling district. The second, Nagar, almost follows the boundary line between Raiganj and Islampur subdivisions. Two major languages are spoken in this district- Bengali and Urdu. The people of Raiganj subdivision speak mainly Bengali and Islampur subdivision usually speak Hindi, Urdu, Bengali and some local language which is a mixture of Hindi, Urdu and Bengali. Apart from this, Hindi speaking population is also found in the district.

Despite the fact that the undivided West Dinajpur was a low literate district in the state, yet subsequently after the partition, educationally more backward areas came under Uttar Dinajpur district. The census data of 2001 shows that the decadal (1991-01) variation in literacy rate is 26% in Dakshin Dinajpur but it is only 13% in Uttar Dinajpur. The district is also the least literate district in the state. With respect to female literacy rate, both Uttar Dinajpur and Puruliya are placed at the bottom of the list with around 30% of the females in rural areas of the districts found to be literate (Census, 2001).

The district population is about 24.5 lakhs of which 21.5 lakhs (88%) are rural and the remaining 12% (state average- 28%) are in the urban areas. This indicates that the rural scenario dominates the status of all development indicators in this particular district. Irrespective of the fact that most of the population is rural in nature, the average literacy achievement in rural areas (42.86%) is much below than the urban literacy rate (80.50%). At

the same time, the district level rural literacy rate is far below than any other districts of the state along with a large variation with the state average rate (63.4%).

The Census of India (2001) published data for five major religious groups (viz.Hindu, Muslim, Sikh, Buddhist and Jain). The district wise data reveals that the Muslim population in this district (47.36%) is much higher than the State average (25.2%) while the literacy level of the Muslims in the district (36%) is much below the State average (57.47%) of that particular religious group. Again, there is a large variation in literacy rate between muslims (36%) and non-muslims (58%) in this particular district. The survey of out of school children conducted by SRI-IMRB in 2005 has indicated that the proportion of out of school children is the highest within the Muslim community (9.97%) followed by 9.54% of Scheduled Tribes (STs), 8.17% of Scheduled Castes (SCs), and 6.97% of Other Backward Class (OBC) children (GOI, 2008) Social Sector, p.p.20). The majority (68.7%) of out of school children has been overwhelmingly concentrated in five States [Bihar 23.6%), UP (22.2%), West Bengal (9%), MP (8%), and Rajasthan (5.9%)].

The Sachar Committee's report has also highlighted several dimensions of the lower educational status of Muslim children (GOI, 2006). The Ministry of Minority Affairs has identified 103 districts as minority concentrated districts, where the population of religious minorities exceeds 25%. In this respect, the district is Muslim minority concentrated district and the overall district literacy rate and the very poor literacy rate of the minority section require serious attention for analyzing the educational backwardness of this district. Out of 10 least literate blocks of West Bengal (2001), 5 were found in Uttar Dinajpur district. Again as per the Census 2001, there are as many as 37, 956 inhabited villages/census mouzas in West Bengal. The villages under the 17 districts have been arranged by their literacy rates and by calculating the literacy rate (person) of each of the villages in West Bengal, we have identified the villages with a literacy rate below 25% and the identified villages are educationally deprived villages in the state. The state has 843 villages showing this minimum 25% literacy rate. Uttar Dinajpur with 207 villages in this category tops the list, which apparently suggests that the educational deprivation is mostly concentrated in this particular district.

In view of the socio-economic background of the district and the depressing state of educational attainment, the chapter provides a detailed analysis of the educational drawbacks of this district. It also attempts to assess the socio-economic and enabling attributes related to the educational development in general and in particular to investigate the nature and causes of such educational deprivation in this particular district.

5.2 Literacy Profile of Uttar Dinajpur

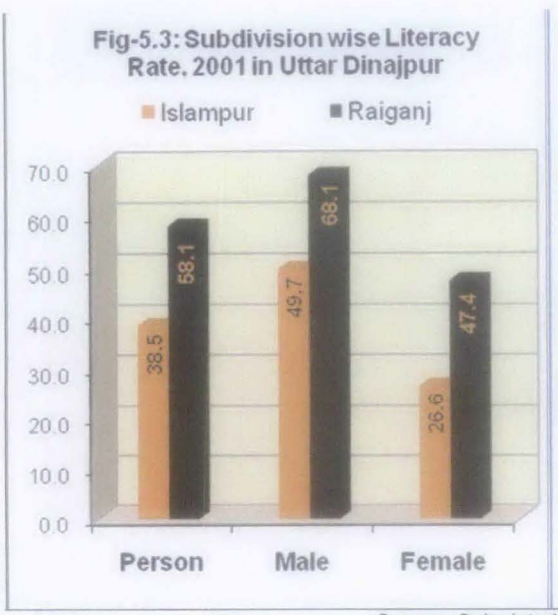
As stated earlier, after bifurcation in 1992, the district of Uttar Dinajpur inherited the educationally backward area defined in terms of blocks at sub-district level. A detailed portrayal of literacy status of the district is presented in Table-5.1. There is a large gap (37.64) between the rural and urban literacy rate in the district. The literacy rate in the urban frame of the district is almost equal to the state average while there is a large gap in literacy rate (21%) within the rural area of the district and State. The proportion of urban population is moderately high in this district (around 13%) compared to certain other districts where total literacy rate is much higher than this very particular district. Therefore, the problem of educational backwardness appears to be mostly associated with the rural areas in this district.

The administrative setup of the district is comprises 09 CD Blocks, 04 Municipalities and 02 Census Towns distributed across two subdivisions, namely, Islampur and Raiganj. A cursory look at Table-5.1 reveals some important literacy facts on the blocks including municipal areas of this district. The literacy rate of each of the CD Blocks in Islampur subdivision is much lower than the literacy rate of the blocks under Raiganj subdivision. Similar divergence is noticeable in the urban areas of the two subdivisions. An extensive gap in literacy achievement (around 20%) is found in the two subdivisions within the district (Fig-5.3).

Table-5.1: Literacy rate in the Blocks and Municipalities of Uttar Dinajpur District as per Census, 2001

CD Block/Town	% 6y+ Literacy 2001	% Male Literacy 2001	% Female Literacy 2001	Gender Gap in Literacy Rate, 2001	% 6y+ Literacy 1991	% Literacy Increase 1991-2001	No. of Villages with Literacy Rate <25%
Chopra	43.3	55.9	29.7	26.2	28.8	14.5	11
Islampur	38.4	50.3	25.7	24.6	23.2	15.2	17
Goalpokhar-1	31.6	42.6	19.8	22.9	17.6	14.0	51
Goalpokhar-2	34.1	44.0	23.6	20.5	18.4	15.7	55
Karandighi	37.6	48.9	25.5	23.3	23.3	14.3	48
Raiganj	51.5	63.0	39.1	23.9	35.4	16.1	9
Hemtabad	56.7	67.1	45.7	21.4	41.7	15.0	0
Kaliaganj	54.1	66.4	41.1	25.3	38.8	15.3	0
Itahar	47.4	57.8	36.5	21.4	32.1	15.3	16
Uttar Dinajpur (R)	42.9	54.2	30.8	23.4	27.8	15.1	207
Islampur Municipality	72.6	78.2	66	12.3	65.4	7.1	-
Dalkola Municipality	68.9	76.6	60	16.6	57.7	11.1	-
Raiganj Municipality	84.6	88.7	80	8.8	78.7	5.9	-
Nachhratpur Kasba CT	63.3	70.2	55.5	14.6	-	-	-
Kaliaganj	82.5	89.2	74.8	14.4	69.6	12.9	-
Uttar Dinajpur (U)	79.2	85.5	72.5	13.0	73.6	5.6	-
Uttar Dinajpur (T)	80.5	85.5	74.8	10.7	74.5	6.0	-
	47.9	58.5	36.5	22.0	34.6	13.3	207

Source: Calculated from Census, 1991 & 2001



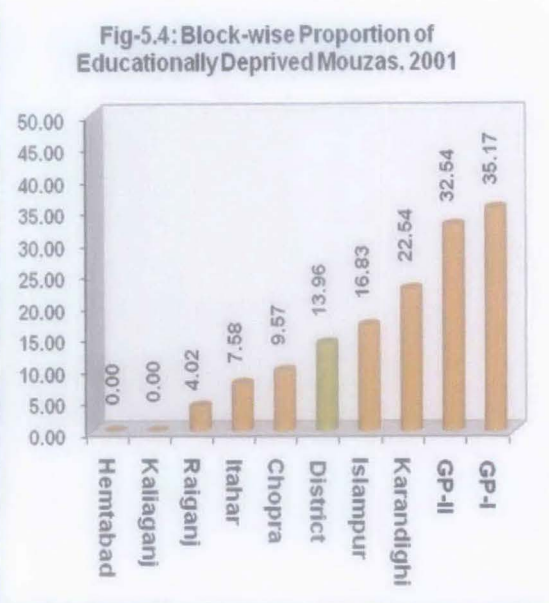


Fig-5.3: Subdivision wise Literacy Rate, 2001 in Uttar Dinajpur

Fig-5.4: Block-wise Proportion of Educationally Deprived Mouzas, 2001

Source: Calculated from Census, 2001

Apart from this subdivisional disparity, block level variation is also very high. Goalpokhar-I with 31.6% literacy rate and Hemtabad with 57% has been positioned as the least and highest literate block in this district. The literacy rate in each of the block of Islampur subdivision is lower than the district average (rural) except Chopra. However, in case of the blocks lying in Raiganj subdivision, literacy rates are above the district average. The gender gap in literacy rates is the highest in Chopra block compared to the rest of the blocks in this district, while the female literacy rate is lowest in Goalpokhar-I Block. This point to the fact that the females are not included in the development process compared to the male in this block.

Out of 10 least literate blocks of West Bengal (2001), 5 exists in Uttar Dinajpur district and all these 5 blocks are in Islampur subdivision of the district. Goalpukur-I, Goalpokhar-II, Karandighi and Islampur are the 4 blocks in respect of low magnitude of literacy rate as depicted in 2001 Census. In all the above 4 blocks, around three-fourth of the total number of females are illiterate. Again, in the previous chapter, mention has been made of 843 educationally deprived villages in the state, of which it is seen that 207 mouzas (around 25%) belong to the district of Uttar Dinajpur. The 207 deprived mouzas across the blocks of the district have been arranged in Table 5.1. It is seen from the Table that out of 207 deprived mouzas, 182 mouzas (88% of the total deprived mouzas) fall under the Islampur subdivision. The focus is therefore becoming more fine-tuned and educational backwardness appears to be more challenging in Islampur subdivision of the district. Figure-5.4 graphically depicts the block-wise proportion of educationally deprived mouzas in which it is seen that Goalpokhar-I includes highest proportion of such deprived mouzas and Chopra has the least among the blocks of Islampur.

Assessing the decadal variation (1991 – 2001) in literacy rate, it is found that almost all the CD Blocks along with the district as a whole achieved a 14-16% literacy jump. This however is not in consonance with experiences of most of the other blocks and districts of the state where low literate areas of 1991 achieved higher literacy jump in 2001, than the high literate regions/district. Thus it appears that the socioeconomic background of this district may have some distinct characteristics that disturb the process of educational development in this area. To identify such characteristics responsible for the educational backwardness of the district, an extensive survey based study of the district is required and has been undertaken in the subsequent chapter. However, prior to that, a multiple regression analysis is attempted using the secondary data at mouza level to identify socio-economic factors that are responsible for variations in literacy rates in this district.

Table-5.2: Literacy Rate among the Social Groups

Block/District	% of SC Population	% of ST Population	Literacy Rate (%)		
			TOTAL	SC	ST
CHOPRA	18.5	7.1	43.29	52.7	28.9
ISLAMPUR	17.6	2.4	38.39	54.8	27.4
GOALPOKHAR-1	14.3	3.8	31.60	50.7	17.9
GOALPOKHAR-2	23.2	6.2	34.11	44.8	26.1
KARANDIGHI	30.7	7.3	37.56	43.7	23.1
RAIGANJ	38.4	5.8	51.46	49.2	35.3
HEMTABAD	34.6	3.8	56.72	51.4	28.7
KALIAGANJ	60.5	4.6	54.13	48.6	38.7
ITAHAR	26.7	7.9	47.37	45.2	26.1
UTTAR DINAJPUR (Total)	27.7	5.1	47.89	50.1	28.7

Source: Calculated from Census, 2001

Table-5.2 computed from Census 2001, shows the literacy rate of the marginalized segments of the population of the blocks in the district of Uttar Dinajpur. Literacy rate among the Scheduled Castes is marginally higher than the total literacy rate of the district while the same is far below the district average for the Scheduled Tribe. Significantly, the blocks under Islampur subdivision display an edge over the blocks under Raiganj subdivision in literacy achievement of the SCs, although it is a fact that the proportion of this backward segment of the population is significantly lower in Islampur subdivision compared to Raiganj subdivision.

5.3 Regional Variation in Performance and Enabling Economic Attributes: A Multiple Regression Analysis at Mouza Level

The presentation of educational scenario in the earlier section reveals that the educational backwardness of this district is mostly associated with the rural areas along with a substantial variation across the blocks and also across the villages of a particular block. In order to have a handle on the nature of variation at more disaggregated level, the mouza level literacy rate of this district is calculated from the census data. All the mouzas having a population size of more than 200 are included in the analysis and as such 1403 mouzas qualify in this category out of a total 1477 mouzas in this district. The literacy distribution of these 1403 mouzas across the blocks is tabulated below in Table 5.3. The mouzas are classified as per their literacy rate and grouped into four categories depending on the range of literacy rate 0% to 20%, >20% to 40%, >40% to 60% and More than 60%. In all the blocks of Islampur Subdivision, more than 65% of the mouzas are lying in the lower two literacy range categories (L1, L2; Table-5.3) except Chopra where the proportion of such mouzas is closer to 47%. In all, 68% of the mouzas of Islampur subdivision are having literacy rate below 40% while the same is only 19% in Raiganj Sub Division. Significantly, almost all the mouzas (102 out of 105) of Hemtabad Block are in the two higher literacy ranges (H-1, H-2). On the other hand in Goalpokhar-I, more than 80% of the mouzas lie in the two lowest literacy range categories (L-1, L-2). This again categorically exhibits the poor literacy development of Islampur subdivision compared to the other subdivision of this district. None of the blocks of Islampur subdivision are found to be more advanced than the other blocks of the district in the above categories. This makes it imperative to focus on Islampur subdivision for in depth study of literacy achievement and educational attainment in the district. However, in order to have a priori knowledge of literacy achievement of the blocks, a multiple regression analysis has been attempted with mouzas as unit of observation.

Table-5.3: Block wise distribution of Mouzas as per the literacy range

Name of the Block	Number of Mouzas having the Literacy Range				
	Less than 20% L-2	>20% to 40% L-1	>40% to 60% H-1	More than 60% H-2	Total No. of Mouzas
CHOPRA	3	47	50	7	107
ISLAMPUR	8	57	30	4	99
GOALPOKHAR-1	23	88	21	5	137
GOALPOKHAR-2	32	80	43	8	163
KARANDIGHI	23	120	50	7	200
Islampur Sub Division	89	392	194	31	706
RAIGANJ	4	46	118	47	215
HEMTABAD	0	3	62	40	105
KALIYAGANJ	0	17	124	40	181
ITAHAR	4	60	110	22	196
Raiganj Sub Division	8	126	414	149	697
District	97	518	608	180	1403

Source: Calculated from Census, 2001

5.3.1 The Model

Two regression equations for each of the nine CD blocks in this district have been estimated to determine the impact of several social and economic indicators on the two significant dependent variables, viz., male literacy rate and female literacy rate. The functional relation between the variables is specified below as linear combination of different explanatory variables:

MLR = a + b1DEPRATIO + b2WFPRF + b3CULT + b4AGRWRKR + b5FERTRT + b16SC + b7ST+U -----(1)

FLR = a + b1DEPRATIO + b2WFPRF + b3CULT + b4AGRWRKR + b5FERTRT + b16SC + b7ST+U ------(2)

Where 'a' is the intercept term, bis are the coefficients to be estimated and U is the error term of the regression equation. MLR & FLR stand for the male and female literacy rates of the mouzas and are the dependent variables in the equation.

As explanatory variables, DEPRATIO is a ratio of non-worker to total worker within all the households of a particular mouza. This may be assumed as a surrogate of population dependency ratio as because the economic burden of the non-workers are generally shouldered by the earning members. WFPRF is female work force participation rate. Proportion of cultivator (main & marginal) in total workforce (main & marginal) and similarly proportion of agriculture labourer in total work force have been represented by CULT and AGRWRKR respectively. It is of special interest to see whether there is any effect of the family size (HHSIZE) on literacy attainment. As a surrogate of fertility rate, the proportion of 0-6 year age group population has been used and it is designated as FERTRT. Proportion of Scheduled Caste (SC) and Scheduled Tribe (ST) population are also incorporated to capture the impact of social backwardness in this district. School level enabling factors as explanatory variables are not used here owing to the non-availability of data at mouza level. This is the limitation of the present exercise. However, in an analysis (Reddy and Rao,2003), based on the data collected from 3000 households in 12 villages of Andhra Pradesh, it has been concluded that demand side factors (poverty, economic activity, irrigation, work participation rate, etc.) show a significant impact on literacy and dropout rates. Supply or access related factors (coverage of school, pupil-teacher ratio, % of female teacher etc.), on the other hand, do exert their influences on both but very significantly on enrolment rates.

The regression analysis has been carried out at district and block level (for each blocks separately) taking mouzas as unit of observation in both the cases. Intra-block comparisons are also undertaken to capture the specific socio-educational characteristics of the blocks separately.

The study thus explores the effects of some socio-economic factors on literacy attainment of male and female separately which will facilitate to categorically identify the factors responsible for differential literacy attainment. Secondly, an analysis by taking the mouza as a unit of analysis is unique in nature. Finally, regression analysis for each block along with a district analysis helps to identify the regional issues within the district, which is the prime objective of the whole econometric exercise.

5.3.2 Analysis of Regression Results

The Regression Result of 09 blocks along with the district as whole has been presented in Table-5.4.

Table- 5.4: Result of the Regression

CD Block Chopra								
	Model-1 MLR				Model-2 FLR			
Variables	Unstandardized Coefficients	Std. Error	't' value	Sig.	Unstandardized Coefficients	Std. Error	't' value	Sig.
(Constant)	98.801	15.223	6.490	0.000	79.227	13.144	6.028	0.000
DEPRATIO	-1.023	4.414	-0.232	0.817	1.406	3.811	0.369	0.713
WFPRF	0.031	0.232	0.133	0.894	0.065	0.200	0.326	0.745
CULT	0.019	0.090	0.206	0.837	-0.005	0.078	-0.064	0.949
AGRWRKR	-0.108	0.066	-1.621	0.108	-0.052	0.057	-0.905	0.368
SC	0.015	0.046	0.335	0.738	-0.057	0.040	-1.434	0.155
ST	-0.165**	0.081	-2.038	0.044	-0.149**	0.070	-2.139	0.035
FERTRT	-1.627***	0.426	-3.819	0.000	-2.145***	0.368	-5.830	0.000
R2	0.307				R2	0.349		
Adj. R2	0.258				Adj. R2	0.303		
N	108				N	108		

CD Block Islampur

	Model-1 MLR				Model-2 FLR			
Variables	Unstandardized Coefficients	Std. Error	't' value	Variables	Unstandardized Coefficients	Std. Error	't' value	Variables
(Constant)	94.765	15.204	6.233	0.000	66.055	12.272	5.383	0.000
DEPRATIO	-5.348	4.233	-1.263	0.210	-3.500	3.417	-1.024	0.308
WFPRF	-0.365	0.232	-1.570	0.120	-0.216	0.188	-1.150	0.253
CULT	-0.314**	0.113	-2.777	0.007	-0.270**	0.091	-2.963	0.004
AGRWRKR	-0.332***	0.100	-3.307	0.001	-0.352***	0.081	-4.345	0.000
SC	0.168**	0.064	2.630	0.010	0.096*	0.052	1.854	0.067
ST	-0.205	0.171	-1.199	0.234	-0.097	0.138	-0.702	0.485
FERTRT	-0.290	0.360	-0.806	0.422	-0.377	0.291	-1.296	0.198
R2	0.313				R2	0.329		
Adj. R2	0.260				Adj. R2	0.278		
N	98				N	98		

CD Block Goalpokhar-1

	Model-1 MLR				Model-2 FLR			
Variables	Unstandardized Coefficients	Std. Error	't' value	Sig.	Unstandardized Coefficients	Std. Error	't' value	Sig.
(Constant)	63.966	16.212	3.945	0.000	37.689	12.435	3.031	0.003
DEPRATIO	-9.394*	5.223	-1.799	0.074	-5.651	4.006	-1.411	0.161
WFPRF	-0.404**	0.170	-2.374	0.019	-0.248*	0.131	-1.900	0.060
CULT	-0.055	0.083	-0.665	0.507	-0.120*	0.064	-1.892	0.061
AGRWRKR	-0.079	0.082	-0.967	0.335	-0.150**	0.063	-2.387	0.018
SC	0.387***	0.043	8.950	0.000	0.295***	0.033	8.896	0.000
ST	-0.343**	0.165	-2.085	0.039	-0.158	0.126	-1.253	0.213
FERTRT	0.191	0.263	0.725	0.470	0.185	0.202	0.918	0.360
R2	0.415				R2	0.438		
Adj. R2	0.384				Adj. R2	0.408		
N	163				N	163		

CD Block Goalpokhar-2

	Model-1 MLR				Model-2 FLR			
Variables	Unstandardized Coefficients	Std. Error	't' value	Sig.	Unstandardized Coefficients	Std. Error	't' value	Sig.
(Constant)	80.134	11.307	7.087	0.000	51.661	8.717	5.926	0.000
DEPRATIO	-1.237	2.506	-0.494	0.622	1.126	1.932	0.583	0.561
WFPRF	-0.103	0.139	-0.736	0.463	-0.002	0.108	-0.019	0.985
CULT	-0.347***	0.086	-4.049	0.000	-0.372***	0.066	-5.628	0.000
AGRWRKR	-0.506***	0.076	-6.614	0.000	-0.461***	0.059	-7.815	0.000
SC	0.246***	0.044	5.612	0.000	0.175***	0.034	5.195	0.000
ST	0.071	0.062	1.152	0.251	0.131**	0.048	2.745	0.007
FERTRT	-0.080	0.280	-0.286	0.775	-0.054	0.216	-0.249	0.803
R2	0.420				R2	0.446		
Adj. R2	0.394				Adj. R2	0.421		
N	200				N	200		

CD Block Karandighi

	Model-1 MLR				Model-2 FLR			
Variables	Unstandardized Coefficients	Std. Error	't' value	Sig.	Unstandardized Coefficients	Std. Error	't' value	Sig.
(Constant)	64.768	10.725	6.039	0.000	47.468	8.426	5.633	0.000
DEPRATIO	-4.270	3.184	-1.341	0.181	-1.636	2.501	-0.654	0.514
WFPRF	-0.222*	0.129	-1.720	0.087	-0.162	0.101	-1.599	0.111
CULT	-0.030	0.072	-0.411	0.682	-0.114**	0.056	-2.022	0.045
AGRWRKR	-0.437***	0.059	-7.454	0.000	-0.420***	0.046	-9.126	0.000
SC	0.383***	0.034	11.314	0.000	0.225***	0.027	8.445	0.000
ST	0.113**	0.045	2.497	0.013	0.089**	0.036	2.494	0.013
FERTRT	0.090	0.232	0.389	0.697	-0.147	0.182	-0.809	0.420
R2	0.487				R2	0.418		
Adj. R2	0.468				Adj. R2	0.397		
N	138				N	138		

CD Block Raiganj

	Model-1 MLR				Model-2 FLR			
Variables	Unstandardized Coefficients	Std. Error	't' value	Sig.	Unstandardized Coefficients	Std. Error	't' value	Sig.
(Constant)	122.526	11.396	10.752	0.000	101.801	10.759	9.462	0.000
DEPRATIO	-12.907**	4.572	-2.823	0.005	-9.986**	4.317	-2.313	0.022
WFPRF	-0.431**	0.164	-2.632	0.009	-0.415**	0.154	-2.683	0.008
CULT	0.028	0.062	0.450	0.653	-0.114*	0.059	-1.930	0.055
AGRWRKR	-0.261***	0.062	-4.241	0.000	-0.343***	0.058	-5.892	0.000
SC	0.098**	0.030	3.250	0.001	0.024	0.028	0.848	0.398
ST	-0.041	0.080	-0.507	0.612	-0.035	0.076	-0.460	0.646
FERTRT	-0.993***	0.225	-4.415	0.000	-0.905***	0.212	-4.264	0.000
R2	0.285				R2	0.349		
Adj. R2	0.261				Adj. R2	0.327		
N	215				N	215		

CD Block Hemtabad

	Model-1 MLR				Model-2 FLR			
Variables	Unstandardized Coefficients	Std. Error	't' value	Sig.	Unstandardized Coefficients	Std. Error	't' value	Sig.
(Constant)	54.176	12.755	4.247	0.000	48.979	11.570	4.233	0.000
DEPRATIO	6.295	3.880	1.622	0.108	3.792	3.520	1.077	0.284
WFPRF	0.146	0.140	1.037	0.302	0.017	0.127	0.136	0.892
CULT	0.159**	0.074	2.129	0.036	0.075	0.068	1.109	0.270
AGRWRKR	-0.228**	0.075	-3.059	0.003	-0.200**	0.068	-2.959	0.004
SC	0.052*	0.029	1.828	0.071	-0.090**	0.026	-3.475	0.001
ST	-0.299**	0.138	-2.159	0.033	-0.240*	0.126	-1.914	0.059
FERTRT	0.246	0.313	0.788	0.432	0.075	0.284	0.266	0.791
R2	0.274				R2	0.320		
Adj. R2	0.221				Adj. R2	0.271		
N	106				N	106		

CD Block Kaliyaganj

	Model-1 MLR				Model-2 FLR			
	Unstandardized Coefficients	Std. Error	't' value	Sig.	Unstandardized Coefficients	Std. Error	't' value	Sig.
(Constant)	77.070	11.870	6.493	0.000	60.189	12.381	4.861	0.000
DEPRATIO	2.573	4.820	0.534	0.594	0.750	5.027	0.149	0.882
WFPRF	0.014	0.142	0.095	0.924	-0.038	0.149	-0.253	0.801
CULT	-0.062	0.060	-1.039	0.300	-0.079	0.063	-1.254	0.212
AGRWRKR	-0.127*	0.065	-1.962	0.051	-0.043	0.068	-0.639	0.524
SC	-0.101***	0.024	-4.155	0.000	-0.221***	0.025	-8.736	0.000
ST	-0.263**	0.076	-3.473	0.001	-0.375***	0.079	-4.750	0.000
FERTRT	0.021**	0.252	0.084	0.933	0.045	0.263	0.173	0.863
R2	0.192				R2	0.384		
Adj. R2	0.160				Adj. R2	0.359		
N	181				N	181		

CD Block Itahar

	Model-1 MLR				Model-2 FLR			
Variables	Unstandardized Coefficients	Std. Error	't' value	Sig.	Unstandardized Coefficients	Std. Error	't' value	Sig.
(Constant)	102.978	13.478	7.640	0.000	85.234	12.027	7.087	0.000
DEPRATIO	-6.013	4.982	-1.207	0.229	-7.206	4.446	-1.621	0.107
WFPRF	-0.213	0.153	-1.388	0.167	-0.336**	0.137	-2.458	0.015
CULT	-0.263***	0.073	-3.611	0.000	-0.200**	0.065	-3.067	0.002
AGRWRKR	-0.453***	0.068	-6.698	0.000	-0.392***	0.060	-6.491	0.000
SC	0.010	0.028	0.373	0.710	-0.133***	0.025	-5.299	0.000
ST	-0.041	0.051	-0.804	0.422	-0.119**	0.045	-2.641	0.009
FERTRT	0.000	0.236	-0.001	0.999	0.087	0.211	0.411	0.681
R2	0.271				R2	0.402		
Adj. R2	0.243				Adj. R2	0.380		
N	196				N	196		

District Uttar Dinajpur

	Model-1 MLR				Model-2 FLR			
Variables	Unstandardized Coefficients	Std. Error	't'	Sig.	Unstandardized Coefficients	Std.	't'	Sig.
(Constant)	102.796	4.162	24.696	0.000	86.776	3.879	22.372	0.000
DEPRATIO	-9.044***	1.280	-7.066	0.000	-9.190***	1.193	-7.705	0.000
WFPRF	-0.398***	0.052	-7.651	0.000	-0.421***	0.048	-8.679	0.000
CULT	-0.041	0.026	-1.551	0.121	-0.056**	0.025	-2.256	0.024
AGRWRKR	-0.195***	0.024	-8.250	0.000	-0.164***	0.022	-7.459	0.000
SC	0.170***	0.013	13.502	0.000	0.061***	0.012	5.165	0.000
ST	-0.070**	0.025	-2.755	0.006	-0.086***	0.024	-3.628	0.000
FERTRT	-0.829***	0.101	-8.194	0.000	-1.008***	0.094	-	0.000
R2	0.292				R2	0.229		
Adj. R2	0.288				Adj. R2	0.225		
N	1403				N	1403		

*Significant at 1%, **Significant at 5%, *Significant at 10%

5.3.2a Economic Dependency and Literacy Attainment

The DEPRATIO (Non-worker/Worker) is calculated as a ratio of non-worker to total worker at the district, block and mouza levels. The overall dependency ratio for the district is 1.61. The non-workers are the remaining part of the population who are not in the workforce (main & marginal). As such, a lion's share of them is either children or old age members along with other non-working males and females. The variable is found to be significant and inversely related to literacy attainment of both the genders at district level. This implies that with an increase in the ratio, i.e., with increase in the number of non-workers in a village, the literacy rate will decline and this depressing effect is more prominent for the female literacy rate than male and vice-versa. Considering the various segments of population in the non-workers category, one can arrive at several explanations of how each component can impact the literacy rates. However, the variable is not found to be significant at block level in most of the blocks of the district. In the blocks of Islampur subdivision, it is insignificant except in Goalpokhar-I, while the ratio appears to be significant with strong negative impact on literacy rate in the blocks of Raiganj subdivision except Kaliyaganj.

5.3.2b Female Work Participation and Literacy Attainment

Most of the Indian studies (Pandey, 1990; Jeejeebhoy, 1993; Krishnaji, 2001 and Mukhopadhaya, 1994) have established the negative impact of WFPRF on literacy and enrolment. This is partly because the daughters have to shoulder the responsibilities of household chores and sibling care and partly because the lack of maternal attention and supervision discouraging girl children's schooling. The WFPRF, which is measured as the proportion of total female workers to total female population, is inversely related to literacy rates of both males and females, supporting the earlier numerous studies. This holds true for inter-mouza analysis but at sub-district level that is at the block level, the result is not uniform. Only in two blocks (Goalpokhar-I and Raiganj) it is found to be statistically significant with negative impact on both male and female literacy rate. In Karandighi, it is found to be significant in influencing male literacy rate and in Itahar, the female literacy rate. In the five blocks of Chopra, Islampur, Goalpokhar-II, Kaliyaganj and Hemtabad) the female workforce participation rate does not bear any significant statistical relation with the literacy development of those areas. It may be due to the fact that the additional resources from mothers'earnings have overshadowed the negative impact of mothers' absence from home (Psacharpoulos et al, 1989; Tansel, 1997). An important result in this respect has been found in a village level study in West Bengal (Sengupta et al; 2002). While the study found a significant negative effect of mothers' work participation rate on daughters' school enrolment, however it had a negative but not significant impact on grade completion. The factor does not appear to have a significant impact on the probability of dropout or retention

in school. Thus it appears that the negative impact of WFPRF on educational attainment is not universally acceptable.

5.3.2c Agricultural Dependency and Literacy Attainment

Agricultural dependency of any region can be measured by the proportion of workforce engaged in agricultural activities either as a cultivator or as agricultural labourer. Both the indicators have been included in the present analysis as explanatory variables with a priori knowledge of their negative impacts on literacy attainment so far as the earlier literature is concerned. It has been mentioned earlier that nearly 80% of the Muslim population depends on agriculture in this district. The census data shows that 76.5% of the total work force is engaged in agriculture in the rural area of which 32.7% are cultivators (main & marginal) and 43.77% are agricultural labourers (main & marginal). Thus, this economic variable is expected to play a significant role in determining any social variable in the rural areas of the district.

The review of the regression results so far show that at district level, an increase in the proportion of agricultural worker (AGRWRKR) exerts a significant negative impact on both male and female literacy rate with a marginally lesser depressing effect on female literacy rate. It may be worthy to note here that, 07 out of 09 blocks have more than 75% of workers (except Chopra and Karandighi) depending on agriculture. During the paddy plantation season (mid of June to mid July), a large number of agricultural worker is in demand in the rural areas of the district. The opportunity to work as an agricultural worker at an early age (schooling age) is more lucrative for the boys than girls. Most of the rural schools, especially the upper primary and high schools are used to the paddy plantation leave instead of summer vacation. (The researcher himself is a headmaster of a rural co-educational higher secondary school under Chopra block but the said school used to remain open during the paddy plantation season. It has been an experience that during the month of June-July, the absenteeism among the boys significantly decreases. The similar experience has been shared from the adjacent schools too.) Thus an increase in the agricultural worker decreases the chance of males to be literate. On the other hand, the regression result at district level shows that proportion of cultivator (CULT) has its negative impact on female literacy only. The negative influence of these two occupational variables has been observed more or less in all the remaining blocks with a few exceptions.

It is only in the Chopra block where both AGRWRKR and CULT have remained insignificant in affecting any of the literacy variables. It may be noted here that after 1990, a large percentage of agricultural land has been transferred to tea producing land in this block and the agricultural labourers and small cultivators have become tea producers and do not come under the agricultural labourer or cultivator category of workers. This may be one of the reasons for such a non-responsive result so far.

An interesting result has also been observed in the mouza level analysis. In Hemtabad, although the AGRWRKR has its negative effect, CULT exerts its positive significant impact for enhancing the male literacy rate. However, it remains insignificant for affecting the female literacy rate. On the other hand in Kaliyaganj, AGRWRKR does exert its negative impact (the coefficient of the estimate is -0.122) on male literacy only. Proportion of cultivators in total workforce remains insignificant in affecting the literacy character irrespective of gender. This result should be an example as because the above two blocks are the first and second highest literate blocks in the district, both of them being endowed with more than 80% of rural earners dependent on agriculture. This makes it a compulsion to review some other related economic indicators. It has been seen that in Hemtabad, half of the villages have electricity for agricultural use, which is the highest in the district. Kaliyaganj too have the figure at 43.12%. Again, 28% of the total villages of this block have road connectivity within the village which again is the highest among the blocks. Considering all these, it may be said that illiteracy is not necessarily associated with the predominantly agricultural family. Rather,

by modernizing agriculture and by providing better basic infrastructural facilities to the people, the scenario can be changed in favour of literacy and educational attainment.

5.3.2d Social Backwardness and Literacy Attainment

There are several studies (Devi, 2001, Acharya, 2001, Sengupta et al., 2002) regarding disparities in school enrolment and dropout rates among the social groups (between general, SCs, STs). In a study of 1991 district level census data, Saldanha (1996) had noted that districts with higher than average SC/ST population will tend to have lower than average literacy rates. Anuradha Pande (2001) in her analysis has noted that among the SC children, a girl child is more likely to attend to young siblings and take care of old members in the family than a boy child. In general, it is often said that the social backwardness has a close positive relation with educational backwardness too.

In the present analysis, at district level, the proportion of Scheduled Tribe population characteristically has exerted its negative impact on literacy rates with a substantially more depressing effect on overall female literacy rate. The same result is found in most of the blocks except Karandighi where the proportion of ST population bears a positive influence on the literacy attainment both for the males and females.

However, the comparatively higher proportion of Scheduled Caste population in the district has a significant positive influence on the overall literacy rates with an exception in Kaliyaganj block. This is substantiated by the data presented in Table 5.2 where it is seen that the literacy attainment of the Scheduled Caste population in the district is comparatively better than the overall literacy rate. Thus summarily it may be stated that illiteracy is not necessarily a leading problem associated with the Scheduled Caste population.

5.3.2e Fertility Change and Literacy Attainment

There are several studies in India where it is found that there exists a strong negative relationship between fertility levels and the adult female literacy rates. The study by Srinivasan (1991) demonstrated that female literacy correlates highly with fertility at state level and by repeating the same exercise in the states of Kerala and Uttar Pradesh, similar results were arrived at. Agnihotri (2002) examines the relationship between rural female literacy and the size of the child population (0-6 year) using block level data from the population Census of 1991 for West Bengal. He finds that a threshold level of female literacy is associated with a continuous decline in child population (0-6 year) as the female literacy levels go up. Amongst international studies a study in Ghana by Llyod and Brandon (1994) has emphasized the complementary inhibiting effect of sustained high fertility on girls' educational progress. They conclude that high fertility appears to have a negative impact on education of girls. But it is also true that some other international studies differ from the above. Jejeebhoy (1995) has pointed out that the relationship between women's schooling and fertility – and particularly the effect of a modest level of schooling – is highly context-specific, varying by regions of the world, level of development and time.

However, in the present analysis, regressing the 0-6 population group on male and female literacy rate, the following results were found. At district level, the variable shows stronger negative impact on both male and female literacy rate. But the same is found to be insignificant in all the blocks except Raiganj. On observing such a paradoxical result, it was necessary to segregate the mouzas according to their average size of child population. The methodology applied here is detailed below.

The size of child population is 17.94% of total population in India, while it is 16.98% in West Bengal. The Uttar Dinajpur district in the state has 20.49% in this respect. The decadal (1991-2001) growth rate of population (28.7%) and the fertility rate (4.0%) are both higher in this district compared to the other districts in West Bengal. Considering such an observation, segregation of the mouzas under the district was done accordingly – those with above the average district size of child population and those maintaining less than or equal to the average district size. As such it was found that there were 1271 mouzas under the first

category and the remaining 132 as the second category. Although, such segregation is completely a special interest of the study to observe the literacy variation in such two segregated groups characterized by child population. After the segregation of mouzas, regression has been run separately for each category. In case of child population size above the district average the variable significantly influences the literacy attainment of both the males and females. However it remains insignificant where the mouzas are endowed with comparatively lower proportion of child population. It apparently signifies that below a considerable proportion of child population, it has negligible influence on literacy attainment.

What is apparent from the above secondary data analysis is that there is large variation in the nature and causes of literacy attainment even within a district. This in turns implies that a uniform policy even at a district level may not be fruitful. Planning at more disaggregated level is very much necessary and may bring some positive changes to literacy attainment.

5.4 Review of Elementary Education in Uttar Dinajpur District

It has been seen in the previous chapter that the school level enabling attributes play a significant role in affecting the school level achievement indicators, especially, the quality related outcomes such as gender parity index in enrolment, successful students with high secured marks etc. It is thus necessary to look into the institutional structure of Uttar Dinajpur district and explore whether the above outcomes hold true for the district too.

5.4.1 Institutional Structure of Education in Uttar Dinajpur

Literacy rate as calculated by the Indian Census, includes all the population of age group 7 years and above. Over this vast range, a substantial proportion of the population belongs to the schooling age group. In order to capture the extent of variation in educational development, school education scenario is thus a meaningful and important matter to understand. The following section illustrates the state of affairs in school education at district and sub-district level.

The institutional structure of education in Uttar Dinajpur district (2006-07) as reflected in Table-5.5 comprises category wise number of institutions, students enrolled and teachers in position.

Table-5.5: Basic information on Elementary Education (2006-07) in Uttar Dinajpur District

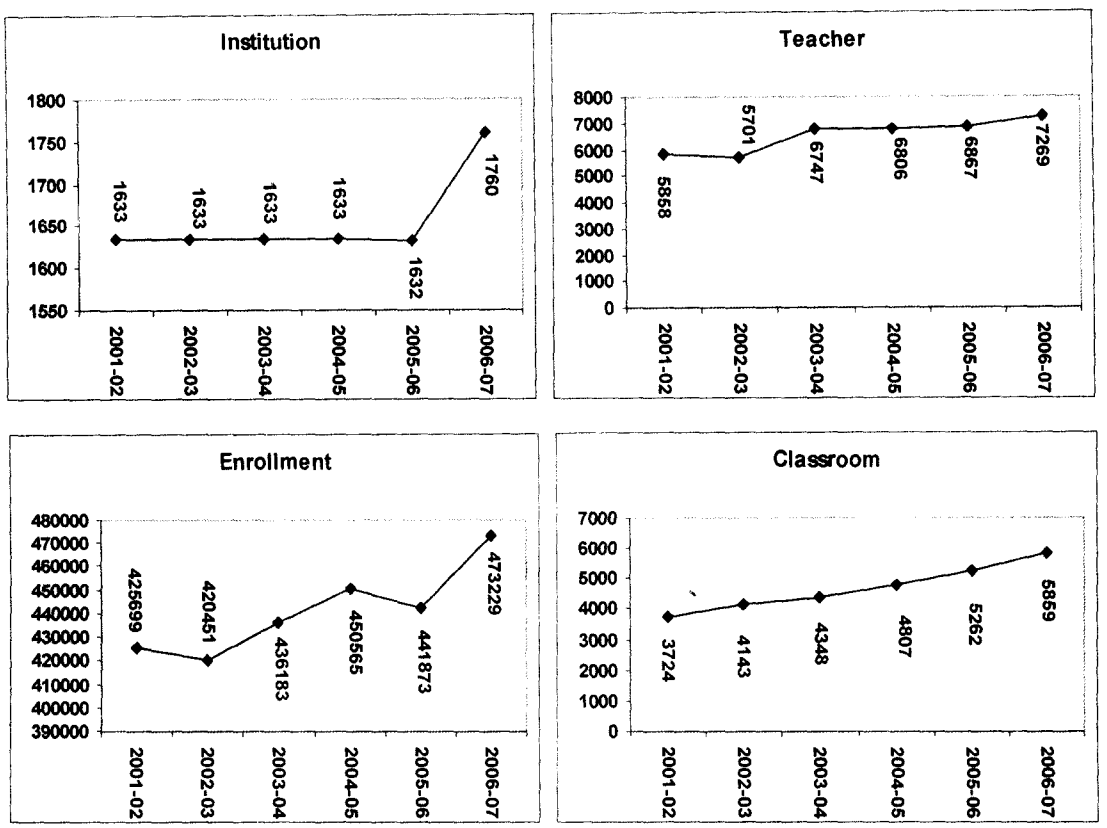
Category of the School	No. of Institutions		Total Enrolment		No. of Teachers in Position	
	Govt.	Private	Govt.	Private	Govt.	Private
Primary only	1430	120	304914	21187	4522	0
Primary with Upper Primary	0	7	0	2129	0	0
Primary with U. Primary & Secondary/Higher Sec.	0	10	0	5965	0	51
Upper Primary only	0	41	0	16729	0	284
U. Primary with Sec./ Higher Sec.	0	148	0	122305	0	2412
No response	1	3	0	0	0	0
Total	1,431	329	304,914	168,315	4,522	2,747

Source; District Report Card: 2006-07 NUEPA, 2008

Almost 88% of the total schools, 70% of the total students enrolled and 67% of the total teachers engaged, are constituents of primary education in the district. It is seen that primary education occupies an important status in education ambit. This is not a unique trait of this district, rather it is common to all the districts of West Bengal and the country as a whole. The

remaining part of the school education system (middle, high and higher secondary) is constituted by 12% of schools, 30% of total enrolled students and 33% of the total teachers in position. The district has a very weak base in tertiary level of education. Only six general degree colleges and six Professional & Technical institutions are the total subset in the educational inventory of the district (NCERT, 2005). A trend analysis of institutional structure is shown in Fig-5.5 below.

Fig- 5.5: Trend Analysis Elementary Schooling 2001-02 to 2006-07



Source: District Report Card, NUEPA different years

The reference period is from 2001-02 to 2006-07. It is observed that there is a steady growth in enrolment, teachers in position and number of available classrooms. Two basic indicators - pupil teacher ratio (PTR) and student classroom ratio (SCR) are also found to have a decreasing trend over the period. The PTR has come down to 65 in 2007-08 from 73 in 2001-02 and the SCR declined to 81 from 114 over the same period. But to cope with such an increase in enrolment, there was no addition to the number of schools till 2005-06. It is only in the year 2006-07, an additional establishment of new schools was undertaken in the district. The District Primary Education Programme (DPEP) and Sarva Siksha Mission thus stressed on providing more teachers and sanctioning additional financial resources for constructing new classrooms in the existing schools along with establishing new schools in this district. An additional sanctioning of teacher strength and classrooms was expected to cause a further decrease in the above ratios, but accessibility was not considered under such policy. This appears to be a shortcoming so far as the district level planning is concerned.

5.4.2 Madrasah Education

'Madrasah' is an Arabic word meaning an institution of education which is free from any caste, creed or religion, both on the part of learners and teachers. In West Bengal, two types of Madrasahs exist - Senior Madrasah (old pattern) and Junior/High Madrasah. In the Junior/High Madrasah the subjects taught are almost similar to that of High Schools, but Arabic as an advanced paper is also taught in these institutions. After graduating from 10th class examination from junior/High Madrasah, the students can enter the main stream of education. In Senior Madrasah the 10th level examination is known as the 'Alem

Examination' and after graduating from this stage, the students can enroll in class-XI only in the Arts stream, thereby having no chance to be acquainted with the modern techno-based world. Apart from these recognized Madrasahs, a substantial number of Moqutab type unrecognized Madrsahs also functions in the district. However, no authenticated report could be collected on them for the present research. (Unconfirmed reports say that there are as many as 56 Moqutab type unrecognized Madrsahs in Goalpokhar-I block where only religious education is being imparted). Most of the learners from such Moqutubs do not get themselves enrolled in the formal education system after completing their education in these Moqutabs.

The district has only 9 Juniour High Madrasahs, 6 High Madrasahs and 5 Seniour Madrasahs and it ranks 11th in this respect (GOWB, 2002-03). The district is thus, not sufficiently provided by such institutions in spite of a substantial proportion of Muslims in the total population of the district. Additional establishment of modern Madrasah may contribute to the increase in literacy rates of this ethnic minority.

5.4.3 Accessibility of Rural Schools in Uttar Dinajpur District

Accessibility of school is a powerful attribute that has a strong influence on educational outcomes as elaborated earlier. To provide for a primary school within walking distance from home is the primary responsibility of the government. But the district has only 71% (74.3% State average) mouzas that are covered by primary schooling and remaining 29% are not served by any primary school (Census, 2001). The situation is more pathetic in case of accessibility of upper primary schools. Only 9.14% (14.6% state average) of the villages were served as per the Census 2001 report. National Council of Applied Economics and Research (NCAER) noted that geographical proximity of primary schools and enrolment ratio together explains more than 60 per cent variation in literacy rates (NCAER, 2003). The PROBE report (1999) noted that the positive association between school facilities and pupil achievements is stronger in the educationally backward region (e.g. MP, Orissa). It is however, not significant in Kerala and weak in other educationally advanced states. Being the least literate district of the state, accessibility is expected to have much significance and better accessibility may enhance the literacy growth of the district. Apart from this poor institutional setting in the district, the distribution pattern of schools across the blocks is presented in Table- 5.6 for a better understanding of the problem.

Accessibility of primary school in three blocks of Islampur subdivision, namely, Goalpokhar-I, Goalpokhar-II and Karandighi is far below the state and district average. The block-wise location of middle (Class 5-8) school shows a strong rural urban disparity. Two subdivisional blocks - Islampur and Raiganj- include highest proportion of villages covered by the middle school. Interestingly, only 68.4% of the villages in Hemtabad block have primary schools within the village perimeter. This is much lower than Raiganj (88.2%) or Islampur (81.2%) blocks. Nevertheless, Hemtabad still maintained a literacy rate of 56.7% which is considerably higher than Islampur (31.6%) or Raiganj block (51.46%). What seems to be more important to note is that more than 12 % of villages in Hemtabad has access to an upper primary school within a village and this coverage is second highest in the district after Islampur (18.8%). The advantage in accessibility of both primary and upper primary schools within larger number of villages may have manifested in comparatively higher educational development in this block.

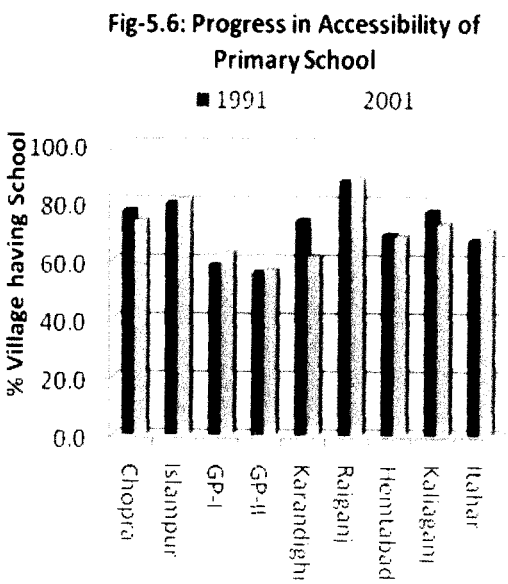
The earlier discussion on accessibility ascertained that provision of school within the specified distance (5 km) in the district is considerably low for both primary and upper primary institutions, with high concentration of primary schools in Raiganj subdivision and upper primary schools in Islampur and Raiganj blocks. It is important at this point to note the progress of accessibility over the decade 1991-2001. The distribution of schools within the census villages is taken into account as a standard of measure irrespective of category of schools in this respect.

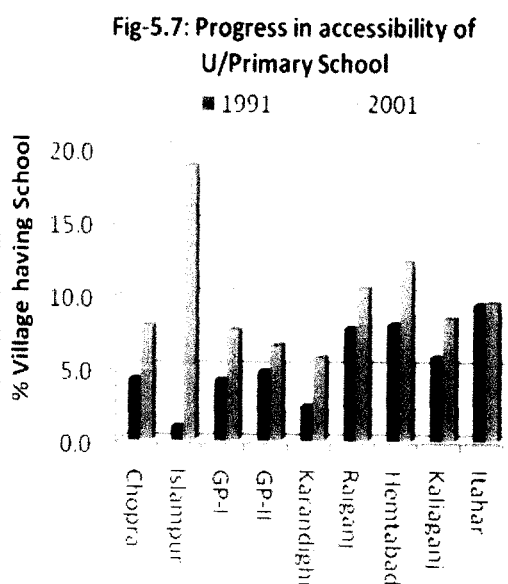
Table- 5.6: Accessibility of Rural Schools in Uttar Dinajpur District 2001

State/ District/ Blocks	Inhibited (Total)	Villages having Primary School			Villages having U. Primary School		
		within the village	withinn 5 kms	> 5kms	within the village	withinn 5 kms	> 5kms
W/ BENGAL	**37956**	**74.3**	**22**	**3.7**	**14.6**	**49.1**	**36.3**
U/ DINAJPUR	**1477**	**70.7**	**22.3**	**7**	**9.1**	**50.3**	**40.6**
CHOPRA	115	73.9	17.4	8.7	7.8	19.1	73
ISLAMPUR	101	81.2	16.8	2	18.8	43.6	37.6
GOALPOKHAR - I	145	62.8	28.3	9	7.6	26.2	66.2
GOALPOKHAR - II	169	56.8	36.7	6.5	6.5	56.2	37.3
KARANDIGHI	211	61.6	23.7	14.7	5.7	44.1	50.2
RAIGANJ	220	88.2	6.8	5	10.5	54.1	35.5
HEMTABAD	114	68.4	16.7	14.9	12.3	44.7	43
KALIAGANJ	191	72.8	23.6	3.7	8.4	69.1	22.5
ITAHAR	211	70.6	28.4	0.9	9.5	70.6	19.9

Calculated from Census of India, 2001

The Census data shows that in 1991, 1089 mouzas in the district was covered by primary school within the village but the same declined to 1044 in 2001. However, the coverage of mouzas by upper primary and secondary school recorded a higher increase over the decade. The block wise progress in this respect is shown in Figures 5.6 & 5.7.

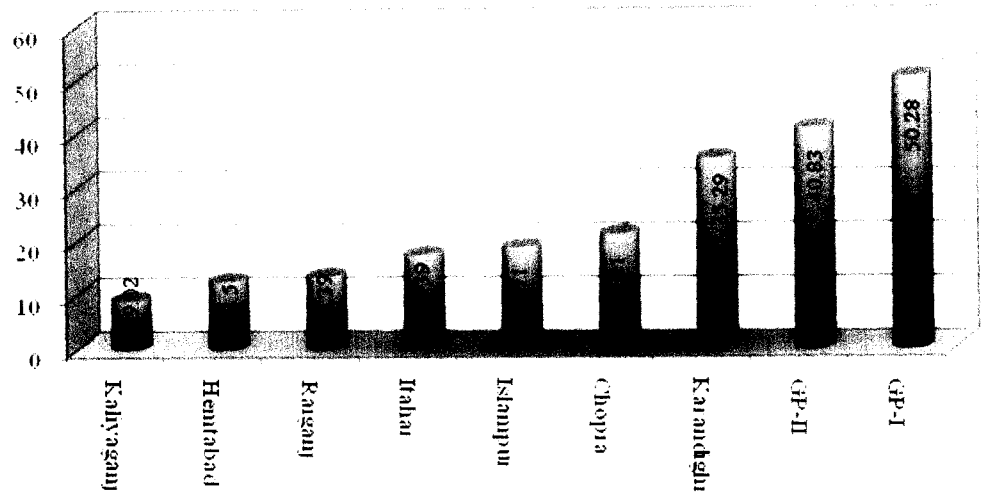




Calculated from Census of India, 2001

It is apparent from Figure 5.6 that there has been a more than moderate escalation in the numbers of both middle and secondary schools in Islampur block followed by Raiganj block. Minimal increase in post primary schools are recorded in three blocks of Islampur subdivision- Goalpokhar-I, Goalpokhar-II and Karandighi. It has been found in the last census (Census, 2001) that there are 207 Mouzas in the district where only less than one-fourth of the total population is literate. Out of this 207 Mouzas, 182 are in the Islampur subdivision and significantly 154 were in the above three blocks. Thus the slow progress in establishing upper primary and secondary institutions accessible to primary school students may be responsible for the educational backwardness in the Islampur subdivision especially in the above three blocks.

Fig-5.8: Proportion of Unserved Gram Sansad in Uttar Dinajpur, 2006-07



Source: - Office of the District Project Officer, Sarva Siksha Mission, Uttar Dinajpur. Academic Year- 2006-07

Considering the poor literacy rate of the district, availability of the school appears to be a very important issue that may influence the schooling pattern of this area. Thus providing new schools in this district deserves special attention for educational development. The recently launched programmes of the government (e.g. DPEP, SSA etc) do not confirm much achievement in this respect. The 2006-2007 data of Sarva Shiksha Abhiyan as obtained from the office of the District Project Officer, Raiganj, Uttar Dinajpur does not display any considerable increase in school facility in the district as per its need. Till date, 362 Gram Sansads out of 1422 (25.53%) in the rural areas of the district are uncovered by any type of schools (primary or upper primary). Block wise distribution of unserved gram sansads is shown in the following Figure-5.8. The blocks of Raiganj subdivision again have the benefit of better accessibility of school, compared to Islampur subdivision. Goalpokhar-I, the least literate block out of 341 CD blocks in West Bengal has no school in 50% of its Gram Sansads followed by Goalpokhar-II and Karandighi. Thus the three educationally backward blocks in the district require focused attention at the district level planning.

5.4.4. State of School-related Educational Infrastructure

The above exploration affirms the poor accessibility along with lower growth rate of accessibility of school in the district. It also draws attention to the three blocks of Islampur subdivision (Goalpukur-I, Goalpukur-II and Karandighi) that are in need of urgent attention to improve on their literacy rates and educational development. However, accessibility is not always sufficient to speak for all the school facilities that also contribute to enabling environment for education. Considering the supplementary school related infrastructures, building facility takes the primary seat so far as the positive impact on teaching-learning environment of a school is concerned. The educational infrastructure that is mirrored by the structural quality and type of building of the institutions is presented below.

The 7th All India School Education survey (2002) as tabulated in Table- 5.7, reveals that in Hemtabad block, 24 primary schools (28.2% of total primary schools) were running under open sky, yet it attained the highest literacy rate in 2001 census. While being endowed with better school building, Goalpokhar-I & II lagged behind with respect to literacy rates. More than 90% of the schools were either pucca or semipucca in all the blocks except Hemtabad. The survey also reveals that all the High and Higher Secondary schools in the district are either pucca or semi-pucca thereby showing almost equal building facilities at this level of

school education. So it appears that the status of school building in this district has very minimal relation with the educational attainment measured in terms of literacy rate.

Table- 5.7: School (Primary & U/Primary) Infrastructure in Uttar Dinajpur District by Building-Types 2002

CD Block.Town	Primary					U/Primary				
	Total	Pucca	Semi-Pucca	Kuchcha	Open sky	Schools	Pucca	Semi-Pucca	Kuchcha	Open sky
Chopra	136	41	91	4	-	6	4	2	-	-
Islampur	151	127	19	3	2	10	6	2	2	-
GP-1	112	104	7	1	-	9	5	-	3	1
GP-2	120	100	16	-	4	6	5	-	1	-
Karandighi	136	74	56	6	-	8	-	7	1	-
Raiganj	244	154	83	4	3	7	1	2	4	-
Hemtabad	85	18	43	-	24	3	-	2	1	-
Kaliaganj	162	151	9	1	1	5	4	1	-	-
Itahar	167	74	76	8	9	9	3	4	2	-
U Dinajpur Rural	**1313**	**843**	**400**	**27**	**43**	**63**	**28**	**20**	**14**	**1**
U Dinajpur Rural (%)	**92.01**	**64.2**	**30.5**	**2.1**	**3.3**	**88.73**	**44.4**	**31.7**	**22.2**	**1.6**
Islampur M	25	17	8	-	-	2	-	1	-	1
Dalkola M	10	10		-	-	1	-	1	-	-
Raiganj M	43	21	20	1	1	4	3	1	-	-
Nachhratpur Katabari CT	5		5	-	-	1	-	-	1	-
Kasba CT	6	2	4	-	-	-	-	-	-	-
Kaliaganj M	25	23	2	-	-	-	-	-	-	-
U Dinajpur Urban	**114**	**73**	**39**	**1**	**1**	**8**	**3**	**3**	**1**	**1**
U Dinajpur (Total)	***1427***	***916***	***439***	***28***	***44***	***71***	***31***	***23***	***15***	***2***

Source: - Seventh All-India School Education Survey: 2002

Further, observing the State of Educational Infrastructure as enumerated in the Report of Sarva Siksha Mission, Uttar Dinajpur, 2006-07, it is a matter of satisfaction that the district has no primary school that runs under open air as per 2006-07 estimates. So in order to discuss the building status/type of the Primary Schools in the district it is desirable to discuss it as per the availability of the classrooms under different structural forms.

Table-5.8:Type of Class Rooms of Schools in Uttar Dinajpur 2006-07

Block*	Total Class Rooms		% good		% needs minor repairing		% needs major repairing	
	Primary	U/primary	Primary	U/primary	Primary	U/primary	Primary	U/primary
CHOPRA	374	175	60.2	67.4	21.1	21.7	18.7	10.9
ISLAMPUR	457	239	60.8	49.8	16.4	28.9	22.8	21.3
GOALPUKUR-I	273	112	43.6	67.9	19	20.5	37.4	11.6
GOALPUKUR -II	278	204	52.5	41.2	24.5	21.1	23	37.7
KARANDIGHI	402	210	55.7	62.9	21.4	19.5	22.9	17.6
RAIGANJ	779	524	53.5	60.2	22.1	21	24.4	18.8
HEMTABAD	218	150	49.5	52	12.8	30	37.6	18
KALIYAGANJ	486	277	58	56.7	21	19.1	21	24.2
ITAHAR	468	233	59	53.6	17.5	22.3	23.5	24
District	**3735**	2124	**55.6**	**56.7**	**19.9**	**22.3**	**24.5**	**21**

- includes both rural and urban area

Source: - Office of the District Project Officer, Sarva Siksha Mission, Uttar Dinajpur. Academic Year- 2006-07

The data as collected from the SSM, Uttar Dinajpur for the year 2006-07 categorically classifies the classrooms into - good condition, needs minor repairing and needs major

repairing. On that basis, the performance of the district reveals a blend of both satisfactory and unsatisfactory result. It has been found that 55.6% of the total classrooms (3735) of the primary schools and 56.7% of total classrooms (2124) of the upper primary schools (V-XII) are in good condition (Table-5.8). The block level data shows that Chopra occupies the top position preceded by the blocks of Raiganj subdivision. Goalpokhar-I &II are placed once again at the bottom of the list in this respect. In spite of being an educationally advanced block in the district, Hemtabad block lies well below the district average. Thus it may well be concluded that infrastructural deficiencies may not be the only factor that can seriously affect child schooling. It is thus important to delve into other factors other than institutional deficiencies responsible for the educational backwardness of the district. It is also reflected in the data of Sarva Siksha Mission that there are nearly one-fourth of the total class rooms of the schools that needs major repairing. It may be noted here that a major portion of funding under SSM is being expended on construction and thereby it may be expected to meet the gap in the near future.

5.4.5 System Performance and System Load in Elementary Education

"Brick and mortar do not make a school efficient or useful, nor are books in the library or appliances in the laboratory so essential. Teachers make the school or mar it".

The district has 12% of population living in the urban areas and remaining 88% in rural areas. Because of the rural nature of the district, 93% of primary school, 92% of the teacher and 96% of the students are from the rural areas of the district. But the distribution of schools along with the teachers in post-primary system is comparatively better in the urban areas of the district. Thus, for 90% of the students, only 84% of total schools and 83% of total teacher strength are provisioned for the rural areas of this district (Table-5.9). As such, migration of students to the urban area is a common feature in the district for obtaining better educational access.

Table-5.9: Pattern of Basic Education in Uttar Dinajpur District: 2006-07

Block/Municipality	Primary Schools	U/Primary Schools	Primary Teachers		U/Primary Teachers		Primary Student	U/Primary Student
			Male	Female	Male	Female	Total	Total
CHOPRA	137	17	371	34	183	60	39710	15436
ISLAMPUR	157	15	408	48	124	37	39728	9094
GOALPOKHAR-1	112	14	269	16	111	26	27837	8353
GOALPOKHAR-2	119	18	278	29	171	35	31603	12270
KARANDIGHI	134	17	346	64	202	49	35847	14816
RAIGANJ	255	28	629	289	338	121	44010	24020
HEMTABAD	85	14	241	60	172	44	15564	11051
KALIYAGANJ	162	18	421	168	202	61	25732	14145
ITAHAR	171	21	461	112	190	71	30849	16328
Rural	1332	162	3424	820	1693	504	290880	125513
KALIYAGANJ	25	5	30	70	67	57	3129	3781
RAIGANJ	43	14	44	87	124	116	4088	6755
ISLAMPUR	18	7	58	50	105	48	2858	4442
KARANDIGHI	12	4	30	8	19	16	3117	2691
Urban	98	30	162	215	315	237	13192	17669
DISTRICT	1430	192	3586	1035	2008	741	304072	143182

Source: - Office of the District Project Officer, Sarva Siksha Mission, Uttar Dinajpur. Academic Year- 2006-07

This trend is mostly seen in the periphery of Raiganj and Islampur municipal towns. It is seen from the enrollment figures that the upper primary students in the municipal areas are higher than the primary school students. Migration of students from rural area to urban area for

better post primary schooling facility is seen to be the highest in Raiganj Municipality where 65% of students is added to the primary enrolment figure followed by Islampur Municipality (53%). However, unlike these two municipalities, Karandighi municipal area shows lower enrollment in the upper primary level than its primary enrollment figure. The causes of enrollment jump at upper primary level in the municipal area may be due to the better access, locational advantage and importantly for the existence of private primary school which are concentrated mostly in such area. All the rural blocks in this district show a huge cut in enrollment between primary and upper primary level (Table-5.9). The rural area of Islampur block and Goalpokhar-I show a noticeably high differential in the number of scholars studying in primary and upper primary level.

One of the positive enabling attributes of educational system is the proportion of female teachers in the schools, especially in the primary schools. Studies have shown that the presence of female teachers can enhance enrollment, retention rate and thereby can lower the drop out rate. Some micro level studies in this respect clearly indicate that female teachers represent better teacher attendance and better quality of education, thus exerting its positive impact on literacy attainment (Bhatty, 1998; Devi, 2001; Pratichi Education Report, 2002 Rao and Reddy, 2003; Thind and Jaswal, 2004).

The data on proportion of female teachers in the district again consistently shows a positive bias in favour of the blocks of Raiganj subdivision and in favour of the urban areas too. Goalpokhar-I has the lowest proportion of female teachers while it is the highest in Raiganj block followed by Kaliyaganj, Hemtabad and Itahar. The gender disadvantage is not so significant in case of upper primary teachers of the blocks.

5.4.6 System Load in Basic Education

It will be unreasonable to appraise the educational system at its very base in terms of numerical enumeration of indicators. The totality needs to be weighted by appropriate indicators. The system performance may be described by attaching weights to indicators and it is found that the system structure can be best understood in terms of the system load.

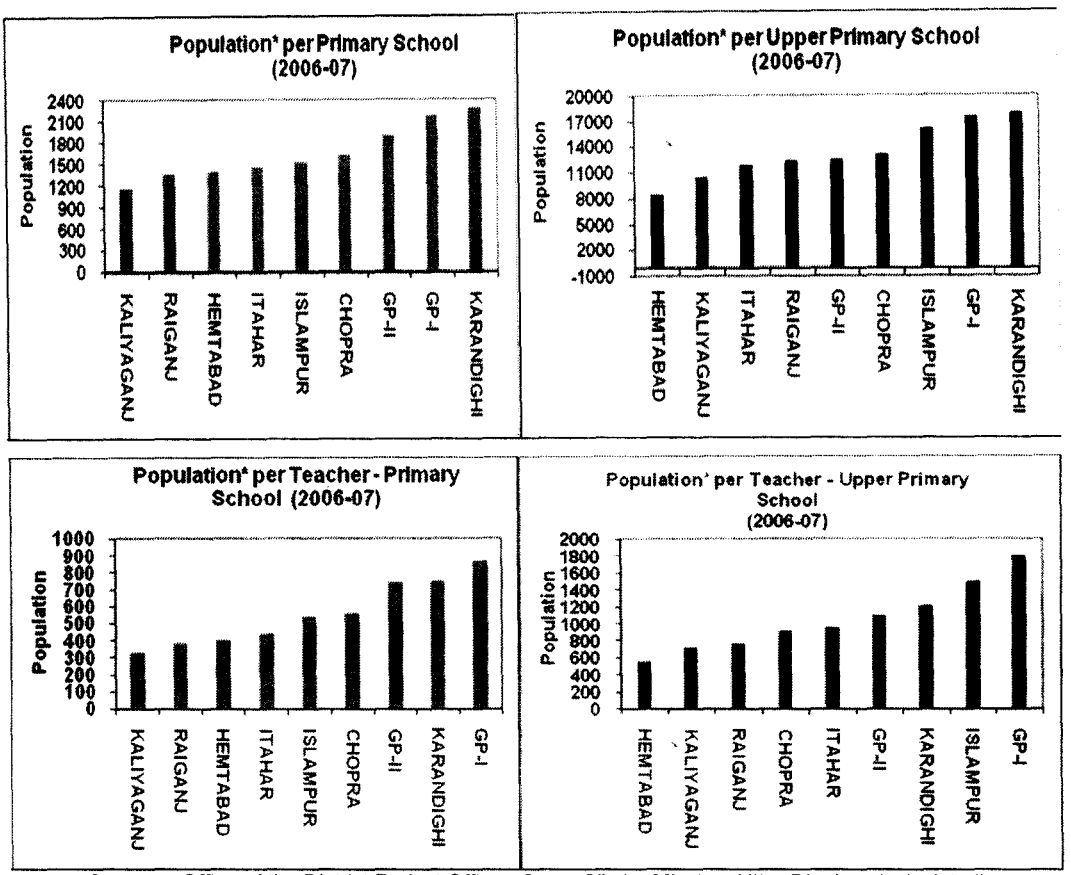
If we consider the school distribution vis-à-vis the population, it is seen that the Kaliyaganj block has the highest proportion of primary school followed by Raiganj, Hemtabad and Itahar. In order to reflect the scenario of school distribution vis-à-vis the population, a simple graphical presentation is sketched below (Fig-5.9). A similar trend is also seen in case upper primary school too. It is also seen from the diagram that population wise teacher distribution is also concentrated mostly in the blocks of Raiganj subdivision.

Again, the load of population on teacher maintains a favourable trend for all the blocks of Raiganj subdivision. The three least literate blocks (Goalpukur-I, Goalpukur-II and Karandighi) have also been ranked in the least three position in this respect. The load on a school and on a teacher (both at primary and upper primary level) is more than double in these blocks compared to the best performing blocks (Hemtabad and Kailyaganj) in these terms. Thus, the three blocks of Goalpukur-I, Goalpukur-II and Karandighi deserve immediate attention for lowering the system load to enhance educational development.

Differential system load - in terms of population per primary/upperprimary school, population per teacher in primary/upper primary school - of the educational structure of the blocks of Uttar Dinajpur are presented in Table 5.10. The state average student load per primary school was 179.9 as against the district average of 200, as on 01.04.2003. For the upper primary section, the state average student load was 578.3 which is substantially lower compared to the district average (700.5). Recent data available from Sarva Siksha Mission for the district shows a noticeable jump in average student load per primary school from 200 to 230 thereby implying either a considerable increase in the number of students in the existing primary schools causing institutional deficiency in providing primary school. However it may be said that establishment of new primary school is highly in need because of the overflow of a huge

number of first generation primary students into the formal schooling system. Presently the district average student load in upper primary section has become 746 which once again is a pointer to a substantial increase in student flow to upper primary vis-à-vis the addition to the number of upper primary schools in the district.

Fig- 5.9: System Load in Basic Education (2006-07)



Source: - Office of the District Project Officer, Sarva Siksha Mission, Uttar Dinajpur (calculated)
* Population as per census, 2001

Apart from this, the block level variation is also worth looking into. All the urban areas, except newly formed Karandighi municipality, have sufficiently lower load of students on school (primary and upper primary). Block wise data shows that Chopra has the highest load of students both at primary and upper primary schools. Amongst all the blocks, this load appears to be the least in Raiganj block and also in the Raiganj municipal area within the urban frame of the district.

Average number of teacher per school (teacher-school ratio) at primary level in the state was 3.2 compared to 3.5 in the district and the same was 7.26 upper primary level in the state against 9.50 of the district, as on 01.04.2003. The difference in the ratio at primary level between the state and the district was negligible while it was comparatively higher in this district at the upper primary level, showing an edge in providing teacher in the upper primary schools in this district. Although the distribution of teachers per primary school remains almost equal between the period 2002-03 and 2006-07, the same has been increased from 9.5 to 14.3. It may be noted here that the total number of teacher which was 2081 in 2002-3 has become 3065. This claims an extra credit.

Looking at the recent data (2006-07) on spatial distribution of teachers in the district, it is evident that more than three teachers have been provided on an average in the primary schools of all the blocks of Raiganj while the same is less than three in the blocks of Islampur subdivision except Karandighi block. In providing teachers at upper primary level, there is also seen a clear bias in favour of Raiganj subdivision except Itahar block. The Karandighi block of Islampur subdivision has the higher number of teachers than Itahar and it is the

highest among the blocks of Islampur subdivision. Goalpokhar-I and II are provided with fewer number of teachers at both primary and upper primary level. Here it may be noted that Karandighi, in spite of having almost equal ratio of teacher per school both at primary and upper primary level compared to the district average, could barely manage 7th position in respect of literacy rate among the 9 CD blocks, in this respect. While Hemtabad, with having almost equal number of teacher per school as of Karandighi, has the highest literacy rate in the district. This in a sense is paradoxical and therefore needs further attention, to make a difference to educational attainment.

Table - 5.10: System Load in Basic Education in Uttar Dinajpur District: 2006-2007 (Ratio Analysis)

Block/ Municipality	Students/ Primary School	Students/ U/Primary School	Teachers/ Primary School	Teachers/ U.Primary School	Students/ Primary Teacher	Students/ U.Primary Teacher	Primary School/ U.Primary School	Primary Teacher/ U.Primary Teacher
CHOPRA	290	908	2.96	14.3	98.0	63.5	8.1	1.67
ISLAMPUR	253	606	2.90	10.7	87.1	56.5	10.5	2.83
GOALPOKHAR-1	249	597	2.54	9.8	97.7	61.0	8.0	2.08
GOALPOKHAR-2	266	682	2.58	11.4	102.9	59.6	6.6	1.49
KARANDIGHI	268	872	3.06	14.8	87.4	59.0	7.9	1.63
RAIGANJ	173	858	3.60	16.4	47.9	52.3	9.1	2.00
HEMTABAD	183	789	3.54	15.4	51.7	51.2	6.1	1.39
KALIYAGANJ	159	786	3.64	14.6	43.7	53.8	9.0	2.24
ITAHAR	180	778	3.35	12.4	53.8	62.6	8.1	2.20
Rural Frame	**218**	**775**	**3.19**	**13.6**	**68.5**	**57.1**	**8.2**	**1.93**
KALIYAGANJ	125	756	4.00	24.8	31.3	30.5	5.0	0.81
RAIGANJ	95	483	3.05	17.1	31.2	28.1	3.1	0.55
ISLAMPUR	159	635	6.00	21.9	26.5	29.0	2.6	0.71
KARANDIGHI	260	673	3.17	8.8	82.0	76.9	3.0	1.09
Urban Frame	**135**	**589**	**3.85**	**18.4**	**35.0**	**32.0**	**3.3**	**0.68**
DISTRICT (Total)	***213***	***746***	***3.23***	***14.3***	***65.8***	***52.1***	***7.4***	***1.68***

Source: - Office of the District Project Officer, Sarva Siksha Mission, Uttar Dinajpur. Academic Year- 2006-07

The student load per teacher or pupil-teacher ratio (PTR) is a powerful enabling attribute that has close relation with the achievement attributes of educational development. Against the policy norm of 40 students per teacher at primary level, the state average was 56.8 while the district average was 57 in 2002-03. For the upper primary stage, this ratio was 79.1 at state level and 73.7 at district level. The PTR at district level is therefore, very similar to the state average. Considering the base year of 2002-03, the PTR at primary level in the district presently has risen considerably from 57 to 65.8 (2006-07). On the other hand, the PTR in upper primary section has decreased from 73.7 to 52.1 possibly due to the drive to recruit more teachers or due to the decrease in student flow at upper primary level which however is not supported in the previous analysis. The number of teachers in upper primary level increased to 3065 from 2081 in 2002-03. (The recruitment of teacher at primary level in the district has remained stagnant owing to the legal order and it has been reported by a member of the primary council that a number of cases are pending before the Hon'ble High Court of the state in this respect).

The student load per teacher is substantially lower at both primary and upper primary levels in the urban frame compared to the rural areas. So the rural teachers, especially, of primary section, have to shoulder the burden of more number of students. The PTR at primary level across the blocks is found to be the lowest in Kaliyaganj of Raiganj subdivision and highest in Goalpokhar-I of Islampur subdivision. The ratio at primary level is more than double in each

block of the Islampur subdivision compared to Kaliyaganj block. Thus there is a need to consider student load per teacher while deciding on recruitment of teachers in the district. Apart from other socio-economic reasons, the absurdly high PTR at primary level in the blocks of Islampur sub-division may be one of the school related reasons that is responsible for slower growth of this sub-division compare to the other sub-division within the district. The PTR at upper primary level across the blocks shows little variation. But notably the ratio of PTR in the municipal area of Raiganj, Kaliyaganj and Islampur is almost half when compared to the rural blocks.

The comparison of ratio analysis across the blocks of the district shows a substantial variation with of course, a rural-urban disparity in every respect. In brief, certain specific suggestions may be placed as outcomes of the foregoing analysis which have policy implications for the district. They are as follows -

i) While recruiting new teachers for primary schools, focus should on the deprived blocks of the district which have persistently higher system load and significantly higher pupil-teacher ratio.

ii) More number of female teachers at primary level need to be inducted (like SSK) in the blocks where enrollment and retention are lower and is an hindrance to literacy achievement.

iii) Student load in the primary schools of Islampur subdivision need to be decreased by establishing more schools in this subdivision with special focus on Goalpokhar-I and II blocks.

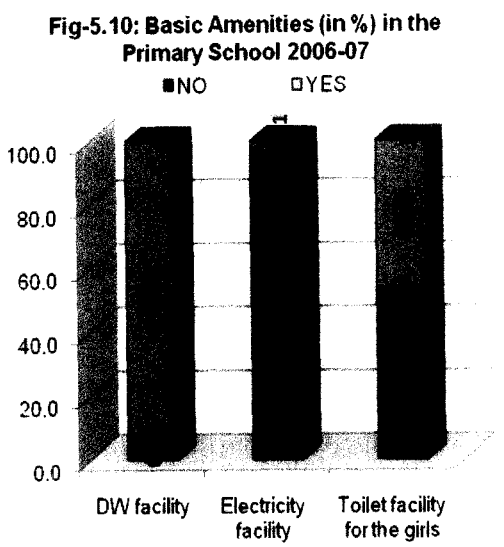
iv) In the process of providing new teachers in the upper-primary schools, focus is required for the blocks and urban areas other than the schools of two municipal areas of Raiganj and Islampur urban areas where teacher per school and student per teacher is remarkably low compared to the other areas of the district. School specific data may be more fruitful in this respect.

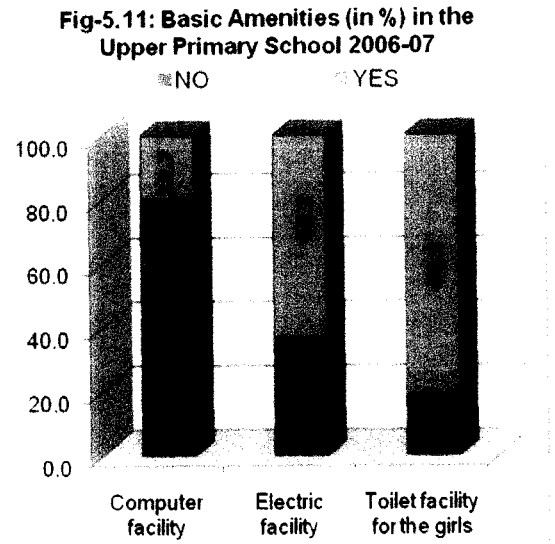
5.4.7 Availability of School Amenities

Ensured accessibility and adequate staffing are the two most enabling attributes that can encourage the acceptance of the schooling system in any area. Besides this, there are other basic amenities, the facility of which also operates as enabling attributes. These amenities are drinking water (DW) facilities, toilet facility, electricity facility, computer facility, etc.

Non-availability of safe drinking water can pose health hazards for the population. The basic amenity of providing safe drinking water in primary schools of the district is adequate, for the district. Only 7% of the schools were not covered till 2006-07. With very positive drives towards this provision from the government in recent times, it is expected that all primary schools of the district will have been provided with safe drinking water facility (Figure - 5.10) in a few years since 2006-07. Toilet facility in the primary schools appears to be a challenging job in this district. The primary schools are coeducational and thus separate toilet facility for the girl students is a necessity. Computerization is beyond the expectation of most schools since 97% of the primary schools are not yet electrified. Thus, school amenities are still inadequate in the district at primary level, except drinking water facility.

At upper primary level, drinking water facility is not a problem, as the coverage is near completion. Electricity facility in the upper primary schools is still an issue that requires immediate attention. Because of the establishment of new schools in remote areas, the remote villages require electrification so that the electrification in the schools may be realized. Computer is now being used as a device of learning. It is the gateway through which a student can cross the threshold to a modern world. So computerization in the post primary schools is also a challenging task in this district. One of every five school or around 20% of the schools is covered by this facility. Also, these schools are either urban or semi-urban block schools. It appears that computerisation is still a dream to the village learners. The detail of the facilities being provided to the schools in the district is shown in Figures - 5.10 & 5.11





Source: - Office of the District Project Officer, Sarva Siksha Mission, Uttar Dinajpur

5.5 School Enrolment & Dropout Trends in Elementary Education System

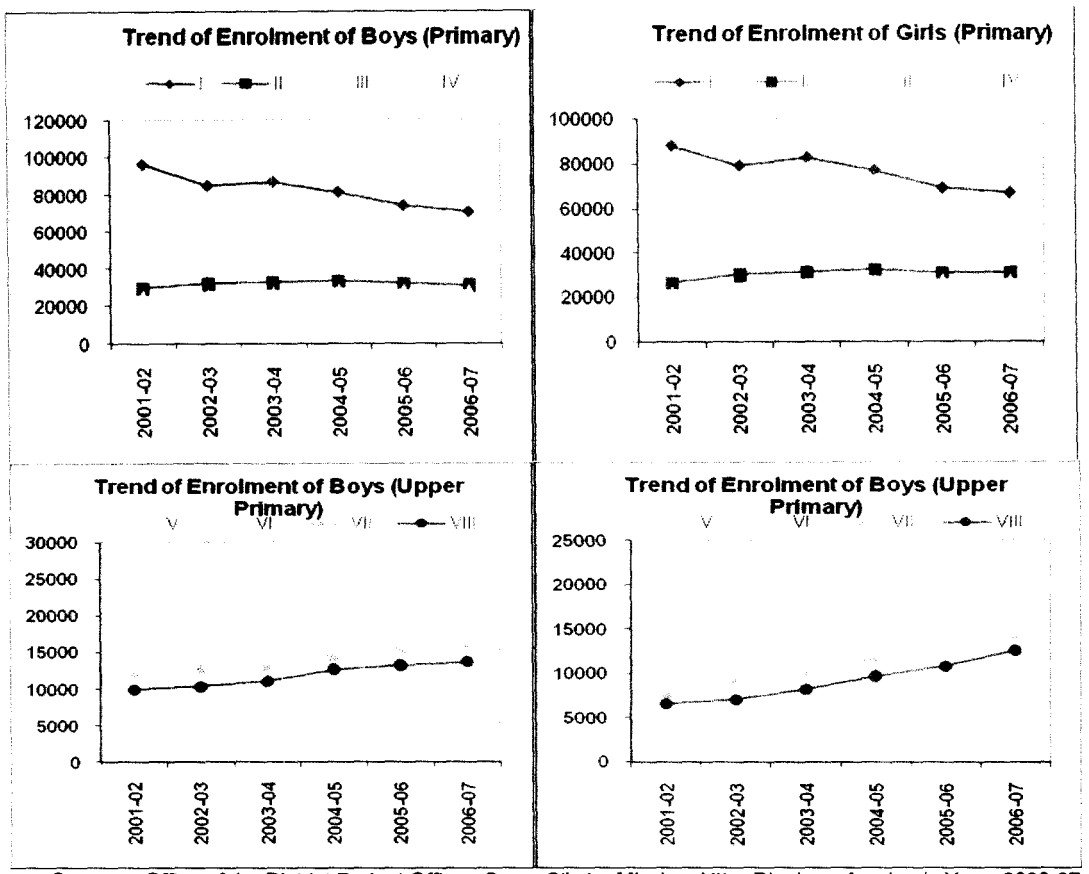
After the declaration of the Millennium Development Goals and the goal of Education For All, special efforts to achieve the goals were undertaken by the state of West Bengal with the introduction of DPEP and thereafter through SSA and SSM. Special attention was given to enroll all the children belonging to the school age group. By maintaining the child register and door to door campaigning, it was expected that universalisation of primary education could be achieved by 2007 and elementary education by 2010. In this light, it is necessary to examine the trend of total enrollment at elementary level for different years. The following diagrams (Figure 5.12) picture the trend of year-wise school enrollment from 2001 to 2007.

Enrollment of students in class-I for both boys and girls has been steadily decreasing since 2001-02. The actual figures show that between the periods 2001-02 to 2006-07 boys' enrolment decreased by 22% and girls' by 19%. Here it may be said that the reference period excludes the SSK's enrollment. The enrollment figure of SSKs is however not available for the year 2001-02, but available for the year 2006-07. Even when the enrollment figure of SSK is added, the decreasing trend remains prominent (15% for boys and 12 % for girls). This indicates that the decreasing trend including primary schools and SSK still show very little change in the trend from the earlier exposition. This decrease in enrolment may be due to the decrease in child population over the years or may be due to the non-enrolment of children. But so far the data on out of school children is concerned, it appears that the former is more feasible explanation. On the other hand, the trend in enrollment at other classes of primary education shows a negligible increase. But at upper primary level a distinctive increasing trend is discernible for all the classes irrespective of gender.

The gender difference in enrollment can be better explained following the concept of sex ratio (number of girls/1000 boys at any stage/class of education) in enrollment. This is shown in the bar diagram below. In a brief comparison, all the blocks in Raiganj subdivision maintain a higher ratio than the district average so far as the primary level of education is concerned.

However, at upper primary level, blockwise variation in sex ratio in school enrolment is quite noticeable. It varies from a minimum of 789 in Chopra to a maximum of 1072 in Itahar. The ratio at district level (rural) is found be much lower at upper primary level (908) compared to the primary level of enrolment (968). This trend is seen in all the blocks except Goalpokhar-I and Kaliyaganj. This implies that it is the girls who usually drop out of schools at primary level in comparison to the boys. The sex ratio (Fig-5.13 & 5.14), especially at upper primary level, in Chopra block is consistently low for all the classes I to VIII, demanding special attention.

Fig-5.12: Recent Trends in Enrollment at Primary & Upper Primary Schools



Source: - Office of the District Project Officer, Sarva Siksha Mission, Uttar Dinajpur. Academic Year- 2006-07

Fig-5.13: Sex Ratio in Enrolment: Primary level (2006-07)

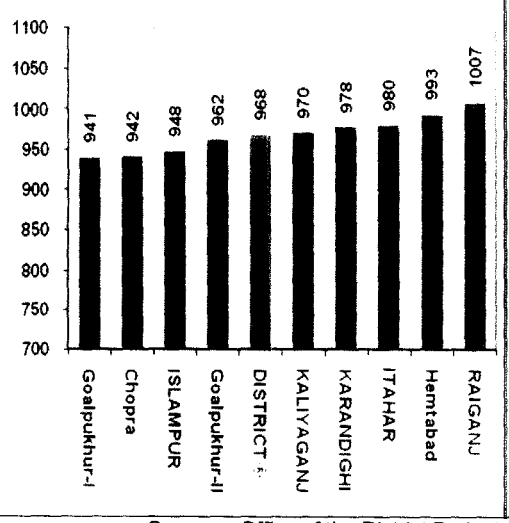
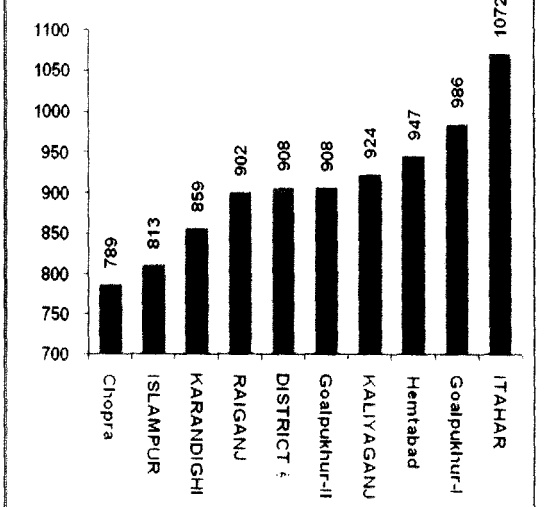


Fig-5.14: Sex Ratio in Enrolment: Upper Primary level (2006-07)



Source: - Office of the District Project Officer, Sarva Siksha Mission, Uttar Dinajpur.
DISTRICT®= District Rural

5.5.1 Dropout Rate

A departmental survey of school was undertaken by the SSM in the district and it was conducted in 2005-06 in order to calculate the dropout rate at the primary stage. The survey covers 1288 schools out of 1437 schools. The remaining schools, because of the non-availability of record, were not covered by the survey. On the basis of students' attendance register for different years, the students of different classes were identified who could not be

promoted to the next higher class. Deducting the number of migrated students and repeaters from the unsuccessful students, the extent of dropout children was calculated. Following this methodology, the block level dropout rate had been calculated. The result is tabulated in Table-5.11 below.The district level dropout rate is around 35% with very little difference in case of the girl children. Chopra, in spite of being the highest literate block in Islampur subdivision, is in the worst position with regard to the dropout rate.

Table - 5.11: Block wise Dropout & Grade Completion Rate 2005-06

District/Blocks/ Municipality	Dropout Rate at Primary Level : 2005-06			Completion Rate of Primary Education:2005-06		
	Boys	Girls	Total	Boys	Girls	Total
CHOPRA	63.5	63.3	63.4	25.4	23.8	24.7
ISLAMPUR	37.1	37.8	37.4	24.9	22.4	23.8
GOALPOKHAR-1	44.4	43.8	44.1	33.3	33.9	33.6
GOALPOKHAR-2	53.4	53.0	53.2	30.2	28.6	29.5
KARANDIGHI	20.6	20.6	20.6	43.2	45.1	44.0
RAIGANJ	17.0	15.8	16.4	45.8	46.3	46.1
HEMTABAD	16.9	14.0	15.5	38.3	38.5	38.4
KALIYAGANJ	22.5	22.3	22.4	4.0	25.2	24.6
ITAHAR	29.3	28.7	29.0	60.6	60.7	60.6
KALIYAGANJ (M)	20.8	15.8	18.4	48.4	50.7	49.5
RAIGANJ (M)	27.5	24.4	26.0	44.6	50.9	47.7
ISLAMPUR (M)	40.0	37.4	38.7	46.1	49.3	47.6
KARANDIGHI (M)	17.5	18.0	17.7	56.6	56.9	56.7
DISTRICT (TOTAL)	35.2	34.2	34.8	37.3	37.6	37.5

Source: - Office of the District Project Officer, Sarva Siksha Mission, Uttar Dinajpur. Academic Year- 2006-07

Most of the enrolled children in Chopra dropped out of the school system before completing primary education. Consequently, the completion rate of primary education is very low (25%) in this block. This implies that although the literacy rate in Chopra block is comparatively higher, the level of education among the literate person is low. The dropout rate across the blocks varies as low as 15.5% in Hemtabad to a high of 63.4% in Chopra block. Traditionally, Goalpokhar-I sand II are in the position of higher dropout rate and lower completion rate that manifest in their low educational attainment. Quite unexpectedly the Karandighi block, with a considerably low literacy rate in the district, shows better position where the dropout rate is only 20.6% and a moderately higher primary completion rate of 44%. This again may be due to the fact that the level of education among the literate persons is higher in this block. Literacy campaign in this block seems to have lower success rate unlike in Chopra and other blocks. The review of literacy campaign supports this logic and is presented below. However, socio-economic and school related factors are also responsible for such paradoxical findings and it needs further research based study.

In order to minimize the dropout rate and also to improve on the transition rate, the SSM of this district has conducted a Child Census in 2007. A scheme of enrolling all children (5-14years) in the education system (both formal and non-formal) has been launched under a comprehensive programme named Bhartikaran Karmasuchi. The census mainly collected the data on out of school children (OOSC) and their present status. A comprehensive picture as obtained from the survey is being presented here.

Table - 5.12: Out of School children 2007 in Uttar Dinajpur District

Reference Period	Out of School Children (Primary)			Out of School Children (Upper Primary)		
	Boys	Girls	Total	Boys	Girls	Total
Total number as on 31.12.06	16326	18900	35226	18073	13633	31706
Enrolled up to 30.09.07	12674	14412	27086	2610	2921	5531
Remaining	3652	4488	8140	15463	10712	26175

Source: - Office of the District Project Officer, Sarva Siksha Mission, Uttar Dinajpur

It has been found that a total number of 66,932 children were out of school in the age group 5+ to 14 years as on 31.12.2006 (Table-5.12). The actual child population belonging to the reference age group was 6,98,892 (in 2001). Considering this figure, it appears that less than 10% of the children in this group had been out of school as on 31.12.2006. Again after the Karmasuchi was implemented, a considerable number of OOSC were brought under the schooling system, especially at primary level and presently on an average only 5% of the children are being left from the schooling arena. This finding of the concerned department seems to be confusing as because, the same source finds a 35% dropout rate and 38% completion rate at primary level of education. However, the survey of Bhartikaran Karmasuchi reveals that out of school children is found to be highest in Karandighi block followed by Goalpukur-I, Islampur, Itahar and Chopra. Apart from the municipal areas, Hemtabad block has the lowest number of out of school children in the district. So the task in this respect is again challenging in the three blocks of Islampur subdivision which were earlier identified as the blocks with special need on the basis of differential achievement and enabling attributes.

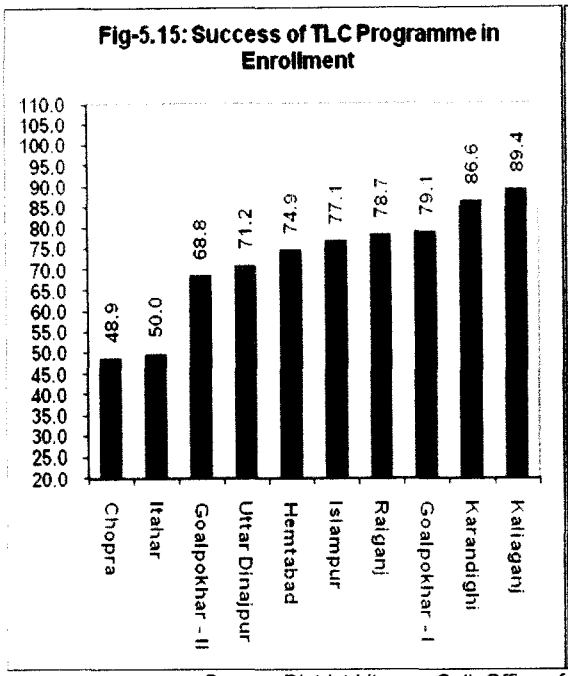
The Bhartikaran Karmasuchi succeeded to enroll around 50% of this targeted out of school children. The success rate was higher for the girls (53.3%) while it was 44.4% for the boys. Presently there are 34,315 children who have to be brought under the scheme and to be enrolled in the education system. The accommodation of the remaining out of school children, as planned by the SSM, will be made under the alternative schooling system such as residential and non-residential bridge course, NGO-run alternative education centre, Rabindra Mukta Vidyalay (RMV), national child labour project, etc., the result of which is awaited.

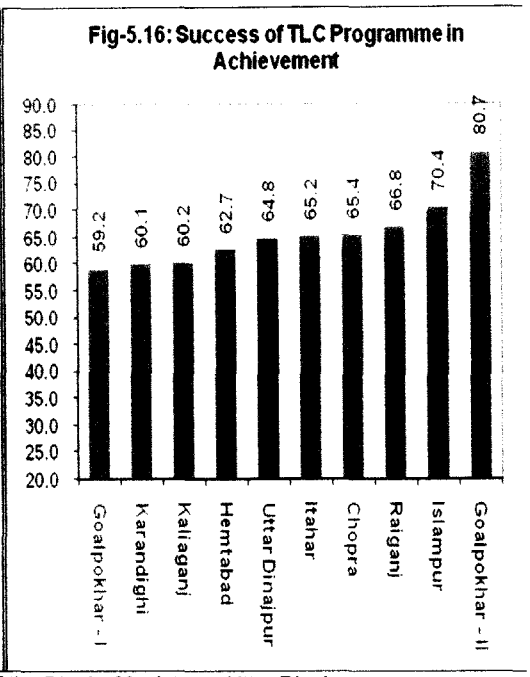
Apart from such enrollment drive, a number of programmes have been undertaken by the SSA/SSM in this district. The involvement of the mothers of the students in Ma-O-Meye Mela is such a programme which can enhance girls' education. Financial assistance for constructing adequate classroom has been released continuously in different schools both for primary and upper primary schools.

5.5.2 Non-formal Education in Uttar Dinajpur

Burdened with the high proportion of illiterates in the country since independence, Literacy Campaigns was initiated in the country in 1989 under the overall coordination of National Literacy Mission (NLM). It was envisaged to address the issues of illiteracy of the country. After receiving the proposal of the desire to take up literacy campaign in this district, NLM extended their sanctioning to start campaigning for illiteracy eradication programme in 1995-96 which is termed as Total Literacy Campaign (TLC). By conducting a fresh survey in 1998, the number of illiterates identified and targeted was 5.6 lakh. With such large number of illiterates, the TLC programme in this district has been initiated. The success was quite satisfactory at the initial stages. Around 4.0 lakh (71.2%) illiterates) were actually enrolled as the learners in the TLC programme. Again, out of this 4.0 lakh enrolled non-literates, 2.6 lakh (64.8%) achieved the norm of NLM in the first phase. Among them 54.7% were male and 45.3% were female which shows considerable gender parity in literacy campaign in this district.

A detail block level scenario of the NLM programme in Uttar Dinajpur district is graphically represented by the following bar diagrams (Fig-5.15 & 5.16). There is much variation in enrolling the targeted non-literate. The success rate in enrolling the targeted illiterates was as low as 49% in Chopra block to highest in Kaliyaganj block where around 90% of the total targeted non-literates were enrolled. The success rate of the non-literate learners in achieving the norm of NLM was also asymmetric across the blocks. For example, Goalpokhar-I block with a high rate of success in enrollment (79.1% of the targeted non-literate) was ranked in the lowest position in achieving the norm of NLM.





Source: District Literacy Cell; Office of the District Magistrate, Uttar Dinajpur

The learners, who achieved the norm of NLM in the first phase of TLC Programme, were brought under the post literacy programme to continue their further development in literacy achievement. By excluding the learners in the age group 5-14 years, the remaining (15 years and above) around 2.00 lakh neo-literate were targeted for PLP Programme. Out of this target, the actual enrolment figure of the learners was 1.86 lakh (92.43%) which was sufficiently high in comparison to the TLC target. This was a great success achieved by the Zila Saksharata Samity of this district and also around 61% of the total enrolled learners (1.13 lakh) in PLP programme already achieved the NLM norms. Currently, the Continuing Education Programme (CEP) has been working in the district and executing the liyeracy programme through out the blocks.

Table- 5.13: Block/Municipality wise Distribution of CECs & NCECs

Name of the Block	Population/ Ward	CEC	NCEC	Total
Chopra	223022	88	6	94
Islampur	241951	86	7	93
GP-I	245430	97	7	104
GP-II	226472	87	6	93
Karandighi	290081	113	9	122
Raiganj	362056	142	10	152
Hemtabad	118822	47	3	50
Kaliyaganj	190019	74	6	80
Itahar	249541	98	7	105
Islampur (M)	14	13	1	14
Raiganj (M)	26	25	1	26
Kaliyaganj (M)	17	16	1	17
Dalkhola (M)	14	13	1	14
Uttar Dinajpur		**899**	**65**	**964**

Source: District Literacy Cell; Office of the District Magistrate, Uttar Dinajpur

The main objective of CEP is to use the knowledge of achieved literacy in further education and for the development of livelihood standard. The sphere of CEP is much broader than TLC or PLP. In lieu of traditional concept of Learning to Read it has been given importance to

Reading to Learn. Presently 899 Continuing Education Centres (CEC) and 65 Nodal CECs are functioning in this district. The block/municipal wise breakup of the centres is shown in Table-5.13.

The process of TLC was started with all-round participation of administration as well as local Panchayats along with political mobilization. Local involvement of the unemployed educated youth was incredible and their voluntary participation as a trainer was commendable. Community participation in this respect was more significant in mobilising the whole process.

5.5.3 Institutional Structure of SSK & MSK in Uttar Dinajpur 2006-07

A teacher of the soil is well aquatinted with the socio-cultural scenario of the area and with the learners, which is much more important for a teacher to be successful in the sphere of any teaching-learning process. Keeping this concept in mind, along with the cost management criteria and above all the growing demand for education, a parallel system of school education (Non-formal) under the Ministry of Panchayat & Rural Development has been introduced in West Bengal. Two types of Siksha Kendra namely Sishu Siksha Kendras (SSKs) and Madhyamik Siksha Kendras (MSKs) are being established to impart the primary and upper primary education in these non-formal institutions. A total of 907 SSKs (38.9 % of total schools imparting primary education) with 2890 teacher (44.6%) covers 1.19 lakh primary learner (28.1% of total primary learners) as per the data for the academic year 2006-07. It thus signifies that the primary education in the district is considerably dependent on such type of parallel system of education. Here it may be noted that in SSKs, 100% teachers are female and they are designated as Sahayika and the teachers of MSK are as Samprasarak and Samprasarika. A quantitative comparison along with the comparison of system load in the formal and non-formal schooling in the district is plotted in Figures 5.17 & 5.18. Two qualitative aspects of school level enabling attribute are compared in this district at its formal and non-formal structure. It is seen that student load on school and teacher both at primary and upper primary level is much lower in the non-formal institutions (MSKs & SSKs).

A similar comparison across the blocks of the district shows the analogous dependency pattern towards the SSKs and MSKs (Table 5.14). Here it is seen that the dependency on these institutions is considerably lower in the blocks of Raiganj. However, in all the blocks, SSR or PTR is much lower in the non-formal institutions than the formal schools. This demands a better infrastructure in the non-formal schools which may lead to a better performance too.

Table-5.14: Institutional Structure of SSK & MSK in Uttar Dinajpur 2006-07

Block	Student School Ratio (SSR)				Student Teacher Ratio (PTR)			
	Primary	SSK	U/primary	MSK	Primary	SSK	U/primary	MSK
CHOPRA	290	124	908	293	98	73	64	50
ISLAMPUR	253	167	606	182	87	38	57	45
GP-I	249	155	597	240	98	41	61	45
GP-II	266	180	682	196	103	53	60	49
KARANDIGHI	268	143	872	166	87	44	59	47
RAIGANJ	173	106	858	189	48	60	52	35
HEMTABAD	183	99	789	183	52	37	51	30
KALIYAGANJ	159	91	786	212	44	37	54	32
ITAHAR	180	111	778	216	54	39	63	33

Source:- Uttar Dinajpur Zilla Parishad

Fig-5.17: Comparison of Institutional Structure (in %) 2006-07

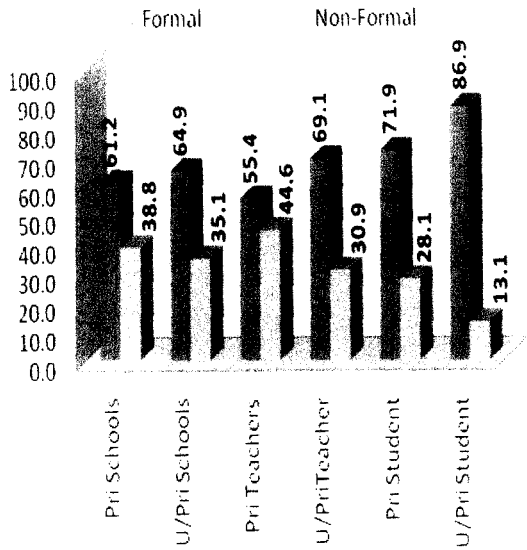
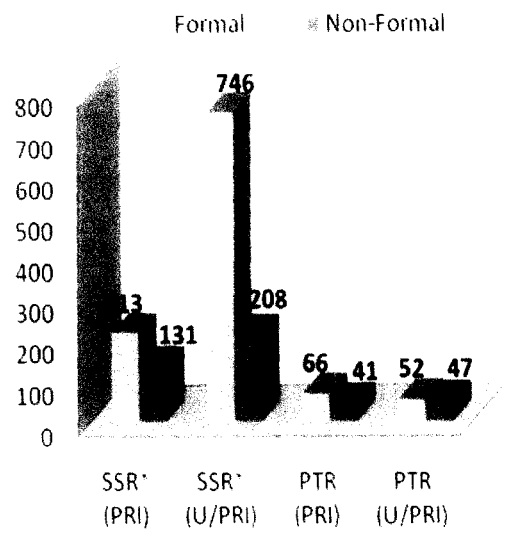


Fig-5.18: Comparison of System Load 2006-07



Note: SSR* student per school; PTR student per teacher.
Source:- Uttar Dinajpur Zilla Parishad; Office of the District Project Officer, Sarva Siksha Mission, Uttar Dinajpur

At present about 39% of the primary level institutions and 28% of the upper primary level institutions has been covered by such non-formal system in this district. In these schools (SSKs and MSKs) around 29% of the total teachers are engaged with an enrollment share about 16% of the students reading at elementary stage. Thus it appears that the access to education in respect of teacher and school is largely managed by the non-formal system of education. This dependency is much more vivid in case of primary education. But the non-formal institutions are a temporary concept and the salary of the teachers in these Kendras, in spite of having same level of qualification and discharging same level of duties, is far below compared to the salary of the teachers serving in the formal schools. This growing trend of coverage by non-formal system may create a critical gap both from the side of the teachers as well as from the learners which may again create an intra-structural gap in the schooling system nurtured by the government. This is a separate research question whether such type of parallel schooling is fruitful for better performance or not. This needs again another study that is beyond the scope of the present study.

The foregoing review of educational structure in Uttar Dinajpur districts brings the following gaps that shall have to be mitigated for meeting the target of universal elementary education in near future.

5.6 Persisting Educational Gaps in Uttar Dinajpur

- *There is no recorded private aided or unaided primary school though there existence is beyond any question. The data regarding such type of schools is being highly in need.*
- *There are only 13 Urdu medium primary schools in this district at Islampur subdivision and surprisingly only two Hindi medium primary schools. Considering the lingual and cultural habit of Islampur subdivision of this district, establishment of Hindi and Urdu medium primary Schools may have some positive effect in spreading schooling habit among the children at least at lower levels of education.*
- *Muslim population in this district is much higher than the state average while the literacy level of the Muslims in the district (36%) is much below the state average of this particular religious group (54.7%). Again, there is a large variation in literacy rate between Muslims*

(36%) and non-Muslims (58%) in this particular district. So the education of this religious community requires serious attention.

- *The three Muslim dominant blocks of the district (Islampur, Goalpokhar-I & II) are not sufficiently endowed with educational institutions and Goalpokhar-I has no recognized Madrasah. The establishment of Junior/High Madrasah in these blocks will open the doors of education to this deprived section of the population.*
- *It is seen that concentration of primary schools under Raiganj subdivision and upper primary schools particularly in Islampur and Raiganj blocks needs to be kept in view while establishing the schools so as to ensure a fair distribution of educational institutions.*
- *The infrastructural deficiencies in Hemtabad block proves that this deficiency have no serious effect on child schooling. Thus there are many positive enabling factors by which children can be attracted to schools and enrolled in the schooling system. It also appears that the status of school building in this district has hardly any relation with the educational attainment.*

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Chapter- 6

Factors Determining Educational Deprivation in Rural Uttar Dinajpur District: An Empirical Exercise- I

6. Introduction

Chapter 5 illustrated the educational scenario of Uttar Dinajpur district and identified critical gaps in literacy achievement and educational attainment with a focus on elementary education. It has been found that educational deprivation in the district is mostly associated with Islampur sub-division. On the other hand, Raiganj subdivision is better placed, its outcomes being comparable with the state average. It is seen that the literacy rate of each of the CD Blocks in Islampur subdivision is much lower than the literacy rate of the blocks in Raiganj subdivision. Out of 10 least literate blocks of West Bengal (2001), 5 were found in Uttar Dinajpur district and all these 5 Blocks are in Islampur subdivision of the district. It has also been found that out of 207 deprived mouzas of the district, 182 mouzas (88% of total deprived mouzas) have been fallen at the Islampur subdivision (Table-6.1). To overcome the educational backwardness of Islampur subdivision thus appears to be more challenging in the district. Another unique feature of this district is that there is a large variation in rural-urban literacy rate. Literacy rate of the rural areas lie much below the state average, while the urban literacy rate is close to the state average of urban literacy rate. Moreover, it has been an experience of 2001 Census that the low literate areas of 1991 achieved higher literacy jump than the high literate regions/district. However, this has not been the experience of this district even at the sub-district level. Thus it appears that certain distinctive underlying socioeconomic factors could be responsible for the educational backwardness of this district, and especially in the region of rural Islampur subdivision. The understanding of the socioeconomic factors is better captured through intensive field survey which the present study has undertaken in the rural areas of Islampur sub-division of this district in order to identify the nature and causes of such backwardness in educational scenario.

Income deprivation and fallout of economic process is a popular way of addressing the problem of poverty. However, it is inadequate in answering the central question that underlies the proposition- 'Poverty of what'. (Nagaraja, 2004). It is commented that poverty can be explained better if preceded by some suitable socio-economic or any other variable. In order to interpret the multi-dimensional aspects of poverty, Nagaraja, (2004) used the term 'literacy poverty' which encompasses illiteracy and low levels of achievements in education. The World Development Report (2000-01) has also recognized this multi-dimensional concept of poverty, rather than using it as mere income deprivation. According to NSS 1999-2000, 27 percent of the rural households and 12 percent of the urban households did not have any literate adult (15+) (GOWB, 2004). Reviewing the progress of elementary education, the present Indian Prime Minister Dr. Manmohan Singh said, "only 47 out of 100 children enrolled in class-I reach class-VIII, putting the dropout rate at 52.79 per cent", which in his opinion is painful and unexpectedly high (The Hindu, New Delhi, February 22, 2005, cited in Ramachandran, 2005). This Chapter along with the next one is designed to analyse and represent the extent of educational poverty in terms of the quantum of deprivation in the educational attainment stressing on literacy attainment and elementary education. The whole analysis is carried out on the basis of primary field survey in an educationally deprived district of West Bengal.

It has been stated in Chapter 4 that there are 37,956 inhabited villages in the 17 districts of West Bengal (as per census 2001). As is evident from Census 2001, 843 of these villages have literacy rates below 25 percent (Table- 4.6 of Chapter-IV) and the identified villages

have been named as educationally deprived villages in the state. This one-fourth literacy rate norm is assumed to be the cut-off mark for educational poverty and may be attributed as the 'educational poverty line' [EPL]. The villages that could not maintain at least 25% literacy rate are said to lie below the EPL. The distribution of the deprived villages across the districts also highlights a significant point. Out of these 843 villages, around 46 percent of these villages are concentrated in three districts namely, Uttar Dinajpur, Malda and Murshidabad. These three districts alone account for 90 per cent of the aggregate population of the 843 EPL. A closer look at the disaggregated demographic structure of the population in these three districts reveal that they have very high concentration of Muslim population compared to the remaining districts of the state. Another notable feature is that the educationally deprived villages constitute a significant proportion of Schedule Tribe population (15 per cent). Thus, the Muslims and Schedule Tribe segments of the population constitute a significant segment of the total population of these EPL villages.

In order to substantiate the above, proportion of such deprived villages has been regressed on the proportions of Muslims, Scheduled Caste and Schedule Tribe (ST) population at the district level. The parameter estimates of Muslim and ST population are positive and statistically significant, while the same for SCs is insignificant with negative magnitude. This suggests that educational deprivation is more prominent among the Muslims and STs, while it is not so significant for the SCs.

	Coefficients	Std. Error	't' values
(Constant)	-2.66	3.52	-0.76
MUSLIM	0.71***	0.06	2.76
SC	-0.08	0.09	-0.37
ST	0.44*	0.15	1.72

Source: - Calculated from 'Census View, Directorate of Census Operation, GOWB, 2004

The above findings indicate that in West Bengal, educational deprivation is more likely to be associated with two distinct sections of the population - the Schedule Tribes and the Muslims. It is also evident from secondary data that it is the Muslim and ST females who are more deprived when compared to male counterparts. More than 50 per cent of the deprivation is observed in three districts of the state located in its northern part, which is popularly known as Uttar Banga or North Bengal. Thus, North Bengal merits special attention as well as additional intervention for its educational upliftment.

It is from this finding that an attempt has been made to carry out a village level survey for identification of the factors underlying the educational deprivation in West Bengal. The district of Uttar Dinajpur has been purposefully chosen for the analysis. It is so because the district is least literate in the state so far as total literacy and female literacy rate of the state is concerned and at the same time, it includes highest number of deprived villages that have been identified in the state. Moreover, it is the district with a substantial proportion of Muslim Population (47.36 per cent) and a certain proportion of ST Population (5.1 percent) too. These two sections of the population account for more than 50 percent of the total population in the district and therefore educational backwardness of the district also implies educational backwardness of these two sections of the population.

6.1 Background of the Analysis

Literature on economics of education has established that there is a positive association between educational backwardness and level of poverty. The explanation offered is that the opportunity cost of sending the children to school, instead of using them as household help or wage earner, is not an economically feasible option (Bhatty, 1998). This positive association

is emerged in different studies (Chakraborty, 2006; Duraisamy, 2004; Dholakia 2003; Reddy and Rao, 2003; Nambissan and Sedwal, 2002; Devi, 2001; Krishanji 2001, etc).

On the other hand, Nidhi Mehrotra (1995) on the basis of field- based information from Kerala, Uttar Pradesh and Himachal Pradesh, notes that evidence of child labour does not by itself establish that poverty is the prime reason for their not attending school (cited in Bhatty, 1998). Santha Sinha (2000) in her article noted that "—what is found is that not only are literacy rates similar between groups having dissimilar income levels but also vary widely between groups with same income levels. In other words, situations where better off families have engaged their children in work while parents with lower incomes have retained their children in school are not uncommon." Sinha also observed that there are factors other than the purely economic compulsions arising out of poverty, which dictate whether a child is sent to work or to school.

A common proposition that poverty alleviation is a prerequisite for achieving the goal of UEE has been falsified by several country experiences. Many countries have successfully made primary education compulsory and universal when per-capita income in those countries was low and poverty was wide spread. Japan introduced compulsory education in 1872, North and South Korea, Taiwan and People Republic of China, all of which made education compulsory shortly after the Second World War. In the West too, many countries have introduced the same before the industrial revolution. These countries have successfully ensured the universalisation of primary and elementary education in their country and they have regarded mass education as an instrument for the reduction of poverty (Weiner, 1996), justifying the need for education for poverty reduction. While studying the determinants of schooling for boys and girls in Nigeria under a policy of free primary education it has been found (Lincove, 2009) that controlling for costs, household wealth bears a positive relation with primary school attendance. Interestingly, it has greater income elasticity for girls than boys. Girls' attendance also depends on opportunity costs generated by providing child care for younger siblings and living on a family farm. Studies from other countries also suggest more or less similar results. Most studies analyzing the determinants of enrollment (especially girls' enrollment) have found the association between household income and enrollment in school to be positive and statistically significant, whether income is measured directly using a household consumption module or indirectly through some household asset index (Federal Bureau of Statistics, 1998; Hazarika, 2001; Sathar & Lloyd, 1994; World Bank, 2002). Both, the size and significance of income effects are typically larger for girls than boys when results for boys and girls are compared.

The impact of Female Labour Force Participation Rate (FLFPR) on child schooling is still a matter of debate. From the studies of Pandey (1990), Jeejeebhoy (1993), and Mukhopadhaya (1994) it is found that in general, FLFPR has a depressing effect on child schooling. This is partly because the daughters have to shoulder the responsibilities of household chores and sibling care and partly because the lack of maternal attention and supervision discourages children's, particularly girls' schooling. An important result has been found in the village level study of Sengupta et al (2002) for West Bengal. While they find mothers' work participation has a significant negative effect on daughters' school enrolment, it also has negative but not significant impact on grade completion. However, the factor does not appear to have a significant impact on the probability of dropout or retention in school. This has also been confirmed by Jaychandran (2001). The positive relationship between FLFPR and schooling of children, especially of girls, is however not found in Andhra Pradesh where high rates of FLFPR coexist with a high incidence of child labour (highest in India) and relatively low level of school attendance rates (Jaychandran, 2001 cited in Dreze and Sen, 2002; Rao and Reddy, 2003). A recent study (Reddy and Rao, 2003) in this area also does not find any significant impact of female work participation on the enrolment ratio of both male and female. They have concluded the result by using household level data for 12 villages in three districts of Andhra Pradesh. The studies of Psacharpoulos et al (1989) and Tansel (1997) also note that the positive effect of addition to resources from mothers' earnings can overshadow

the negative impact of mothers' absence from home. Similarly, Dreze and Sen (2002), while discussing the schooling revolution in Himachal Pradesh, opined that a high level of female labour force participation raises the economic returns to female education and it is also revealed that status of women, including their educational status, will improve as a consequence of their increasing participation in labour market and development process (Rekha Wazir, 2000).

Parental education emerges as a significant determinant in household education decisions. All the field studies done under the UNDP programme confirm this result (Bhatty, 1998). It is found in rural Punjab that illiteracy of the decision-making members in the family is an important reason for continued perpetuation of illiteracy among women (Thind and Jaswal, 2004). They also noted 'the resistance was very much based on the out-dated beliefs that a woman's place was inside the house and education was of no use to her'. Jeemol Unni (1998) in her study in rural Gujarat found that the education of both parents is positively associated with the schooling of the child. However, the gender differential that she observed was very interesting. While the fathers' education positively influences boys' schooling, the education of the mother has a strong positive influence on the education of the girl child only.

In a village level survey-based study in Orissa, Sailabala Devi (2001) observed that both father and mothers' education have a positive significant influence on the probability of enrolment in primary and upper-primary levels for boys and girls. But mothers' education has a strong influence than that of fathers on girls' enrolment. Parental level of education was also found to be significant in lowering the dropout rates. Sengupta et al. (2002) found similar result in their study in West Bengal. Malathy Duraisamy (2000) in her micro level study in two selected districts of Tamil Nadu found that a 10 percent increase in fathers' education leads to a 1 to 3 per cent increase in the probability of being enrolled and 0.1 to 0.2 percent increase in the educational attainment. A similar trend was also found in case mothers' level of education.

The study of Anuradha Pande (2000) in the rural hill areas of Uttar Pradesh revealed that the literacy level of the community as a whole has a significant impact on children's education-higher the literacy level, lower is the number of dropouts and non-enrolled children. The author also found it remarkable that fathers' education had a much greater influence on a child's chances of enrolment in school, especially of a girl child. Interestingly, it was found that the relationship between mothers' literacy level and educational status of a child is not significant unlike most other studies. An interesting result in this respect has also been emerged in a recent study (Vaid, 2004) where it has been found that gender and parental level of education is only significant for father's literacy at the stage of child's transition from illiteracy to some primary school. She thus concluded that unlike the other study, a more educated mother would lead to a higher education for the daughter does not hold. It should be noted that she used the National Election Study data set (1996) of the Centre for the Development Societies, New Delhi.

However, Thomas (2000) in a study on selected backward villages in Kerala also found that across the villages, the proportion of never-enrolled children in the school going age-group (5-14 years) did not bear any systematic relation to overall literacy level. The study of Llyod and Brandon (1994) in Ghana has emphasized that mothers favour the education of sons over daughters because of their greater dependence on children in their old age and their expectation of greater monetary returns from investment in sons.

Kiran Bhatty (1998) in the article 'Educational Deprivation in India - A Survey of Field Investigations', has concluded that parental motivation is generally high (PROBE Survey also supported this proposition) particularly for male children but, for female children, however, it is still an obstacle. Job aspiration and improvement status are the main determinants of parental motivation for male education; in the case of female education, these motives have less influence. Jabbi and Rajyalakshmi (1997) found in Bihar that the reasons for non-

enrolment of children were more economic and home related in the case of girls and more school related in case of boys.

School enrolment and attainment also bears a significant relationship with the size and composition of the family. It has been noted by several studies that there exists a negative relation between the number of children and child schooling, because the additional burden of children may put a restriction on family resources hampering child schooling. In this respect, there are many studies relating to Indias. Jejeebhoy (1993) in rural Maharastra found that an older girl child with many younger siblings has a corresponding lower chance of her schooling. The same results were found in the study of Psacharpolous et al, 1989 and Pandey, 1990. The lower chance of schooling of a girl child is particularly true, if there are younger male children in the family. Studies from other countries also support the result. Knodel and Wongsith (1990) in their study in Thailand found the similar negative impact of a girl child belonging to a larger family. Debi's study (2001) in rural Orissa observed that larger the number of infants and old persons, lower would be the enrolment rate and grade attainment of female children. By using the state level Indian data Reddy (1995) found the similar negative impact of the variable at the state level for the year 1991.

Krishanji (2001), by using the secondary level data for the inter district analysis in Andhra Pradesh, has used child-woman ratio as an explanatory variable to predict child enrolment at primary and elementary level. It was found that the variable has an adverse effect on enrolment of female children in the age group of 5-9 years. But the same was not found significant in explaining the enrolment ratios of both male and female children belonging to the age group of 9-14 years. This analysis thus, suggests that enrolment at primary level is more responsive to the number of siblings in the family. On the other hand, Jeemol Unni (1998) found somewhat different result in rural Gujarat. Unni, focusing on the schooling decision, observes the determinants of schooling and estimates the least square equations separately for boys, girls and all children. On estimation, it was found that the number of children per household did not show any significant result upon any of the three categories of children. Similarly, Duraisamy (2001) by using the village level data in Tamil Nadu found that the number of children in the household did not exert a statistically significant effect on school enrolment and grade attainment of both boys and girls at the primary level. But the variable was found to be significant while exerting a negative influence on enrolment and grade attainment at the secondary level.

6.2 Methodology and Study Area

It has been stated earlier that the prime objective of this chapter is to find out the nature and causes of educational poverty in a particular the state of West Bengal. It has also been stated that West Bengal has been purposively chosen because the state has been remaining closer to the national average literacy rate over the last 50 years (1951-2001) and is yet to move beyond this level. After selecting the state, the educational scenario of the state on the basis of literacy rate and elementary education has been assessed. From the assessment (discussed in Chapter-IV) it is observed that the district of Uttar Dinajpur in the state is one of the most deprived districts so far as its literacy trend and development of elementary education is concerned. As such the district has again been selected purposively to measure the educational deprivation at a more disaggregated level. Administrative frame of Uttar Dinajpur district comprises of two subdivisions - Islampur subdivision with five CD blocks and Raiganj subdivision with four CD blocks. In order to locate the educational deprivation within the district, literacy rates of the district at various disaggregated level has been calculated. Subdivision wise literacy comparison reflects (discussed in Chapter-V) that Islampur subdivision (38.5%) lie well below the Raiganj subdivision (58.1%). At the same time, the literacy rates of all the five CD blocks in Islampur subdivision are below the four CD blocks of Raiganj subdivision. The distribution of the 207 villages that lie below the EPL across the CD Blocks in each subdivision has been shown in Table-6.1. Out of these 207 villages, 182 (88%) villages are concentrated in Islampur subdivision and only 12% are in the other

subdivision. Along with this, the extent of out of school children is also seen to be concentrated in the Islampur sub-division too.

The primary survey was thus decidedly carried out in Islampur subdivision in order to have a better understanding of the problem of educational poverty in the district. Again, in Islampur Subdivision, Chopra block is found to have the least number of deprived villages (11), while Goalpokhar - I & II (until recently, a single block) has the highest number of such deprived villages and together also have the highest number of out of school children. Moreover, from the block level literacy rate, it is found that Goalpukur-I with 31.6% literacy rate and Chopra with 43.29% literacy rate may be ranked as the least and highest literate blocks of the Islampur subdivision. So it is expected that the selection of the above mentioned two blocks would rightly represent the diverse level of educational development. Thus, in view of the objective of identifuing the nature and causes of educational variation, these two blocks have been selected for the final survey.

Table-6.1: Block-wise distribution of educationally deprived villages and out of school children

CD Block/ Subdivision/ District	No of Villages in with a Literacy rate <= 25%	Out of School Children Age 6 – 14 (Total)		
		Boys	Girls	Total
Chopra	11	8382	8447	16829
Islampur	17	9803	9228	19031
Goalpokhar - I	51	13400	13841	27241
Goalpokhar - II	55	7273	6850	14123
Karandighi	48	19136	18078	37214
Islampur Subdivision	***182***	***57994***	***56444***	***114438***
Raiganj	9	10242	9594	19836
Hemtabad	0	1708	1761	3469
Kaliaganj	0	3375	3228	6603
Itahar	16	8322	7992	16314
Raiganj Subdivision	***25***	**23647**	**22575**	**46222**
District Total	**207**	**81641**	**79019**	**160660**

Source: - Calculated from 'Census View, Directorate of Census Operation, GOWB, 2004 ; DISE-2003-04.

After the selection of two blocks, two villages (mouzas) from each of the blocks have been chosen. For this, the villages as per the literacy rate of 2001 have been taken into account, of which one low literate village lying below EPL and another comparatively literate village has been purposively selected from each block with a view to capture the regional variation in educational development. The stratified, purposive sampling design of the survey is sketched in the next page.

A priori information on socio-demographic characteristics of the study villages are analysed from the secondary data [Table-6.2] for a better understanding of the nature of the problem. Kantigach and Juropani are the two lowly literate villages from Goalpokhar-I (low literate block) and Chopra block (high literate block) with a dominant Muslim and Scheduled Tribe population respectively. Dangipara (from Goalpokhar-I block) and Uttar Bhagalpur (Chopra block) villages are the two comparatively highly literate villages from the two blocks respectively. The population distribution of these two highly literate villages reveals that the Dangipara is a Scheduled Caste concentrated village while the second has a concentration of general caste population. Thus the four villages altogether represent the different segments of population distribution of the district.

The literacy rate of Kantigach was found to be only 2.2% (Census 2001), while the same was as high as 72.5 % in Dangipara village followed by Uttar Bhagalpur and Juropani. As per

Census 2001, it is observed that the composition of workers in the four villages is of a diverse nature. In Kantigach, there is an absolute dependency on agriculture, while in Juropani and Uttar Bhagalpur, three-fourth of the workers work as Other Workers (OW) (Table-6.3). The proliferation of tea gardens in Chopra block has been the reason behind this concentration of OW in this block. So far the proportion of non-worker is concerned, Kantigach has the lowest proportion of population as non-worker. Only 38.4% of total population is non-worker out of which 26.5% is child population (Table-6.2).

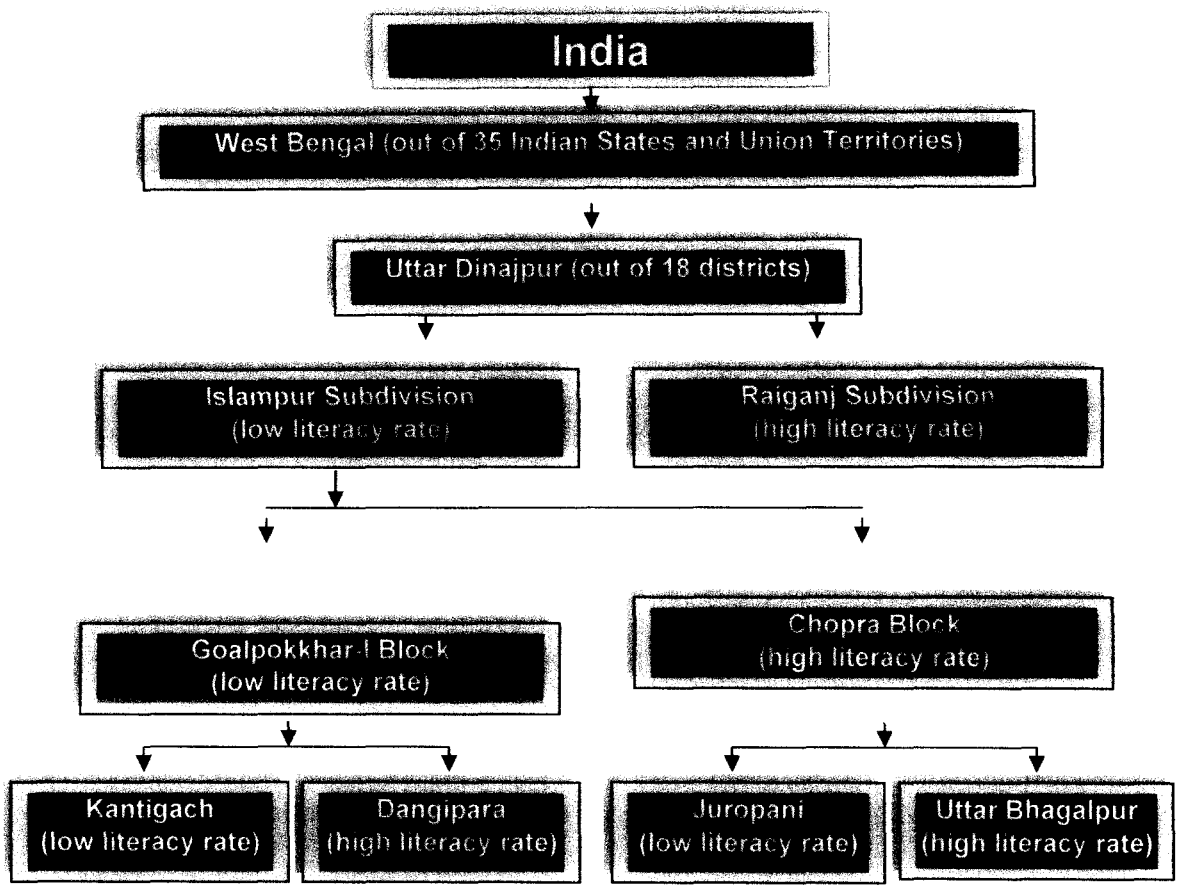


Table - 6.2: Socio-Economic Composition of the Study Villages

Block	Goalpukhar- I		Chopra	
Village/Indicators	Kantigach [LL]	Dangipara [HL]	Juropani[LH]	Uttar Bhagalpur [HH]
Population (Person)	555	721	598	826
No. of households	111	121	122	143
% of child (0-6) Population	26.5	18.3	27.3	15.6
Literacy rate, male	3.5	83.9	41.4	78.6
Literacy rate, female	1.0	58.8	17.8	54.2
Literacy rate, person	2.2	72.5	29.2	67.3
% of SC	0.0	99.6	1.2	0.6
% of ST	0.0	0.0	98.8	25.4
% of Non-worker	38.4	64.8	57.9	54.6
% of Agricultural Worker	10.8	57.5	0.4	3.5
% of cultivators	89.2	25.6	24.6	19.7
% of other worker	0.0	16.9	75.0	76.3

Source: - Calculated from 'Census View, Directorate of Census Operation, GOWB, 2004

If the old-age population is added with the child population, then it appears that most of the family members, apart from children and old-age members, have to work for a living. On the other hand, Dangipara has the lowest proportion of population in the workforce (notably a lower proportion of female work participation rate). The high work participation rate here does not necessarily mean a better economic condition. More often than not, one has to work for mere survival. Needless to say that educational attainment under such circumstances will not be affected by high work participation rate (as it was found in our earlier mouza level regression analysis too). However, a better understanding will emerge in the latter section from the analysis of field based data. A notable difference of the two type of villages is that in the high literate villages (in both the blocks) it is seen that there is a small proportion of child population (Table-6.2) apparently indicating a lower birth rate, while establishing the inverse relationship between literacy and fertility rate.

For the detailed survey, a complete enumeration (household census) of each and every household in the villages was first conducted. From the household census, the data on school-going age (5-14) children was primarily collected. The procedure facilitated in distinguishing the households categorically into two groups - households with school-going age (5-14Yrs) children and households that do not having any children belonging to this category. As such 135 households in Kantigach, 81 in Juropani, 122 in Dangipara and 139 in Uttar Bhagalpur were found to have children in the schooling age group (Table-6.2). From the listing of these households, 32 households from each village have been chosen by random sampling method for a detail household survey. It may however be noted here that 30 households from each village have actually been surveyed keeping 02 households as additional if at the time of survey some of the chosen households were not available. It has been calculated that out of total 1081 children in 477 households of 4 villages, 250 were covered under the detail survey thereby covering 23.1% of the total children in this respect. Again, out of total 477 households of 4 villages with some schooling age children, 120 households have been surveyed and as such a 25.2% of the total households comprise the actual sample size in the survey process. A detail picture is being depicted in Table 6.3.

Table - 6.3: Household and Children in the Survey

INDICATORS	Kantigach	Juropani	Dangipara	Uttar Bhagalpur	TOTAL
Total No. of Households	169	106	149	172	596
No of Households with some Schooling age (5-14Yrs) Children	135	81	122	139	477
No of Households with no Schooling age (5-14Yrs) Children	34	25	47	33	139
Size of the Sample Households	30	30	30	30	120
% of the Households Surveyed	22.2	37.0	24.6	21.6	25.2
Total No. of 5-14 years age group children in the villages	282	211	289	299	1081
Children covered in the Survey	59	72	58	61	250
% of children Surveyed	20.9	34.1	20.1	20.4	23.1

Source: - Field Survey

6.2.1 Survey Questionnaire

After the selection of two villages in Uttar Dinajpur district, they were primarily assessed on the basis of information taken from some informed villagers/panchayat level leadership and teachers. An open discussion was organized in some informal way by accumulating the villagers at a common place. The discussion was carried out with a view to identifying the household level socio-economic factors that may have their effect in connection with the educational development. This has primarily helped to ascertain the plausible set of explanatory variables. On the basis of this, a questionnaire for the households was prepared (APPENDIX-6.I).

6.2.2 Field Work

The survey of the villages took place in between November, 2006 and December, 2007. In collecting the data some language problem was faced in Kantigach and Juropani villages because of their mother tongue. For this, some local educated youths and teachers assisted the investigators for better understanding of the response to the questionnaire. This facilitated in getting the data very close to the actual answers.

6.2.3 Statistical Technique

The main objective of this research is to examine the relationship between the educational attainment and a set of socio-economic demand side variables at household level. With the help of least square procedures (Myers, 1990), multiple regression analysis has been attempted which has become one of the most common statistical techniques for investigating and modeling relationships among variables. In behavioral science an outcome is attributable to several factors. In such a case, the true effects of a particular independent variable or potential predictor variable (X) are assessed by 'controlling' out the effects of other X variables. For this simple reason, performing multiple regression has become a popular technique to analyse the set of data.

Depending upon the purpose of the estimation of the model, multiple regression is generally used for prediction and explanation. In optimizing the prediction objective, the task is to eliminate the superfluous variables, not to test theoretically based hypotheses. The parameter estimates here are of little importance. But, prediction does not always suffice the purpose of all analyses. Explanation is the essence of behavioral research. Multiple regression through explanation allows to separate causal factors, analyzing each one's influence on the explained variable. Most of the regression applications in social science are for explanatory purposes, and this approach has been introduced in this the present analysis of data.

Two main indicators of educational development have been decided for regression analysis – literacy attainment and child schooling. Child schooling has separately been discussed and analysed in the next chapter. This chapter exclusively concentrates on literacy deprivation and variation in the study area. Literacy is a widely used concept and has unanimous measurement criteria in the literature of education. The literacy rate is quantitative in nature and in order to deal with such a response variable multiple regression technique using the ordinary least square method may be applied.

The fundamental model underlying multiple regression analysis posits that a continuous outcome variable is, in theory, a linear combination of a set of predictors and error. Thus, for an outcome variable, Y, and a set of k predictor variables, X1,...,Xk, the Multiple regression model takes the form

$$Y_i = \alpha + \beta_1 X_{i1} + \beta_2 X_{i2} + \ldots\ldots + \beta_k X_{ik} + u_i$$

Where α is the Y-intercept (i.e., the expected value of Y when all X's are set to 0), βjs are multiple (partial) regression coefficients and u_i is the error of prediction.

As it is seen in the above equation, there are 'k' regressors (explanatory variables) and a constant which are fundamentally unobservable. The errors that are also unobservable accommodate all other influences on Y not accounted for in the above equation. As such this unobservable error may be assumed to be normally distributed with the assumption E(ui)= 0 for all i, E(ui)= δ^2 for all i, E(ui uj)= 0 for all $i \neq j$ and E(ui Xi) = 0 for any i and j. Since the error term is mean independent of the Xs, varying the X's does not have an impact on the error term. Hence, there are k regressors (explanatory Variables) whose coefficients i.e., βs and a constant or intercept term α (i.e. k+1 parameters) that have to be estimated.

The problem of multi-collinearity (i.e., collinearity among the regressors) is a serious concern in dealing with the socio-economic variables. This is because the unbiased assumption of Least Squares estimation does not remain valid if there is a relationship between the error term and the independent variables and/or between the independent variables themselves. This in turn can seriously bias the estimated coefficients, especially when there are unobserved or omitted variables

(Levine and Renelt, 1992; McMahon, 1998; Petrakis and Stamatakis, 2002). This would definitely weaken the validity of the findings, since it would make them sensitive to the specification of the model. But, multicollinearity is frequently both a theoretical problem and problem with a particular sample of data. Economic variables will almost always have some correlation with one another making it necessary to compute correlation coefficients of independent variables. But high correlation coefficients do not necessarily imply multicollinearity.

The central question is whether the multicollinearity is so severe as to alter the estimation of the coefficients. A general rule of detection of multicollinearity is that a high R squared with all low t-score and high simple correlation coefficients among the regressors. Sometimes unexpected sign of the coefficient estimated is also found. It is sometime suggested that do nothing or drop some variables to get rid off from the severe multicollinearity. However several measures have also been suggested by the statisticians to test the severity of multicollinearity. One can make a judgment by checking related statistics, such as tolerance value or variance inflation factor (VIF), Eigenvalue, and condition number.

A very common measure as a rule of thumb has been suggested by Kleinbaum et al. In this rule the severity of multicollinearity is tested by calculating the variance inflation factor (VIF) of each of the regressors. It may be noted here that VIF is defined as $VIF=1/(1-r^2ij)$ where rij is the simple correlation coefficient between two regressors. VIF shows how the variance of an estimator is inflated by the presence of multicollinearity. It is clear from the definition of VIF that as rij approaches 1 (i.e. regressors become collinear), the value of VIF approaches to infinity and if there is no collinearity between the regressors, the value of VIF will be 1. In this vast range, as rule of thumb, it is suggested that if the value of VIF of a regressor exceeds 10, then that variable is said to be highly collinear (Kleinbaum et al 1988). This rule of thumb is followed in the regression analysis to identify the problem of multicollinearity in particular.

Sometimes eigenvalues, condition indices and the condition number is referred to when examining multicollinearity. The condition number (κ) is defined as the largest eigenvalue (λmax) divided by the smallest eigenvalue (λmin), i.e.

$$\kappa = \lambda max / \lambda min.$$

The condition index (CI) equals the square root of the largest eigenvalue (λmax) divided by the smallest eigen value (λmin).

When there is no collinearity at all, the eigen values, condition indices and condition number will all equal one. An informal rule of thumb is that if the condition number is between 100 and 1000 there is moderate to strong multicollinearity and if it exceeds 1000 there is severe multicollinearity. But again, these are just informal rules of thumb. With SPSS, one can compute all these by adding the COLLIN parameter to the Regression command.

Another estimating problem in connection with the Multiple Regression Analysis has been taken care of in the analysis that describes the proportion of the variance of the dependent variable that is explained by the model. In regression terminology it is called goodness of fit. Multiple correlation coefficient is normally used for testing such variability. The multiple correlation coefficient is the correlation between the dependent variable and the linear combination of predictors which minimizes the sum of the squared residuals. Its square ($R^2 = \frac{\text{explained variation}}{\text{total variation}}$) is a very common instrument for measuring the degree of explanatory power in an equation which shows the amount of variance in the dependent variable accounted for by the independent variables. R^2, also called the coefficient of determination, is often described as the proportion of variance "explained", or "described" by regression. The R^2 value for a regression can be made arbitrarily high simply by including more and more predictors in the model. However a better statistical measure is suggested by an alternative coefficient of determination adjusted for the number of independent variables in the regression model. Unlike the coefficient of determination, R^2-adjusted may decrease if variables are entered in the model that does not add significantly to the model fit. Adjusted R^2 is defined as –

$$R^2_{adj} = [1 - \frac{\text{unexplained variation}/(n-k-1)}{\text{total variation}/(n-1)}]$$

Thus the adjusted R^2 is one of several statistics that attempts to compensate for the artificial increase in accuracy. This statistic is applied to measure the goodness of fit in the model.

The coefficients in the regression model have the following simple interpretation:

$$\beta_j = \frac{\partial Y_i}{\partial X_{ij}}$$

This implies that each coefficient measures the impact of the corresponding X on Y keeping all other factors (Xs and u) constant (i.e., the expected change in Y resulting out of per unit change in Xj, assuming all other X's are held constant). In other words, the coefficient of any regressor estimates that the average value of y changes by βj units for each 1 unit increase in Xi holding all other variables constant. Apart from analysis of regression coefficients in the light of statistical significance an attempt has been made to compare the relative magnitude of regression coefficients by analyzing the Partial and Semi-partial Correlation Coefficients of the explanatory variables with the Literacy characters (dependent variable). The relevance of such analysis, beyond the simple interpretation of regression coefficients, is discussed in the result section of the regression analysis.

6.3 Analytical Framework

In order to identify the underlying factors that are responsible for educational deprivation or educational attainment, certain possible exogenous factors may be considered. Researchers have identified different enabling attributes that have impacts on the achievement attributes. In the process of educational development, the enabling attributes may mainly be divided into two categories - household related socio-economic demand side factors and school related supply side factors such as the state of educational infrastructure, staffing and amenities. As such a simple supply-demand framework is adopted to examine the phenomenon of educational deprivation (Venkatanarayana, 2004). Actually the phenomenon of educational deprivation arises owing to the inadequate demand for and/or inadequate supply of schooling. The supply of schooling is a state subject and is not a sufficient condition for increase in the levels of educational attainment. Although the supply side factors are necessary condition for child schooling, it is the socio-economic conditions at the household level that are more crucial in raising the demand for child schooling (Krishnaji, 2000) as such may be considered as an enhancing attribute for literacy attainment too. In a recent paper (Chakraborty, 2006), the schooling variation of children has been well explained by the household characteristics only.

Considering the above, among these two broad categories of explanatory variables, it was decided to proceed with a narrower model. School level supply side variables are not included in the present analysis. In the study, only four villages are surveyed and those are almost equally provided with one pre-primary school, one primary school and one SSK (Table-6.4). There is very little variation in this respect. Moreover, non-participation of school is very common within a village being accessed by equal educational facilities and it is also common that within a family, schooling of children is not homogeneous.

6.4 Socio-economic Characteristics of the Villages under Survey

6.4.1 Basic Amenities

Kantigach is a village (Mouza bearing JL No. 98) under Goalpokhar-I Block of Lodhan Gram Panchayat in the district Uttar Dinajpur. The village is roughly 7 kms from both Bangladesh and Bihar. The language commonly used is a jumble of Hindi and Urdu. Some Bengali words are also habitually used. It is a small village with an area of 74.46 hectares where 169 households were identified out of which 166 households belonged to Muslim community and 03 households were found to be ST section. This establishes the dominance of Muslims in the said village. The land is

mainly used for the agricultural purpose other than residential use. But the land per household ratio is very low. So both the farmers and the agricultural labourers have very limited scope to expand on this primary activity. A tradition of working out side the village for earning money has been a common working pattern that is seen in almost all the households. The infrastructural facilities in the village are very poor. There is a primary school in the adjacent village Uttar Talbari with no upper primary school. One SSK was launched in this village in the year 2004 with two Sahayikas without having any specified area for running it. Recently, a building grant of Rs. 2, 00,000/- (Two Lakhs) has been sanctioned and the land for the purpose has been transferred. As there is no primary school within the village, the need of the SSK is very necessary. Even then the villagers could not come to a unanimous decision for utilizing the fund. As such the fund has been sanctioned to another SSK. This explains the level of un-awareness of the villagers. The whole fact was brought in to the notice of the researchers by the Panchayat member.

Juropani on the other hand is a ST dominated village under Chopra Block of Uttar Dinajpur having 106 households (100% ST) with an area of 201.93 hectares. Among the Schedule Tribes in the village two sub communities are seen. They are Santal and Oraon. The languages they speak are not similar. Sadgi and Oraon are the two main languages used for their intra-society communication. They can also interact in Bengali language with the outer world. Most of the villagers responded in Bengali. Translators also helped in interpreting the responses of others. The mouza has two sub-villages - Juropani and Tulsivita. The first one is at the border line of Bangladesh. It has a semi pucca road and the houses are systematically arranged on both sides of the road. The second one is half a kilometer away from Bangladesh. The village has two medium sized tea gardens and almost all the land has been used for this purpose. The main occupation of the villagers is to work in the tea gardens. It has been found that three households who, apart from working at the tea garden, are engaged in producing a alcoholic liquor which they call Hanria. The village has one government run Primary School with a SSK and ICDS center in the village being connected by electricity for domestic use. As a whole, the village is better equipped with basic amenities compared to the earlier village. The detail of other amenities in the villages is depicted in Table-6 .4 below.

Table-6.4: Basic Amenities to the Study Villages

Amenities	Kantigach	Juropani	Dangipara	Uttar Bhagalpur
Distance from nearest Primary Health Centre (in Kms)	2 Kms	6 Kms	4	7
Distance from nearest bus stop (in Kms)	1.5 Kms	1.5 Kms	0.5 Km	0.5 Km
Distance from nearest Bank/ Credit Society /others (in Kms)	1.5 Kms	2 Kms	1 Km	1 Km
Pre-primary School Facility	One ICDS	One ICDS	One ICDS	One ICDS
Primary School Facility	Nil	Govt= 1, Private =1	Govt= 1, Private =1	Govt= 1
Upper primary School Facility	Nil	Nil	1 High School	Nil

Source: - Field Survey

Dangipara is a village under Goalpokhar-I block of Uttar Dinajpur district with an area of 84.57 hectares and is dominated by the Scheduled Caste population. It is located on the international border with Bangladesh. Though it is a remote village of the district, it has substantial education facilities within it. The village is communicated by a pucca road having a distance of about 10 km from the National Highway No. 34. The nearest town is Kishanganj, a district town of the state Bihar, which is 18 km way from the village. Islampur, a subdivisional town of West Bengal, is at the same distance which is usually used by the villagers. Most of the affluent families have their alternative residence at Islampur, mainly because of better and higher educational access of their

children. The village is moderately literate having 72.5% of its population as literate (Census, 2001). The dependency on agriculture is sufficiently high (83.1% of total worker) in the village (Census, 2001).

Uttar Bhagalpur is another village of the district under Chopra block having its area 138.5 acres which is marginally high from the earlier one. The village is located at just a walking distance from the National Highway No. 34 and as such it has a better communication facility. Work diversification is seen in this village. Kuti or procuring rice from paddy is a major source of income of the households. The villagers bring the paddy from nearest paddy producing area (Kanki, Suryakamal of Goalpokhar-II block) and process the same into rice. In this process of work, the female members are also engaged. But their remuneration is not given to them as the households treat it like other household works. Some households are seen to be engaged in self employed small business. In a marginal portion of land, tea gardens in small scale (within 2 to 5 acre) are also seen in the village.

The infrastructural and educational facilities that are available to the study villages is presented in a tabular form in Table- 6.4. It is seen that so far as access to education is concerned, all the villages are equally provided with one pre-primary and one primary school within them except Kantigach. In Kuntigach there is no primary school but one unrecognized Madrasah has been found. There is one private run primary school in addition to one government primary school in Juropani and Dangipara. It is seen from Table-6.4 that the bus connectivity with the villages are also very similar along with another important amenity - banking facility. However, as a whole, the Dangipara village may be said to have better educational and other infrastructural facilities compared to the other villages.

6.4.2 Population Profile

As it has earlier been stated that 30 households from each village have been surveyed in detail and as such a total of 120 households in 4 villages have been covered. The detail population profile of the villages is shown in Table-6.5.

The average household size of the sample villages is 6.1 and it ranges from 5.4 in Uttar Bhagalpur to 6.6 in Dangipara. Child population in the sample villages is found to be 13.5% of the total population. Village-wise, it is highest in Kantigach (19.3%) followed by Juropani (14.5), Uttar Bhagalpur and Dangipara. The child population seems to have some correlation with the literacy rate of the villages. The proportion of aged members (aged 60 years and above) is found to be lowest in Dangipara (6.0%) followed by Kantigach (7.7%), Uttar Bhagalpur (9.3%) and Juropani (10.8%). The noticeable thing is that the sex ratio of the sample households is noticeably low irrespective of their educational level.

Table-6.5: Population Distribution of the sample Villages

Name of the Village	Population		Sex Ratio	Household Size	No of Siblings (0 – 5 Years age)		Old-age (> 60 yrs) Members	
	M	F			M	F	M	F
Kantigach	102	79	775	6.0	17	18	5	9
Juropani	94	92	979	6.2	15	12	10	10
Dangipara	106	93	877	6.6	7	9	7	5
Uttar Bhagalpur	87	75	862	5.4	11	9	9	6
Total of 4 Villages	389	339	871	6.1	50	48	31	30

Source: Field Survey

6.4.3 Literacy Profile of the Sample Population in the Concerned Villages

Literacy rate can be considered as a crucial measure of human capital on the ground that literate people can be trained less expensively than illiterate people and the literate people also generally have a higher socio-economic status and enjoy better health and employment prospects. Policy

makers also argue that literacy increases job opportunities and access to higher education. The UN Millennium Development Goals (MDGs) use literacy data as an indicator in the goal to achieve universal primary education and for promoting gender equality as it has been seen to improve literacy which has high correlation with poverty reduction. UNESCO has declared this coming decade as the UN Literacy Decade in order to stress the importance of literacy. It is also claimed that literacy, besides being a fundamental human right, is a foundation not only for achieving EFA but, more broadly, for reaching the overarching goal of reducing human poverty (UNESCO, 2005 UNESCO (2005); 'EFA Global Monitoring Report 2006' United Nations Educational, Scientific and Cultural Organization, 7, Place de Fontenoy, 75352 Paris 07 SP, France). It is now widely being recognised that "literacy skills are fundamental to informed decision-making, personal empowerment, active and passive participation in local and global social community" (Stromquist, 2005, p. 12)

Such correlation, however, depends upon the definition of literacy or the dimension from which literacy is being defined. The traditional definition considers literacy as an ability to "read, write, spell, listen, and speak. A basic literacy standard in many societies is the ability to read the newspaper. Some have argued that the definition of literacy should be expanded. For example, in Scotland, literacy has been defined as: "The ability to read and write and use numeracy, to handle information, to express ideas and opinions, to make decisions and solve problems, as family members, workers, citizens and lifelong learners." In June 2003 the UNESCO organized a meeting in Paris. Literacy experts from different parts of the world were invited to formulate a definition of literacy that would guide developments in literacy assessment and ensure that it addressed appropriate country issues. The following definition was proposed:

"Literacy is the ability to identify, understand, interpret, create, communicate and compute, using printed and written materials associated with varying contexts. Literacy involves a continuum of learning in enabling individuals to achieve his or her goals, develop his or her knowledge and potentials, and participate fully in the community and wider society."

It is especially after the 1990s, when the internet came into wide use, it has been asserted that the definition of literacy should include the ability to use tools such as web browsers, word processing programs, and text messages. This expanded skill of education has been termed computer literacy. Apart from this, some other types of skills are also advocated while defining literacy in question. These are health literacy, cultural literacy, financial literacy, numeracy, racial literacy, scientific literacy, statistical literacy, visual literacy etc.

However, while dealing with the problem of illiteracy in the Indian context the study will confine to the definition as given by the Indian Census, the ultimate source of literacy data in the country. The Indian Census defines a person as literate if he or she has the ability to read and write with understanding in any language, such as Hindi, Kannada, Marathi, Tamil or any other official Indian languages. But it is not always very easy to measure one's ability of reading with understanding. The census enumerator normally asks the respondent of a household (normally the male head of household) whether each household member is literate. A positive response is given if the individual has had any schooling at all. In India, the census enumerator is instructed, when there is doubt, to see whether a person listed as literate can read any part of the enumerator's manual and write a simple sentence. The census also requires to record details about employment, family size, housing, and many other topics. While conducting the survey, this definition was kept in view and care was taken to find out the literacy skill of the family members as accurately as was possible. With the information gathered from the survey, Table 6.6 has been constructed to reflect the literacy scenario of the study villages.

A simple interpretation of Table-6.6 reveals some important features. Firstly, there has been a remarkable progress in the overall literacy rate of the villages since 2001. A highest of 35 per cent literacy jump has been observed in Kantigach and the lowest is in Uttar Bhagalpur (9.5%). The same is 16% for Juropani and around 13% in Dangipara. It may be noted here that the survey was carried out during the year 2006-07. The literacy jump thus seems to be quite interesting. This simply shows that the growth in literacy rate is more sensitive in the low literate villages.

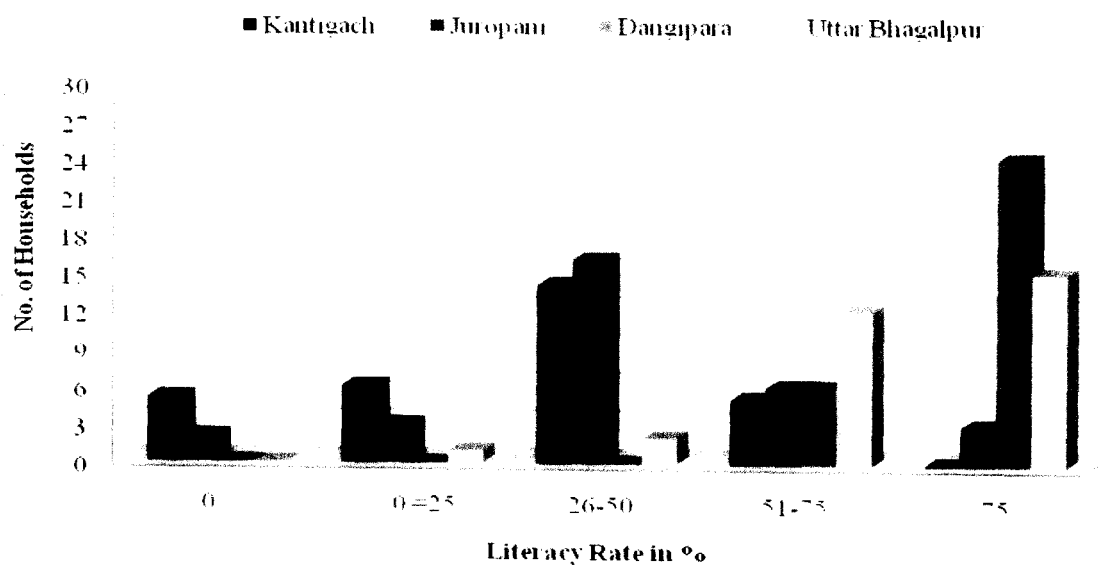
Secondly, in all the villages (except Kantigach where both male and female literacy rates were almost negligible in 2001 Census) the literacy increase has been higher for the females than for the males thereby showing a trend of narrowing the gender gap in literacy rate in the near future. Thirdly, the gender gap in literacy rate is found to be comparatively higher in the low literate villages. This suggests that the higher the overall literacy rate of any area, the lower will be the gender gap. Finally, the overall literacy rate of the sample villages in total is 62.7%, which is comparable to the state average rural literacy rate (63.42 as per Census 2001).

Table-6.6: Literacy Profile of the Villages

Name of the Village	Population		6^+ age Population		6^+ age Literate		6^+ age Literacy Rate		
	Male	Female	Male	Female	Male	Female	Male	Female	Total
Kantigach	102	79	71	56	31	17	43.7 (3.5)	30.4 (0.98)	37.8 (02.2)
Juropani	94	92	75	73	40	27	53.3 (41.3)	37.0 (17.8)	45.0 (29.2)
Dangipara	106	93	92	77	84	60	91.3 (83.9)	77.9 (58.8)	85.2 (72.5)
Uttar Bhagalpur	87	75	73	69	58	51	79.5 (78.6)	73.9 (54.2)	76.8 (67.3)
Total of 4 Villages	389	339	311	275	213	155	68.5	56.4	62.7

Source: - Field Survey (figure in the parenthesis represents the literacy rate 2001)

Fig-6.1: Distribution of Households as per the Literacy Rate



Source: Field Survey

Apart from village level variation, as shown in Table-6.6, it is also noticed that there is a considerable variation in literacy achievement among the households too. A brief sketch of household level literacy character is now being presented in Figure-6.1.

The households have been categorized as per the literacy rate and five categories have emerged from the survey data that reflect upon the educational level of the households. So far the literacy attainment of the households in the sample villages is concerned, it is the Kantigach village where every household has been found with a literacy rate below 75%. Again, 40% of the total number of households (11 out of 30) has hardly acquired a minimum of 25% literacy rate. Half of the family members are found to be illiterate in case of more than 80% households (25 out of 30) in this particular village. On the other hand, the households of village Dangipara from the same block

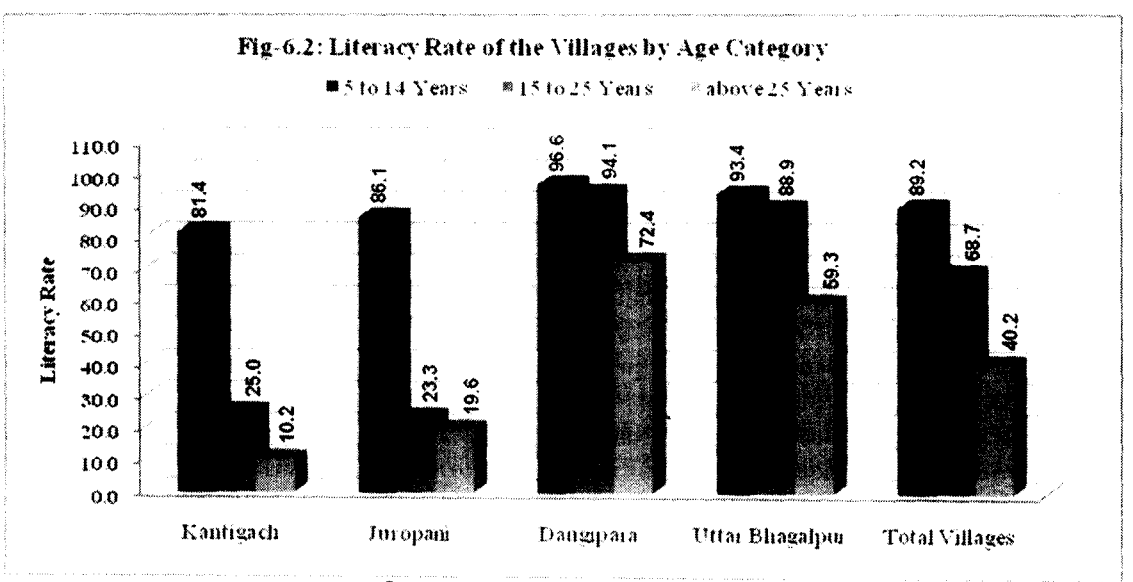
(Goalpokhar-I) show far more developed in this connection. All the households in this village at least maintain a literacy rate of more than 50%. Again, 80% of the total sample households show a literacy rate more than 75% in this village. Juropani, a tribal village, is also a comparative low literate village where 75% of the households are lying within a literacy range of below 50% level.

Beyond this simple interpretation of literacy rate, age-wise literacy character is also constructed for disaggregated analysis. Out of total literate members in all villages (407), 54.8% (223) belongs to the category of 5 to 14 years age group, 19.4% (69) in 15-25 years age group and the remaining 25.8% (115) in 25 years and above. The literacy rate among the family members aged 25 years and above (expected parental group) is found to be the lowest in Kantigach (10.2%) followed by Juropani (19.6%), Uttar Bhagalpur (59.3%) and it is the highest in Dangipara (72.4%). The above provides the overall educational development pattern of the villages too. Further analysis of literacy variation has been undertaken in a later chapter.

6.5 Relevant Data & Variables of the Econometric Application

6.5.1 Household Income/Expenditures

Household income, as it has been pointed out, is an important economic variable that bears strong statistical relationship with educational attainment. But at household level it is rather difficult to assess the family income in the absence of accurate information. It has been observed during the survey that there is a huge discrepancy between income earned (Y), consumption (C) and savings (S) of a particular household. Three types of information were asked - total earnings, total expenditure and total savings. An interesting observation is that total expenditure and total savings altogether was much higher than the total earnings for most of the households. Even for some households, expenditure is much higher than the level of income although the families have not taken any loans. This indicates that that there is either a tendency for the respondent to provide inaccurate information or that they are unable to calculate their earnings on a monthly basis. Thus an alternative process was adopted to capture the issue. For this only the expenditure level of the households was retained for the sake of analysis. Though it is not possible to include all the parts of expenses made by a household, five major expenditures were built-in that were commonly incurred by all the families. They are - expenses (annual) on food, clothing, housing, education and other consumer goods. Owing to the irregular nature authenticity response on health expenditure appears to be doubtful. As such, health expenditure, although an important part, has not been included. On the basis of information on the annual expenditure, monthly per capita expenditure is calculated. The summary of the data is shown in Figure- 6.2 below.



Source: - calculated from Field Survey

Taking expenditure of the households as a surrogate of income, it is seen that in all the villages, expenditure on food is a major share of total expenditure. In the low literate villages (Kantigach

and Juropani) more than 75% of total expenditure is accounted for by food expenditure. In Dangipara, it is the lowest followed by Uttar Bhagalpur and Juropani. This high proportion of food expenditure in total expenditure has an important implication. It is generally observed that lower the level of income, the higher will be the proportion of expenditure on food. As such it seems that, the village Kantigach suffers from acute poverty (monthly per capita expenditure is found to be the lowest at Rs.333, Table-6.7) although the other villages also have the problem of persistent poverty too. Except Dangipara, in all the villages, it is the expenditure on clothing that occupies the second largest share in total expenditure. In Dangipara, educational expenditure gets more prominence, standing next to food expenditure. The above information regarding expenditure of households is a pointer to the fact that the households in most villages have to earn for their basic needs of food and clothing, thus making education of a child an option and not a necessity.

For a detailed understanding of expenditure of the households, the present exercise has calculated an induced expenditure variable apart from traditional monthly per capita expenditure (MPCE). This is educational expenditure as proportion of total expenditure and per capita educational expenditure which is shown in Table-6.7. It is seen from the table that all the induced expenditure variables bear strong relationships with the overall literacy rate at village level. However, all expenditure variables are strongly correlated with each other. Accordingly, introduction of all these independent variables may precipitate the problem of multicollinearity in the regression model. For this, the conventional method of checking the multicolinearity problem will be applied.

Table-6.7: Village Level Expenditure

Name of the Villages	Total	Total Population	Total Literacy Rate	Monthly Per capita Expenditure	Education as % of Total Expenditure	Per capita Educational Expenditure
Kantigach	722440	181	37.8	333	4.72	775
Juropani	865775	186	45.0	388	6.73	987
Dangipara	1027695	199	85.2	430	8.08	1483
Uttar Bhagalpur	767210	162	76.8	395	7.36	1065

Source: - calculated from Field Survey

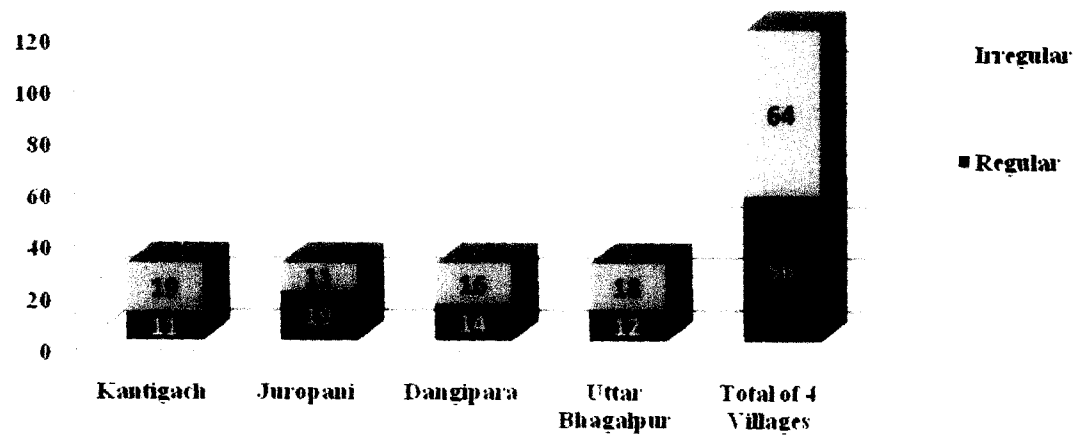
6.5.2 Occupational Pattern and Literacy Attainment

A common classification of occupational pattern is to distinguish between earners as agriculture labourer, cultivator, household industry worker and other worker (Census classificaion). This can be broadly divided into agricultural households and non-agricultural households. In the present study differential occupational pattern is also captured with classification of the households into two new categories - those who have regular/permanent income and the other with irregular income, irrespective of the total income earned by the households.

In order to differentiate between regular and irregular nature and source of income, assessment of households into two broad categories depending upon their nature of work has been undertaken. Firstly, the self employed workers, salaried earners, working in unorganized sectors or in any other types of work that generate a steady flow of income and, secondly, the workers having uncertainty so far as flow of income is concerned, i.e. those who have to rely on saonal income flow. In the latter category, one usually finds the small cultivators, agricultural labourers, semi-skilled labourers. Thus, occupational pattern as reflected by patterns of flow of income help in distinguishing between households which have the security of a steady income from those who do not. The logic behind such exercise is that a household earning income on a regular basis will enjoy economic security along with a guarantee of a future income, which in turn makes decision making and planning for the future less complicated from those who do not have a regular source of income. Education of the children is thus included in the decision making and planning and it has an important bearing on the decision to send the wards to school.

Briefly, out of 120 households in four villages, 56 have been found to earn a regular income and the remaining 64 households are subject to fluctuations or irregularities in income earning. In Juropani, in spite of having lower MPCE, more than 60 percent of the households (19 out of 30) earn income on a regular basis. It has earlier been noted that most of the earners of this village are engaged as tea garden workers getting their wages either monthly or on weekly basis with also having access to the Provident Fund, rations, medical facilities, etc. On the other hand, in Kantigach, the workers frequently migrated to other districts and states for earning and thus being subjected to uncertainty in income earning and often having to face deception from employers. Certainty in getting employed in a distant region is also dependent on several factors like networking, information base, security, connectivity, etc., thus making the process very time dependent. In the other two villages of Dangipara and Uttar Bhagalpur, there is a blend of regular and irregular income holders with the latter being higher than the former in both the villages. The findings are provided in Figure 6.3.

Fig-6.3: Occupational Pattern of the Households



Source: Field Survey

6.5.3 Opportunity Cost of Sending the Children to School

In studying the schooling characteristics of the children, it appears that where income poverty is more acute and where there is opportunity for a child to be engaged in paid work, the parents were under pressure to choose one option from a set of two - either to send the child to school or to send the to work to supplement family income. Considering the income poverty of the families, the propensity to exercise the second option is expected to be stronger and more realistic for the household to alleviate income poverty. This appears to generate a two-way relation in the following manner-

→

INCOME POVERTY EDUCATIONAL POVERTY

←

A strong debate exists in arriving at such a conclusion, i.e. economic security/income will always have positive educational or schooling outcomes. It is common in the literature on education where one can find higher literacy rate among relatively lower income groups. As such, in the study, to overcome such issues, opportunity cost of sending a child (below18 years age) to school has been introduced in the model. This has been done as follows-

The children of the family with irregular income nature usually need to assist their parents for earning. In the process they either assist their parents or they are directly engaged in paid work. With this assumption the collected data from each household include the work status of each family member. The information on work status of the children aged up to 18 years provides information on whether there is scope for children to get access to paid work in the labour market

or not. If it is in the affirmative, it is assumed that there is some opportunity cost of sending children to the school. The implicit opportunity cost through work status has been represented in Table-6.8.

Table-6.8: Work Status of Children (Up to the age 18 years)

Name of the Village	No. of households		
	Total	Children in Paid Work	Children not in Paid Work
Kantigach	30	13	17
Juropani	30	16	14
Dangipara	30	8	22
Uttar Bhagalpur	30	10	20
Total of 4 Villages	120	47	73

Source: Field Survey

It is observed that out of total 120 households, children of 47 households were found to be engaged in paid work. The extent of children in paid work is highest in Juropani (tea garden dominated tribal area) followed by Kantigach and Uttar Bhagalpur. The opportunity cost of sending the children to school may additionally capture the character of income poverty with the prevalence of child labour with a priori assumption that where there is work opportunity for children, lower will be the school enrolment rate of the children. The households are assigned the value "1" if at least 1 child is found in the labour market and "0" other wise, thus assigning it as a qualitative dummy variable with binary values.

6.5.4 Dependency Ratio

Among the family members, children belonging to the age group of 0-5 years and the elderly population of 60 years and above are economically dependent in the sense that they are non-earning members in the household. The presence of this group of family members creates two types of dependencies. As they are non-earners, they are financially dependent and their financial burden is usually borne by the adult earners. This may be termed as economic dependency of a household that may have some effect on child schooling and literacy rate of the family. Again, physically, they are also dependent (except some elderly members) on other able-bodied members of the household since the latter is expected to take care of the sick and elderly in the family. This physical dependency may again be termed as household dependency which is a non-financial burden. This non-financial burden is usually shouldered by other non-earners, primarily by the school going age children or by the female members of the family unit. It may generally be assumed that larger the dependency (both economic and household dependency) of a family, lower will be the chance of a child to be schooled. Considering this assumption, the extent of both types of dependency ratio has been incorporated as an additional explanatory variable in the regression exercise. A brief picture of the dependency character as obtained from the sample households is depicted in Table-6.9 below.

Table-6.9: Village Level Dependency Ratio

Name of the Villages	Schooling age 5-14 Children	Dependent member	Total Earners	Household dependency Ratio	Economic Dependency Ratio
Kantigach	59	48	42	0.81	1.14
Juropani	72	47	72	0.65	0.65
Dangipara	58	28	55	0.48	0.51
Uttar Bhagalpur	61	35	52	0.57	0.67
Total of 4 Villages	250	158	221	0.63	0.71

Source: - calculated from Field Survey

It may be noted here that household dependency ratio is calculated as ratio of dependent members to schooling age children following the above mentioned argument. The economic dependency has been estimated by the ratio between the dependent members to earners in the family. It is seen that both household and economic dependency ratio are the highest in the least literate village of Kantigach followed by the higher literate village. The ratios have an explanatory capacity in capturing the variations in literacy character of the households, thus amply justifying the inclusion of this variable in the regression analysis.

6.5.5 Role of Female Members in the Household

Mothers' role is undeniably significant in determining the educational status in a family. In order to elucidate on this crucial role, female Work Participation Rate (FWPR) has been considered in the model as an explanatory variable acting on the premise that it will negatively impact upon the educational outcomes of the children in the household. Taking FWPR for all the villages under survey, around 19% of the female members were found to be working. A very low rate of FWP was found in the village of Kantigach where the literacy level is also very low and the same is reflected in the other villages too. This however is not in line with economic arguments present in literature where low literacy of women is associated with high WPR especially in informal sectors. However, the figure is for all the villages which may or may not be supported at household level. The regression coefficients will provide more robust results. In the regression model, FWPR has been incorporated as a qualitative dummy variable assigning the value '1' if any female member is working and '0' otherwise.

Table-6.10: Work Participation

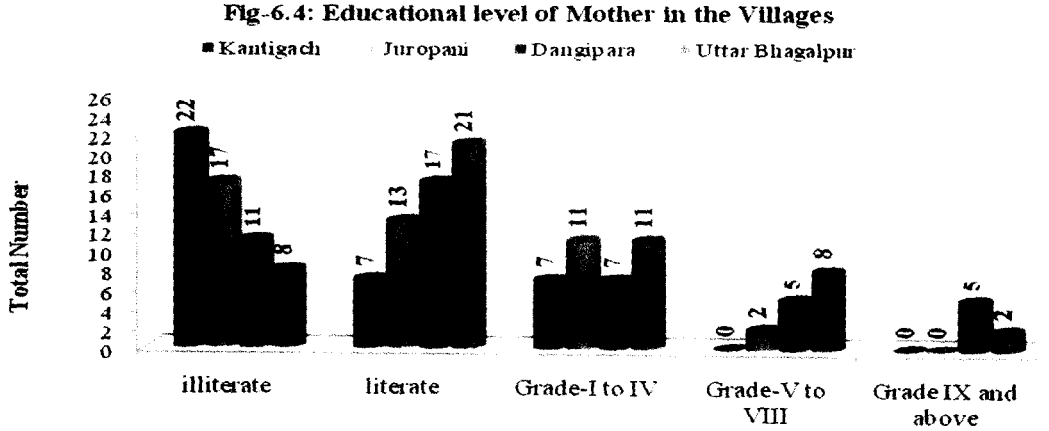
Name of the Villages	No of Earning members			WPRF
	M	F	T	
Kantigach	40	2	42	2.53
Juropani	35	37	72	40.22
Dangipara	47	8	55	8.60
Uttar Bhagalpur	35	17	52	22.67
Total of 4 Villages	157	64	221	18.88

Source: - calculated from Field Survey

6.5.6 Parental Educational Level and Schooling of Children

Studies on educational status of the parents show that mothers' educational level has a positive relationship with the households' educational attainment and accordingly this has also been introduced in the present schema of analysis. It has been found from the sample data that out of total 120 households there were 116 mothers whose level of education had been recorded (Fig-6.4).

Fig-6.4: Educational level of Mother in the Villages



Source: - calculated from Field Survey

Out of this, 58 were found to be literate of which 36 were literate with below primary level of education, 15 had received education till upper primary and the remaining 7 mothers were found to have moved beyond upper primary level of education. Educational level of mothers in Kantigach village is most appalling with only 7 mothers (out of 29) who are literate with below primary level of education.

Over the past few decades the empowerment of women has been an important issue that has been adopted not only in academic research but also in policy matters. Among all the factors that can empower women, education is understood to be the all important factor that can enhance the capability of the person thereby empowering the person. To quantify the level of empowerment, an Index of Parental Empowerment as suggested by Chakrabarti and Sharma Biswas, (2008) has been adopted to serve the present purpose. The index takes into account whether decisionwithin the household is taken by the respondent (mother) herself or jointly with husband or other family members (Yes = 1; No = 0). This index has been constructed for two dimensions - index for household matters (e.g.cooking, health, allowed to have money) and index for freedom to go outside the house (e.g. freedom to go to the market, visiting relative/friend's house, right to spend money, right to purchase jewelry, decision to stay at parental house). Following this, this index has been introduced as a variable in a modified form. For this, a simple query covering 4 aspects of decision making had been included under the principle query. The four specific issues with three pre-defined possible responses were – who decide/s in the event of enrolment of children, continuation of child education, economic matters and matrimonial and other socio cultural affairs. Although there are other related issues on which decisions usually taken, but for capturing the educational purpose, only these four specific issues have been covered. The possible three responses were - in some issues father alone, in some issues mother alone and some decisions may be taken jointly by both parents. Each parent is allotted 01 mark for taking part in decision making sphere. As such, a parent (father/mother) may be assigned a maximum of 4 marks if he/she takes part in all the familial issues and in each village 120 is the maximum level of score (Full Score; if all the 30 parents are alive) that the fathers or the mothers of that particular village can obtain. Finally, on the basis of the score/marks obtained by each parent in a household, an index assigned to each parent of the households has been calculated as follows –

$$\textbf{Parental Empowerment Index (PEI)} = \frac{\textbf{(Marks or score obtained by the parent)}}{\textbf{Total Score}} \times 100$$

This index has been termed as Parental Empowerment Index (PEI). Accordingly, if a parent takes part in all the four specified decision-making spheres, then his/her empowerment index will be 100%. Finally, after calculating the value of the index for both of the parents in a particular household, it is again observed whether the value of the index of mother is greater or equal to that of father. In that case, it is obvious that the mothers are enjoying equal or even more decisive power in the family and accordingly it may be said that the mothers are empowered in that very particular family. In technical terms, if mothers are empowered then they are assigned with yes or '1' value and '0' if not.

The value of the index for the four villages is shown in Table-6.11. Overall, the decisive power of the fathers is 86.3%, i.e., at the event of taking familial decision, in 86.3% issues, the fathers are taking active part while the same is 76.5% for the mothers. It is observed that the PEI varies across the villages. Interestingly it is found that the PEI associated with the mothers has a unique positive correlation with the overall literacy rate of the villages. In Kantigach, the mothers are less empowered than all the villages where the literacy rate has also been found to be lower than the other three villages under study. The only exception found here is that in Juropani while mothers were highly empowered, the literacy rate does not reflect the level of empowerment of the women in the family. In Juropani, the mothers play an important role in familial decision-making which may be because of the culture of a tribal dominated village.

Noticeably it is seen that in economic matter, the fathers' role is more dominating than the other issues. Considering such an interesting association of this PEI with literacy attainment, it has been decided to incorporate the index as an additional explanatory variable to see the role of women empowerment in educational attainment.

Table-6.11: Construction of Parental Empowerment Index

Area of Empowerment	Kantigach		Juropani		Dangipara		Uttar Bhagalpur		All Villages	
	Father	Mother	Father	Mother	Father	Mother	Father	Mother	Father	Mother
Enrolment of children	23	14	23	27	25	28	27	21	98	90
Continuation of education	22	14	25	25	23	28	27	20	97	87
Economic matter	28	6	25	27	27	27	30	21	110	81
Matrimonial/other socio-cultural purpose	27	15	25	29	26	29	28	24	106	97
Total Score of the village	100	49	98	108	101	112	112	86	411	355
Full Score	120	116	116	120	120	112	120	116	476	464
Index of Empowerment	83.33	42.24	84.48	90.00	84.17	100.00	93.33	74.14	86.34	76.51

Source: - calculated from Field Survey

6.6 Factors Explaining Literacy Rate

In order to identify the factors influencing the literacy levels a set of explanatory variables (demand side) are incorporated in the multiple regression analysis where households are taken as unit of analysis.

A regression analysis using PLR, MLR and FLR as the outcome variables representing the literacy rates of person, male and female has been performed. The right hand side variables in the equations are predictors, the definitions of which along with the other details have already been discussed in the earlier section of this chapter. Theoretically we expect that higher literacy attainment would be associated with higher proportion of educational expenditures (EDNTOTEX), better educated parents (FTHEDN & MTHEDN), households with having more regular income (INREGIRREG) and the families where the mothers enjoy more or at least equal level of empowerment as compare to the fathers (EMPMTH) . On contrary, a negative association is expected with the households where economic dependency of the earner (ECONDEP) and household dependency of the children found to be higher and where the mothers ought to work in the labour market (FWPR). Finally, a priori assumption is also made that the literacy attainment of the households will be lower if there is a scope of the children to be engaged in labour market (OPPTNTCOST). It is also assumed that literacy rate is a linear function of all the predictors and considering the above theoretical background, three separate regression equations have been constructed for analysis in the following way

Regression Equation

$$PLR_i = \beta_0 + \beta_1 EDNTOTEX_i + \beta_2 FWPR_i + \beta_3\, ECONDEP_i + \beta_4 HHDEP_i + \beta_5 INREGIRREG_i + \beta_6 OPTNTCOST_i + \beta_7 FTHEDN_i + \beta_8 MTHEDN_i + \beta_9 EMPMTT_i + \epsilon_i - -(1)$$

$$MLR_i = \beta_0 + \beta_1 EDNTOTEX_i + \beta_2 FWPR_i + \beta_3\, ECONDEP_i + \beta_4 HHDEP_i + \beta_5 INREGIRREG_i + \beta_6 OPTNTCOST_i + \beta_7 FTHEDN_i + \beta_8 MTHEDN_i + \beta_9 EMPMTT_i + \epsilon_i - -(2)$$

$$FLR_i = \beta_0 + \beta_1 EDNTOTEX_i + \beta_2 FWPR_i + \beta_3\, ECONDEP_i + \beta_4 HHDEP_i + \beta_5 INREGIRREG_i + \beta_6 OPTNTCOST_i + \beta_7 FTHEDN_i + \beta_8 MTHEDN_i + \beta_9 EMPMTT_i + \epsilon_i - -(3)$$

Here, i=1, 2, 3.....120 and ε_1 is the error term which accommodate all the other influences on the outcome variable not accounted for in the assumed model. This error term is assumed to be a random variable εwith a mean of zero, conditional on the explanatory variables with the property that the variance of the error is the same at any level of explanatory variables, i.e., E (u 1i) ~ N (0, σ2). $\beta_0, \beta_1, - - - - - - \beta_9$ are unknown parameters which are estimated by "fitting" the equation to the data using least-squares. The variables used for regression analysis are listed below (Table-6.12):

Table-6.12: Description of Variables

Variables	Notation	Description
Dependent variables		
Literacy Rate (Person)	PLR	Percentage of total population literate in the age group 7 years and above
Literacy Rate (Male)	MLR	Percentage of male population literate in the age group 7 years and above
Literacy Rate (Female)	FLR	Percentage of female population literate in the age group 7 years and above
Independent covariates		
Economic dependency ratio	ECONDEP	Ratio of non-earners (old-ages and siblings) to earners
Household dependency ratio	HHDEP	Ratio of non-earners (old-ages and siblings) to schooling age children
Proportion of educational expenditure	EDNTOTEX	Educational expenditure as a % of total expenditure
Mothers' empowerment	EMPMTH	1= if mothers' empowerment index is greater than or equal to that of father's, 0 = less than that of father's
Fathers' education level	FTHEDN	education in completed number of years
Female work participation	FWPR	1= if female members work, 0= no female works
Pattern of income	INREGIRREG	1= if the main income of a household is regular, 0= if the main income is not regular
Mother's education level	MTHEDN	education in completed number of years
Opportunity cost of schooling	OPTNTCOST	1= if there is any children in the age group below 18 years and working, 0= if there is no children in the age group below 18 years and working

It is expected that as proportion of educational expenditure to total expenditure (EDNTOTEX), monthly per capita expenditure of the household (MPCE), educational level of father and mother (FTHEDN, MTHEDN) increase, the literacy rate will also have an increasing trend and households with regular income (INREGIRREG) and with mothers' empowerment will also show the increase in literacy rate. However it is assumed that increasing economic dependency representing the ratio of non-earners to earners (ECONDEP) and household dependency measured as the ratio of old age and sibling members to total number of schooling age children (HHDEP) will lower the literacy rate. it is also assumed that the literacy rate will be lower for the households where the female members work (FWP) in the paid market and where there is an opportunity for the children to be engaged as child labour (OPTNTCOST).

6.6.1 Regression Analysis

It has earlier been stated that multiple regression analysis as a method of estimation is being applied in the present study. However, there are different forms of regression methods such as Standard multiple regression, Hierarchical multiple regression and Stepwise multiple regression. Standard multiple regression is used to evaluate the relationships between a set of independent variables (metric or dichotomous) and a dependent variable (metric). Hierarchical, or sequential, regression is used to examine the relationships between a set of independent variables and a

dependent variable, after controlling for the effects of some other independent variables on the dependent variable. Stepwise regression is used to identify the subset of independent variables that has the strongest relationship to a dependent variable. So far the present analysis is concerned, standard multiple regression is resorted to where all the independent variables are entered into the regression equation at a time. Here, beyond normal goodness of fit test (R^2 Adjusted) and statistical significance test ('t' test), an 'F' test is used to determine if the relationship can be generalized to the population represented by the sample (as because sampling method has been applied in the process of data collection).

6.6.2 Initial Observations on the Multiple Regression Result

In order to test the viability of sample size, the minimum ratio of valid observation to independent variables for multiple regression is normally suggested 5 to 1. In our model with 120 valid cases and 09 independent variables, the ratio for this analysis has become 13 to 1, which is more than the minimum requirement. Another rule of thumb has been suggested in the manner that when there is a number of cases (N) relative to the number of predictor variables (k), N should be > 50 + 8k when testing R2 and N > 104 + k when testing individual Bj values (Green, 1991).

Thus it appears that the selection of sample size and independent variables holds satisfied so far the statistical requirement is concerned.

Table-6.13: Descriptive Statistics

Variables	Mean	Std. Deviation	N
PLR	62.61	30.25	120
MLR	69.05	36.69	120
FLR	56.17	40.95	120
EDNTOTEX	6.82	4.69	120
MPCE	392.80	124.49	120
FWPR	0.47	0.50	120
ECONDEP	0.89	0.98	120
HHDEP	0.70	0.69	120
INREGIRREG	0.47	0.50	120
OPTNTCOST	0.35	0.48	120
FTHEDN	3.47	4.01	120
MTHEDN	2.08	2.86	120

Multiple correlation coefficient- Goodness of fit

Before reporting the regression results which usually contain the estimates of the parameters and their standard errors or t-statistics, it has been tried to gather some information that tells how closely the regression line fits the survey data. Putting it in other words, how much variation in the response variable is being explained by the independent variables that are included in the analysis. It is earlier stated that R Square or Adjusted R Square is a statistic that measures the above proportion in any multiple regression analysis.

Three literacy variables have been regressed upon in the model and as such multiple correlation coefficient for each of the three equations have been found and shown in detail in Table 6.14. Adjusted R Square is about 0.553 for overall literacy rate (PLR) which tells us that 55 % variation in literacy rate (41% and 38% in female and male literacy rate) is accounted for by the predictors included in our model. This apparently indicates that variation in literacy rate is not much explained by the household level socio economic factors (predictors in the model). But it should be noted here that cross sectional data has been used in the analysis. In such a case individual differences are caused by many factors that often cannot be measured. Moreover, so far the number of observations of the analysis (120 observations in total) and limitation of not including the institutional factors in the model are concerned, it appears that the exercise proved to be a good model for explaining the literacy rate. However a better explanation in this respect may be found

from the analysis of variance given by the F- ratio which incorporates sample size and number of predictors in assessing the significance of the relationship. It actually measures whether all the independent variables, taken as a group, (linearly) influence the dependent variable or not. That is, it tests the null hypothes ($H_0=\beta_1 = \beta_2 = \beta_3 = - - - \beta_k = 0$) against the alternative hypothesis, ($\beta_1 = \beta_2 = \beta_3 = - - - \beta_k \neq 0$) that at least one of the coefficients is not zero. If the H_0 is true, clearly the model does not explain the behavior of dependent variable and the regression model then reduces to-

$$\text{Literacy Rate} = \beta_0 + \epsilon_i$$

Table-6.14: Multiple correlation coefficient/ Goodness of fit

R	R Square	Adjusted R Square	Std. Error of the Estimate	Dependent Variable
0.766	0.586	0.553	20.238	PLR
0.656	0.431	0.384	28.792	MLR
0.674	0.454	0.409	31.481	FLR

The result of ANOVA as found for the three regression equation is briefly summarized in table-6.15. From the analysis of variance (ANOVA) it is found that the probability of the F statistic in all the three equations estimated is less than 0.001 which is again less than or equal to the level of significance of 0.05. Thus it appears that a statistically significant F- ratio as found for the present analysis indicates that the model is quite good. Thus, the results support the research hypothesis that there is a statistically significant relationship between the set of independent variables included in the model with that of the dependent variables, thereby rejecting the null hypothesis.

Finally, before interpreting the regression coefficients, check on the presence of collinearity among the regressors has been done. In order to find out the actual effect of a particular independent variable, multiple regression analysis allows for control over the effects of other independent variables on the dependent variable. Thus it is essential in multiple regression analysis that the key explanatory variable not be correlated perfectly with one or more of the other explanatory variables. If there is to be perfect correlation between two independent variables, it would not be possible to separate out the effect of the key variable on the dependent variable from the effect of the other independent variable/s.

Table-6.15: ANOVA

	Sum of Squares	df	Mean Square	F	Sig.	Dependent Variable
Regression	63872.367	9	7096.930	17.328	0.000(a)	PLR
Residual	45051.867	110	409.562			
Regression	69007.047	9	7667.450	9.249	0.000(a)	MLR
Residual	91187.302	110	828.975			
Regression	90552.604	9	10061.400	10.153	0.000(a)	FLR
Residual	109012.705	110	991.025			

a Predictors: (Constant), MTHEDN, HHDEP, FWPR, OPTNTCOST, INREGIRREG, MPCE, EDNTOTEX, FTHEDN, ECONDEP

It is equally important that suppose the explanatory variables (e.g. in the model EDNTOTEX and other independent variables) are not correlated, then including one particular explanatory variable (e.g. EDNTOTEX) in the model would not have an effect on estimated coefficients of the other

independent variables (e.g. EMPMTH, MTHEDN, HHDEP, INREGIRREG, FWPR etc.) in explaining the dependent variable (e.g. literacy rate in our model). In other words, if the independent variables are not correlated, then there is no need to perform multiple regression. Bivariate analysis may capture the true effect of a particular variable. In practice, economic variables will almost always have some correlation with one another. When two or more variables are highly, but not perfectly, correlated - that is, when there is multicollinearity - the regression can be estimated, but some concerns remain. The basic task is to see whether the correlation among the predictors is tolerable. For this one may compute correlation coefficients of independent variables. But high correlation coefficients do not always necessarily imply multicollinearity. We can make a judgment by checking related statistics, such as tolerance value or variance inflation factor (VIF), Eigen value, and condition number.

Table 6.16 and Table 6.17 have been constructed to make a judgment on the presence of the magnitude of multicollinearity in the preferred model. From the tolerance values it is seen that all are ranging from a low of 0.4 to as high as 0.9 thereby generalizing that the tolerance values of all independent variables is greater than 0.1 which again limits the values of VIF sufficiently less than 10 (Kleinbaum et al 1988). Primarily, it may therefore be expected that the problem of multicollinearity is not severe in the model. It may be worthy to note here that VIF shows how multicollinearity has increased the instability of the coefficient estimates (Freund and Littell 2000: 98). Putting it differently, Variance Inflation Factor (VIF) provides a measure of how much the variance of the estimated regression coefficient is inflated as compared to when the variables are not linearly related.

There is another use of VIF that relates to Multicollinearity of the model. If the mean value of VIFs related with the regressors is much greater than 1, serious problems are indicated (http://www.stat.lsu.edu /faculty/geaghan/EXST7034/Fall2005/E34MaterialsFall2005.html). In the present model the value is found be as low as 1.6 which seems to be not much higher than 1. This suggests that no serious concern remains so far as multicollinearity is concerned.

Table-6.16: Tolerance and Multicollinearity

Variables	Tolerance	VIF
EDNTOTEX	0.762	1.312
MPCE	0.691	1.446
FWPR	0.850	1.177
ECONDEP	0.445	2.249
HHDEP	0.456	2.194
INREGIRREG	0.806	1.240
OPTNTCOST	0.867	1.153
FTHEDN	0.504	1.982
MTHEDN	0.596	1.677
Mean of VIFs		1.604

In order to have an alternative test of the Multicollinearity problem, Collinearity Diagnostics has been analysed in our model. Statistically, a set of eigenvalues of relatively equal magnitudes indicates that there is little multicollinearity (Freund and Littell 2000: 99). Condition numbers or condition indices are square roots of the ratios of the largest eigen values to individual ith eigen values. Conventionally, an eigen value close to zero (say less than .01) or condition number greater than 50 (30 for conservative persons) indicates significant multicollinearity. Belsley, Kuh, and Welsch (1980) insist 10 to 100 as a beginning and serious points when collinearity affects estimates. In both the cases, the Collinearity Diagnostics table (Table-6.17) as calculated for the survey data does not seem to be indicative that there is a severe multicolloinearity that needs to be addressed in the model.

Table-6.17: Collinearity Diagnostics

Dimension	Eigen value	Condition Index
1	6.123	1.000
2	1.216	2.244
3	0.760	2.838
4	0.599	3.198
5	0.469	3.613
6	0.299	4.526
7	0.210	5.394
8	0.168	6.039
9	0.125	6.992
10	0.031	14.042

6.6.3 Interpretation of Regression Coefficients

The remaining task is now to determine which variables statistically and significantly contribute to the model. The significance tests for individual regression coefficients assess the significance of each predictor variable assuming that all other predictors are included in the regression equation. The level of statistical significance required to reject the null hypothesis (i.e., to obtain a statistically significant result) is set conventionally at .05, or 5%. While the 5% criterion is typical, reporting of more stringent 1% significance tests or less stringent 10% tests can also provide useful information. In the present analysis the level of statistical significance has been assumed at the level of less stringent 10%. It is also to be noted here that if the sample is random and large enough, one can assume the distribution of the errors of estimation would be normally distributed. As the sample becomes smaller, the same will follow the't' distribution. So far the sample size of the present study is concerned (120 out of 477 households, i.e. only 25%), it is reasonable to use the t- statistics for obtaining the statistical significance of the model.

Out of nine explanatory variables that are incorporated in the model, seven variables namely, EDNTOTEX, MPCE, ECONDEP, INREGIRREG, OPTNTCOST, FTHEDN and MTHEDN, show statistically significant relationship with the literacy characters (PLR, MLR, FLR) of the households. However, all the explanatory variables are not found to be equally significant and enabling in determining each of the dependent variables for which the explanatory variables were used. The regression coefficients (un-standardized) along with their standard errors, t-values and the level of significance (p-values) have been shown in Table 6.18.

However, by applying the stepwise regression technique (backward or forward) one could drop the so-called insignificant variables. But one should also be aware about the potential costs that may arise if the so-called insignificant variables were excluded from the equation. In reality, insignificance arises if the p-value is greater than some "critical" level (e.g. 0.10 as assumed in the model). Under such an assumption, in a standard t-test, one can generally conclude that the variable has no explanatory power in the model if the p-value is 0.10001. Such a conclusion is probably not always justified, because, the so-called insignificance is a statement about precision in estimation and not about causality. Actually, the larger the p-value, the more likely the null hypothesis is true. In a justified manner, one can conclude that the probability of making a Type I error (i.e. rejecting the null hypothesis) is slightly higher than what is otherwise likely to be assumed. But in no way does the decision to reject or not, mean that the variable is uninformative. Moreover, the dropped variables are now part of the error term and to the extent these dropped variables are correlated with any included regressors will be critical since the coefficients on those regressors, under such circumstances, will be estimated with bias. This is a much more serious problem than including regressors with imprecisely estimated coefficients. In conclusion, the decision to mark a variable as insignificant is a subjective choice and one is liable to falsely think that p-values are more objectively applied. For this technical point, the present regression exercise

has included all the nine (09) explanatory variables without dropping any. However, attempt will be made to assign economic significance to not-so-significant variables.

Table-6.18: Regression Result

Variables	Model-1 PLR			
	Un-standardized co-efficient	Std. Error	't' value	Sig
(CONSTANT)	26.367	8.125	3.245	0.002
EDNTOTEX	0.909**	0.453	2.009	0.047
MPCE	0.053***	0.018	2.932	0.004
FWPR	5.571	4.017	1.387	0.168
ECONDEP	-4.780*	2.834	-1.686	0.095
HHDEP	1.296	4.002	0.324	0.747
INREGIRREG	9.537**	4.124	2.312	0.023
OPTNTCOST	-11.623***	4.160	-2.794	0.006
FTHEDN	0.770	0.652	1.181	0.240
MTHEDN	3.408***	0.839	4.060	0.000

R2 = 0.586; Adj. R2 = 0.553; N = 120

Variables	Model-2 MLR			
	Un-standardized co-efficient	Std. Error	't' value	Sig
(CONSTANT)	22.893	11.560	1.980	0.050
EDNTOTEX	0.379	0.644	0.589	0.557
MPCE	0.085***	0.025	3.330	0.001
FWPR	-1.007	5.715	-0.176	0.860
ECONDEP	-4.827	4.032	-1.197	0.234
HHDEP	3.472	5.694	0.610	0.543
INREGIRREG	14.563**	5.867	2.482	0.015
OPTNTCOST	-9.324	5.918	-1.575	0.118
FTHEDN	2.201**	0.928	2.372	0.019
MTHEDN	0.661	1.194	0.553	0.581

R2 = 0.431; Adj. R2 = 0.384; N = 120

Variables	Model-3 FLR			
	Un-standardized co-efficient	Std. Error	't' value	Sig
(CONSTANT)	25.348	12.639	2.006	0.047
EDNTOTEX	2.141***	0.704	3.039	0.003
MPCE	0.028	0.028	1.021	0.309
FWPR	11.587*	6.249	1.854	0.066
ECONDEP	-2.950	4.409	-0.669	0.505
HHDEP	-4.580	6.225	-0.736	0.463
INREGIRREG	-4.600	6.415	-0.717	0.475
OPTNTCOST	-12.428*	6.471	-1.921	0.057
FTHEDN	-0.756	1.014	-0.745	0.458
MTHEDN	7.015***	1.306	5.372	0.000

R^2 = 0.454; Adj. R^2 = 0.409; N = 120

Note: *** significant at 1% level, ** at 5% and * at 10%

Another point related with the model estimation is that the values of the least-squares estimators vary from sample to sample. If continued collection of more and more samples are generated as additional estimates, as might happen when new data become available over time, the estimates of each parameter would follow a probability distribution. This probability distribution can be summarized by a mean and a measure of dispersion around the mean, a standard deviation that usually is referred to as the standard error of the coefficient, or the standard error. Small standard errors imply results that are likely to be similar from sample to sample, while results with large standard errors show more variability. In the present model, the variables that are statistically

significant show small standard error of estimates thereby reflecting small variability in connection with the values of the estimators (quite consistent estimators) associated with each significant explanatory variable.

6.6.4 Discussion on Regression Result

Interpretation of the regression results in statistical terms is done through the use of significance tests and other specifications. However, the result can be interpreted in a more practical, non-statistical manner, i.e., how far the statistically significant results sustain with the practical significance in question. This is much more important than a mere interpretation of the statistical model. In analyzing the present result, we shall compare it with the results that have been found in our earlier chapters (chapter-IV & chapter-V). In multiple regression, the regression coefficients describe the effect of an explanatory variable while controlling effects of the other explanatory variables in the model. Based on this statistical concept, the result of the regression has been analysed in a more detailed manner by capturing the practical significance as observed during the data collection.

In explaining the literacy rate at district and block level in chapter-IV, asset holding has been treated as a surrogate for income. There it was observed that holding of no assets by the household bears a significant negative impact on both male and female literacy rate at block level in the state. However, it does not bear any significant impact on female literacy rate at district level. In the present case, two expenditure related variables has been tested to observe the impact on literacy achievement namely Monthly per capita expenditure (MPCE) and expenditure on education as proportion of total expenditure. MPCE is commonly used as a proxy of income and remains as a significant variable in determining the overall literacy rate (PLR) and male literacy rate. On the other hand, expenditure on education as proportion of total expenditure (EDNTOTEX) has been found to significantly explain the overall literacy rate and female literacy rate. The basic objective of incorporating expenditure variables in two different dimensions is to observe the effect of marking a larger share of expenditure for literacy achievement. Some interesting results come out from the regression result. Both the expenditure variables have been found to be significant in explaining the overall literacy rate. But the explanatory power of EDNTOTEX (0.909) is much higher than the conventional MPCE (0.053). This is probably because the share of expenditure of a household on education is a focused variable than the actual MPCE which includes expenditure on basic needs with food expenditure taking a prime share. Again, EDNTOTEX is also significant in analyzing the female literacy rate while it is insignificant in explaining the male literacy rate. This gender difference explains to some extent that an intention of spending more income on education may enhance the female literacy rate.

In Chapter-IV, while analyzing the district level and block level regression equation for West Bengal, the variable Female Work Participation Rate (FWPR) was found to be significant in exerting its negative impact on literacy rate. At mouza level (in Chapter-V) it was found that the variable is significant for Goalpokhar-I block but insignificant for Chopra block. Several socio-economic factors are responsible for female work participation. It may be due to the fact that the female members are well equipped with skill and knowledge for participation in the labour market. On the other hand, it may well be that the earning of the male members of the household is not sufficient to maintain the family. From the cross tabulation of data on mothers' education level it is observed that out of 116 mothers, 58 mothers are completely illiterate and 36 out of remaining 58 literate mother hardly have the primary level of education. As such it may be assumed that the latter reason seems to be more acceptable for work participation of the female members in the study area. With a poor educational level, it would be very optimistic to assume that the mothers are well aware of the economic and social benefits of education. Consequently, in the present primary data analysis, FWPR does not impact literacy rate in a significant manner.

As mentioned earlier, economic dependency ratio is calculated as the ratio of non-earners to earners. The higher value of the ratio represents the magnitude of economic burden on a particular household. It explains that households with larger number of non-workers imply increased economic pressure on the earner/s of the family. Economic dependency ratio (ECONDEP) has

been tested at mouza level where it was found that the ratio is significant in those blocks where the value of the ratio is comparatively low (Chapter-V). In the present analysis the overall value of the ratio is calculated to be 1.87 (Table 6.10) which is considerably higher than the overall district average (1.67) and accordingly it may be expected that the said variable could barely show its effect on literacy variation at household level analysis. Although ECONDEP is found to be significant in explaining the overall literacy rate, in isolation, it does not bear any statistically significant effect on literacy rate. It may however be noted here that economic dependency is directly related to the level of poverty, both moving in the same direction. To sustain with such extreme poverty is the immediate pressure on the household even at the cost of engaging the schooling age children in the labour market. The household dependency which calculates the non-economic burden of a family as discussed in the earlier section of this chapter may have some effects on literacy attainment of a household. Thus in addition to economic dependency, household dependency ratio has been incorporated as an additional explanatory variable in the regression equation. However, the variable does not have any statistically significant effect on the literacy rate. This may be due to the fact that the non-economic burden of taking care of the siblings and old-age members does not stand as an additional barrier for educational development in the study area.

Among the parental characteristics, the educational level of both the parents has been incorporated as variables affecting literacy rate. In explaining the overall and female literacy rate, educational level of mothers is found to have statistically significant impact on the literacy variable. Mothers' educational level however do not affect the male literacy rate in a significant way while it has strong positive effect on female literacy rate. Similarly, father's education remains insignificant in determining the female literacy rate, but it exerts a positive role on male literacy rate. It explains that in order to enhance female literacy levels in an educationally deprived area, it is necessary for the present generation girl children to be schooled so that these educated future mothers in the society will further the education of next generation learners.

Occupational diversification has been captured by including a dummy variable with 0, 1 options. Households having their primary income in a regular pattern have been coded numerically as 1, while it is 0 otherwise. This variable shows its positive association with male literacy rate. This means that a higher male literacy is found in the households having regular pattern of income. The households having a certainty in income pattern enjoys economic security. For example, in Kantigach village, there are lot of earners who work as tea garden workers basically engaged either on permanent basis or as casual workers. The permanent workers are provided with ration, medical and provident fund facilities. Casual workers are economically insecure and this insecurity compels the other family members to participate in the labour market for maintaining their livelihood. In case of marginal cultivators and agricultural workers (observed mostly in Kantigach village) an irregular pattern in earning is also very common. In such a situation the earners, mostly the male members of a household migrate to other states like Haryana, Delhi, Sikkim etc., in search of work as skilled or unskilled labourers. This economic insecurity compels the household to engage more number of male members in the labour market for enhancing the income. This may be responsible for poor male literacy rate in the village. However, the income pattern does not show any significant relation with the female literacy rate whatsoever.

Opportunity cost of schooling is included in the model to observe its effect on literacy rate. In order to capture whether a household considers the opportunity cost of sending a child to school or not, was achieved by collecting data on children in the age group up to 18 years participating in the labour market from a particular household. After assigning a numeric code 1 to those households where at least one child has been working in labour market and 0 other wise, it was found from the regression analysis that this dummy variable exerts a strong negative effect in explaining the female literacy rate. The same is not found to be significant in determining the male literacy rate. This represents that if there is enough scope of girl children to be engaged in labour market, this will adversely affect the female literacy rate. The magnitude of child labour is found to be the highest in Juropani village where it is observed that the girls in this age group usually work in the tea garden as casual workers, especially during the plucking period (generally from the April to

September in a calendar year) of a year. The female literacy rate of this village is also considerably low (37.0%) as compared to the other villages (Table-6.9). There is thus a strong indication that there exists a negative association between child labour and female literacy, frequent evidence of which is found in the literature on education.

6.7 Comparison of the Relative Magnitude of Regression Coefficients

So far discussion has been limited to the overall relationship between literacy rate and the predictor variables that are included in the model and the magnitude of the variance in literacy rate that is accounted for by the predictor variables (ANOVA and Multiple Correlation R2). Interpretation of the direction and magnitude of the effect of each predictor variable on literacy rate (explaining the regression coefficients) is also undertaken. But frequently, the predictor variables in a regression equation (Xk) are in different scales of measurement. For example, INREGIRREG and OPTNTCOST are categorical assuming only two values (0 or 1), MPCE is expressed in money terms, parental educational level is expressed by the completed years of education, EDNTOTEX in percentage and so on. Now by comparing the regression coefficients of each predicator, it is found that the regression coefficient for INREGIRREG is the largest (Table-6.13). From this, it can't be concluded that INREGIRREG has the greatest impact on literacy rate. For the task of comparing the various regression coefficients in a regression equation that contains variables in different scales of measurement, the coefficients must first be standardized and the standardized regression weights will help in comparing the Relative Magnitude of Regression Coefficients. But there are some difficulties in using the standardized regression weights. Beta weights are interpretable and useful when the independent variables are not collinear. The magnitude of the beta weights can only be compared with the variables in the equation. If additional variables are added to the equation, the beta weights of the previous variables are likely to change, particularly if they are collinear with the newly added variables. Similarly, the beta weights in an equation cannot be compared with the beta weights found in similar studies, since their value is sample specific. Moreover, beta weights are sensitive to the ranges of the independent variables. Any change in ranges will change the estimated beta weights as well. Owing to the caveats in interpreting standardized regression coefficients, one can alternatively suggest (Bryman and Cramer, 2005) to calculate the Partial and Semi-Partial correlation coefficients between the dependent and explanatory variables separately for each predictor. An attempt will now be made to describe and give a brief interpretation of partial and semi-partial correlation coefficients in respect of the present model. Using SPSS, partial correlations are labeled as "Partial", and semipartial correlations are labeled "Part."

Partial correlation represents the correlation between the dependent variable and a predictor after common variance with other predictors has been removed from both the dependent variable and the predictors of interest. That is, after removing variance that the dependent variable and the predictor have in common with other predictors, the partial expresses the correlation between the residual predictor and the residual criterion.

A semipartial correlation coefficient represents the correlation between the dependent variable and a predictor that has been residualized with respect to all other predictors in the equation. It may be noted here that the dependent variable remains unaltered in the semipartial. Only the predictor is residualized. An important advantage of the semipartial is that the denominator of the coefficient (the total variance of the dependent variable) remains the same no matter which predictor is being examined. This makes the semipartial very interpretable (Neil, 2007).

The partial and semipartial correlation coefficient of literacy rate (PLR, MLR and FLR) with the predictors is given in Table-6.9 above. A careful observation of the Table reflects that the educational level of mothers is dominant in explaining the overall (PLR) and female literacy rate (FLR). Monthly per capita expenditure used as a surrogate for income is the second relatively important factor in explaining the overall literacy rate. However, this income factor is more important in explaining the male literacy. The opportunity cost of sending a child to school occupies the third position among all the predictors in explaining the PLR. The pattern of income (INREGIRREG) which has the dominant regression coefficient is not significant in part and partial

correlation analysis, although it was found to have considerable importance in explain the PLR and MLR from the previous regression analysis.

Table-6.19: Partial and Semi-partial Correlation Coefficients for the Literacy Rate

Predictors	Model-1 PLR			Model-2 MLR			Model-3 FLR		
	Zero-order	Partial	Part	Zero-order	Partial	Part	Zero-order	Partial	Part
EDNTOTEX	0.384	0.188	0.123	0.268	0.056	0.042	0.390	0.278	0.214
MPCE	0.520	0.269	0.180	0.517	0.303	0.240	0.334	0.097	0.072
FWPR	0.242	0.131	0.085	0.117	-0.017	-0.013	0.237	0.174	0.131
ECONDEP	-0.301	-0.159	-0.103	-0.209	-0.113	-0.086	-0.264	-0.064	-0.047
HHDEP	-0.196	0.031	0.020	-0.113	0.058	0.044	-0.229	-0.070	-0.052
INREGIRREG	0.403	0.215	0.142	0.390	0.230	0.179	0.172	-0.068	-0.051
OPTNTCOST	-0.348	-0.257	-0.171	-0.304	-0.149	-0.113	-0.222	-0.180	-0.135
FTHEDN	0.537	0.112	0.072	0.491	0.221	0.171	0.370	-0.071	-0.052
MTHEDN	0.540	0.361	0.249	0.352	0.053	0.040	0.539	0.456	0.379

In explaining the MLR, MPCE is found to be the most important variable along with income pattern (INREGIRREG) and educational level of father. In explaining the effects on FLR, mother's educational achievement followed by proportion of educational expenditure plays a vital role than the other predictors included in the model. It is interesting to note that female work participation affects the FLR adversely and it has a large magnitude too. This variable however has negligible effect on other literacy characters.

6.8 Conclusion

Summarising, it may be said that the demand side socio-economic factors have considerable impact on determining the literacy rate in an educationally deprived area. Parental education, especially mothers' education, is found to be important in determining the literacy character in a deprived area. Apart from the supply related educational amenities, it is the educational level of mothers that can alone enhance the female literacy rate to a considerable extent than other household related factors. So girls' education needs to be given more priority in order to have a balanced literacy development in a near future in such educationally backward areas. Monthly per-capita expenditure (proxy of income) remains important but what is more important is that how much income a household is willing to spend on education. This proportion is more important in enhancing the female literacy rate and as means of removing gender differential in literacy rate. Availability of opportunity to work in the paid labour market impedes literacy development in backward areas. Economic crisis of a family compels the parent to engage their children in such paid activities to ease economic pressure on the family. Thus, policy related to abolition of child labour is a way to ensure schooling of children and also a measure to prohibit employers from engaging a child worker.

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APPENDIX-6-I

The Determinants of Literacy and Educational Attainment: An Investigation of Regional Patterns of Elementary Education in West Bengal :

Household Census, 2005-06

District:- Uttar Dinajpur, CD Block:- _____ village:- Kantigach, Date of Survey:- _____

Sl No	HH No	Name of the Head	Age	Sex	No. of 5-14 age group children			Caste	Religion
					M	F	T		

The Determinants of Literacy and Educational Attainment: An Investigation of Regional Patterns of Elementary Education in West Bengal: Household Census, 2005-2006

APPENDIX-6.I (cont)

The Determinants of Literacy and Educational Attainment: An Investigation of Regional Patterns of Elementary Education in West Bengal: Household Census, 2005 - 2006				
Parental Information				
Father			Mother	
Name			Name	
Age			Age	
Caste			Caste	
Religion			Religion	
Sub-community			Sub-community	
Mother Tongue			Mother Tongue	
Educational Level			Educational Level	
Occupation			Occupation	
a. Primary			a. Primary	
b. Secondary			b. Secondary	
Income (Yearly)	Rs.		Income (Yearly)	Rs.
Aspiration in educating the children	Upto Pri / U Pri / Secondary / Higher Secnodary / Graduate & above		Aspiration in educating the children	Upto Pri / U Pri / Secondary / Higher Secnodary / Graduate & above
Level of awareness regarding direct / indirect benefit of education	**DIRECT:** increases employment prospects, enhances earnings, raises social status, nil, others		Level of awareness regarding direct / indirect benefit of education	**DIRECT:** increases employment prospects, enhances earnings, raises social status, nil, others
	INDIRECT: incentives generates indirect monetary benefits, improves marriage prospects, develops good manners and habits, future resort of the parents, ensures family planning, nil, others			**INDIRECT:** incentives generates indirect monetary benefits, improves marriage prospects, develops good manners and habits, future resort of the parents, ensures family planning, nil, others
Reasons for non-realisation of own aspiration	I) II) III)		Reasons for non-realisation of own aspiration	I) II) III)
Opinion about measures to be taken for realising the aspiration	I) II) III)		Opinion about measures to be taken for realising the aspiration	I) II) III)
Who decides?	Enrolment of Children	continuation of schooling	In Economic matter	In matrimonial purpose
	Father / Mother	Father / Mother	Father / Mother	Father / Mother

APPENDIX-6.I (cont)

The Determinants of Literacy and Educational Attainment: An Investigation of Regional Patterns of Elementary Education in West Bengal: Household Census, 2005-2006

Basic Informations												
1.Village Informations												
Name of the State	West Bengal											
Name of the District	Uttar Dinajpur											
Name of the CD Block												
Name of the Gram Panchyat												
Name of the Census Village												
Gram Sansad No												
Total No of Households												
2. Basic Amenities												
Medical Amenities	Distance Range of nearest Primary Health Centre (in Kms)											
Communication Amenities	Distance Range of nearest Bus Connectivity (in Kms)											
Banking	Distance Range of nearest Bank / Credit Society / others (in Kms)											
Presence of Educational Institution within the Mouza/village	Pre-primary School				Primary School				Upper-primary / Secondary School			
	Nil	Govt	Private	Others	Nil	Govt	Private	Others	Nil	Govt	Private	Others
3. School Informations												
Educational Institution	Distance Range of nearest Pre-Primary Shool											
	Distance Range of nearest Primary Shool											
	Distance Range of nearest Upper Primary Shool											

	No of students		No of Units	No of Class Rooms		No of Teachers		Pupil-Teacher Ratio	% of Female Teachers
	M	F				M	F		
Primary School									
U Primary School									

School Infrastructure at village level	Sanitation Facility		Playground		DW Facility		Blackboard in every classroom		Library		Cooked Meal	
Type of School	Pri	U. Pri	Pri	U. Pri	Pri	U. Pri	Pri	U Pri	Pri	U. Pri	Pri	U. Pri
Available & Functional												
Available & Non-Functional												
Not available												

APPENDIX-6.I (cont)

The Determinants of Literacy and Educational Attainment: An Investigation of Regional Patterns of Elementary Education in West Bengal: Household Census, 2005 – 2006.

Household No.- **Household Schedule**

Name	Sex	Age (in complete year)	Relation with the Head	Educational Level	Present Educational Status	Work Status	Place of work	Reason for working outside the village	Reason for dropout / never enrolment	Reason for enrolment	Marital Status	Mean age at marriage (Expected if not married)	Amount of Dowry paid / received (expected if not married), in Rs.	Earner/ Dependant	Cause of Dependency	Pre-primary Schooling status	Type of Pre-primary School
5-14 Years	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1																	
2																	
3																	
4																	
5																	
Others																	
1																	
2																	
3																	
4																	
5																	

APPENDIX-6.I (cont)

The Determinants of Literacy and Educational Attainment: An Investigation of Regional Patterns of Elementary Education in West Bengal: Household Survey

Technical Note

Sex	1 Female 2 Male 3 other Brother
Relation with the Head	0 Head of family 1 Father 2 Mother 3 Brother 4 Sister 5 Son 6 Daughter 7 Husband 8 Wife 9 Other
Educational Level	0 Illiterate, 1 up to class-I, 2 up to class-II, 3 up to class-III and so on
Present Educational Status	1 currently enrolled, 2 out of school & never enrolled, 3 out of school after completing at least 8 years schooling, 4 dropout at elementary level
Work Status	1 sibling care 2 house- hold work 3 working for enhancing family income 4 studying in school 5 not in school nor in work
Place of work	1 within the household 2 within the Village 3 outside the village
Reason for working outside the village	1 Job opportunity is not available within the village 2 for higher wages 3 other (to be specified)
Reason for Non-enrolment/ dropout	1. Child is needed for other activities 2. School is too expensive 3. School did not seem to be interested 4. Child could not qualify 5. Child not interested in study 6 Poor family conditions 7. School is too far way 8. Child is disabled 9 Parental reluctance 10 others (to be specified)
Reason for enrolment	ECONOMIC: E1. Increases employment prospects E2.school incentives generates indirect monetary benefits E3.enhances earnings E4. Raises productivity E5. Others E6. No reason given
	NON-ECONOMIC: S1. Raises social status S2. Improves marriage prospects S3. Develops good manners and habits S4. Ensures family planning S5. Enhances the feeling of security S6. Education helps to communicate with the modern world S7. Others S8. No reason given
Marital Status	1 never married 2 Currently married 3 Widowed 4 Separated/divorced 5 others
Earner/ Dependant	1 for Earner 2 for Dependant
Cause of Dependency	1 Minor 2 Old age member 3 Physically incapable 4 involved in un-paid family work 5 Student 6 Unemployed
Pre-primary Schooling status	1 for yes 2 for no
Type of Pre-primary school	1 for Government 2 for Private

Chapter - 7

Problems related to Elementary Schooling in Rural Uttar Dinajpur District: An Empirical Exercise II

7. Introduction & Relevance of the study

One of the important findings of literacy analysis in the previous chapter shows that education itself is an important significant factor that can enhance the development of further educational scenario at least at household level. The age composition of the literate members of the study villages indicates an important feature. It has been observed that out of total literate members (407) in all the villages belonging to age group of 5 years and above, 54.8% (223) belongs to the schooling age group (5 to 14 years), 17% (69) in the age group of 15-25 years and the remaining 28.3% (115) in the age group of above 25 years. It is expected that majority of the parents of school going age children belong to the age group of above 25 years. It has been found that out of 120 households in the study villages, 43 fathers and 58 mothers are completely illiterate. The age wise literacy scenario is shown in Table-7.1.

Table-7.1: Age wise Literacy Character of the study Villages

	Kantigach	Juropani	Dangipara	Uttar Bhagalpur	All Villages
No of Family members in the age group 5 to 14years	59	72	58	61	250
No of Literate Family members in the age group 5 to 14years	48	62	56	57	223
No of Family members in the age group 15 to 25years	24	30	34	27	115
No of Literate Family members in the age group 15 to 25years	6	7	32	24	69
No of Family members aged above 25 years	59	56	87	59	261
No of Literate Family members aged above 25 years	6	11	63	35	115
Literacy Rate 5 to 14 years	81.36	86.11	96.55	93.44	89.20
Literacy Rate 15 to 25 years	25.00	23.33	94.12	88.89	60.00
Literacy Rate 25 years and above	10.17	19.64	72.41	59.32	44.06

Source: Calculated from Field Survey

It is also observed that in all the villages the literacy rate is found to be highest among the schooling age (5-14 years) children and it diminishes with the increase in age. It is not a unique feature of the study villages. The interesting observation is that in the low literate villages (Kantigach and Juropani) the gap in literacy rate between the schooling age children and the other family members is comparatively higher. It is obvious that the family members belonging to the age group 5-14 years having a minimum literacy level will hardly have any significant impact if there is no assurance that their school education cycle will be completed. This means that eight years of schooling is a prima-facie to have meaningful educational level. This requires, among other things, universal enrolment and the school dropout rate as low as possible. The primary target in such an educationally deprived area is to have minimum of eight years of schooling for all children so that within a near future this meaningful literate section will further generate a more educationally advanced human resource for the society. Thus it appears that it is not an overnight journey to bring an educationally underdeveloped area under the umbrella of educationally advanced area. This final section of the dissertation thus concentrates exclusively on the problem of elementary schooling in rural West Bengal.

Child schooling, unlike literacy rate, is rather complex in nature (Duraisamy, 2001). In the literature of economics of education, the researchers generally deal with several educational

outcomes, such as dropout rate, enrolment rate, grade completion, school attendance rate, retention rate, etc.. These educational outcomes sometimes may take the form of qualitative rather than quantitative nature. In the literature of economics of education, situations involving qualitative outcomes are quite common. For example, enrolment decision that is usually taken by the parents cannot be quantified. The parents in this situation may have two options - either to enroll their wards or not to enroll them (Majumdar, 2001). Consider also the enrolment scenario of the children in a household, there may be a situation where some (> or = 1) of the schooling age children were never enrolled in any school as opposed to the event that all the children got admitted in a school. Again for example, suppose a household has three children in the age group 5 to 14 years and among them the 13 year old child has never been enrolled in any school. Again, the opposite scenario may be that in a household with two such children, all of them are enrolled in school. The summary of these responses is that in case of the first household, the event of never enrolment is present and for the second household, the event of never enrolment is absent. This helps in making an assessment of universal enrolment of children in school. Universal enrollment becomes more meaningful by studying such decision making behaviour of the households. The response variable may be assigned two values, 1, if some (> or = 1) of the schooling age children are never enrolled in any school and '0', if all the children got admitted in a school. It may however be noted here that the 0, 1 values of the response are chosen arbitrarily for mathematical convenience. Similarly, if it is to assess whether any children of a particular household, who was/were enrolled in the past, has dropped out or not, then the regressand or the dependent variable becomes qualitative in nature. Study of such an option covers a range of dimension where one can interpret whether all the schooling age children get enrolled in school and also the enrolled children are continuing their school education, i.e. the probability of retention is also covered here. Thus by incorporating these two variables in such a qualitative approach, universal enrollment and universal retention can be deciphered. In studying the elementary schooling, the above two qualitative response variables thus have been incorporated. A similar study was carried out in the same state where the probability of child school participation was predicted defining the enrolment decision (y) as y=1 if the child was ever enrolled in school/attending school and =0 if the child was never enrolled in school/had dropped out of school (Sengupta et.al. 2002). The study therefore, does not split the enrolment and dropout scenario.

When the dependent variable becomes categorical and binary (0-1) in nature, it assumes a dichotomous nature. Econometric investigation of such binary response is rather complex. Ordinary Least Squares can model binary response variables using linear probability models (LPM) (Menard, 1995; Cohen, Rea and Lerman, 1970 cited in Gujrati, 2003). Although the linear probabity model ($Yi = \alpha 0 + \alpha iXi + ui$ or $Pi = E(Yi/Xi) = \alpha 0 + \alpha iXi$) has the advantage of simplicity, it suffers from several problems such as non-normality of ui, heteroscedasticity of ui, possibility of estimated probability of the dependent variable to lie out side the 0-1 range and possibility of becoming the R2 value very low. However, one can resolve these problems following some statistical techniques such as- i) by applying WLS to resolve the heteroscedasticity, ii) by increasing the sample size to minimize the non-normality of ui, iii) restricted least-square may also be helpful in making the estimated probability to lie within the reasonable range (0-1). Even then the LPM suffers from a fundamental problem as because it assumes $Pi = E(Yi/Xi)$ increasing linearly with the increase in Xi.

But with a binary dependent variable, need arises for a model where as Xi increases, the estimated probability of dependent variable will increase but never step outside the 0-1 interval. Secondly, a non-linear relationship is expected between Pi and Xi. It has rightly been remarked that Pi approaches zero at slower and slower rates as Xi gets smaller and smaller and approaches one at slower and slower rates as Xi gets very large (Aldrich and Nelson, 1984). Thus instead of a straight line (assumed in LPM Model), it seems preferable to fit some kind of sigmoidal curve that resembles an inverted S laid on its side. The both tails of a sigmoid curve level off before reaching $Pi = 0$ or 1, so that the problem of impossible values of Pi can easily be avoided. Popular methods used to analyze such a sigmoid curve, include the probit model, linear discriminant function analysis, and logistic regression. The logit and probit actually yield similar results although not identical (Aldrich and Nelson, 1984; Hosmer and Lameshow, 1989, page 168). Probit regression,

based on the probability integral transformation, lacks natural interpretation of regression parameters (Press and Wilson, 1978; Hailpern & Paul F. Visintainer, 2003). They also argue that although the discriminant analysis is computationally simpler than the probit model, the later assumes that predictor variables are normally distributed and that variables jointly assume a multivariate normal distribution. In a situation where some of the predictor variables are dichotomous or discrete, the assumption of normality is often violated. In contrast, the logistic regression model makes no assumption about the variable distribution. It is a direct probability model because it is stated in terms of $Pr\{Y = 1|X\}$. Another advantage of the logit model is its ability to provide valid estimates, regardless of study design (Harrell, 2001). Considering all these, we have finally preferred to go with the logit model partly because it is comparatively easy to work with mathematically, and partly because it leads to a model that is easy to interpret. Logistic regression was proposed as an alternative in the late 1960s and early 1970s (Cabrera, 1994), and it became routinely available in statistical packages in the early 1980s.

Given the above relevance, the aim of the present chapter of the research is to empirically investigate the significant indicators of two schooling aspects, namely problem of never enrolment in school and dropout of school. As stated earlier, the logistic regression technique proceeds with a presumption that the result may improve upon the earlier empirical works in the related literature. Two central concepts have been conveyed that have a closer link with the process of such empirical investigation - to convey the concepts of logistic regression as simply as possible and to demonstrate how the logistic regression technique has been applied in the present data set. Apart from this econometric investigation, a qualitative search on the issue of school enrolment is also being discussed with a view to compare the econometric result with the qualitative observation of data set.

7.1 Logistic Regression Exercise

7.1.1 Modeling a Categorical Dependent Variable

Logistic regression analysis (LRA) extends the techniques of multiple regression analysis to research situations in which the outcome variable is categorical. Categorical socio-economic variables may be binary response where the response, Y, of a subject can take one of two possible values, denoted usually by 1 for positive response and 0 for negative response (Hosmer and Lameshow, 1989) and as well as it may take the form of ordinal response where the response, Y, of a subject can take one of m ordinal values, denoted by 1, 2,.....m (Agresti, 1990) data.

In the model, two binary response variables have been stated earlier. Binary response variables are Bernoulli distributed. For such dichotomous response variable, dependent variable can be assigned only two values - 0 and 1. So, modeling the actual values of Y is not exactly of interest and accordingly it does not make any sense. Rather, modeling the probability that each individual in the population responds with 0 or 1 (Karen Grace-Martin, 2001) is what is required. Thus, instead of simply regressing the actual value of dependent variable (which could take only two values) it would be appropriate to model the probability of occurrence of positive or negative response (Karen Grace-Martin, 2001). The application of logistic regression technique accrues from this concept of regressing the probability instead of predicting the actual value of the dependent variable.

Keeping in mind that probability is a measure of likelihood ranging from 0 (an impossibility) to 1 (a certainty), the basic principle of logistic regression is to find an equation similar to that used in linear regression to predict the probability of events falling into one category as opposed to another (e.g. the probability of dropout compared to the probability of non-dropout), but to ensure that probabilities cannot be predicted below 0 or above 1. Accordingly, in case of a dichotomous/binary response variable, there is a sigmoidal (S-shaped) relation between the probability of occurrence of a response and the explanatory variables, because, probability can only fall within the boundaries of 0 and 1. In such a situation adopting a specific model that is designed to handle the specific requirements of binary dependent variables is conclusive.

7.1.2 The Log of Odds Transformation in Logistic Regression

In order to ensure a probability constraint (0 to 1), logistic regression makes two transformations to the dependent variable (Y). First, one has to transform the probability into odds and then to transform the odds using logarithms.

Assuming the probability of the event that one or more children in a household are never enrolled in school is equal to p, then it may be said that (1-p) will be the probability of the event where all children are enrolled. Similarly, if one assumes that the probability of the event that one or more children in a household are dropped out of school, then (1-p) will be the probability of the event that all the enrolled children in a household are currently attending school. Odds are a way of presenting probabilities where the odds of an event happening [Odds (Y=1)] is the probability that the event will happen [p(Y=1)] divided by the probability that the event will not happen [1-p(Y=1)], i.e.-

$$\text{Odds}(Y = 1) = \frac{P(Y = 1)}{[1 - P(Y = 1)]} \text{------(1)}$$

Unlike probabilities, which cannot exceed 1, odds have no such theoretical maximum constraint [substituting the P(Y=1) =1 odds stretches to ∞]. This means that as the probability that Y = 1 tends towards 1, the odds become positive and increasingly large and finally stretching into infinity. So within the maximum probability constraint [P(Y=1) =1], the odds do not have the maximum constraint criterion so far. But this has only resolved part of the problem, for odds may be constrained to zero if one substitutes P(Y=1) = 0 in equation (1). To deal with this problem, second transformation has to be performed by taking the natural logarithm (log with a base which has a constant value of 2.72---) of the odds that Y = 1. This log of odds of the event is reffered as logit which is actually the contraction of the term logistic and unit (Fraas, Drushal and Graham, 2002). This is often written as logit (p) and accordingly the equation for logit (p) is -

$$\text{logit}(p) = \ln[\text{Odds}(Y = 1)] = \ln[\frac{P(Y = 1)}{1 - P(Y = 1)}] \text{------(2)}$$

Combining the above two expressions, one can write –

$$\ln(\text{odds(event)}) = \ln\left(\frac{\text{prob(event)}}{\text{prob(nonevent)}}\right) = \text{logit}(p) = \ln[\frac{P(Y=1)}{1-P(Y=1)}] \text{------(3)}$$

Taken together, transforming the two extreme limits (1 and 0) of probability that Y = 1 into odds [i.e., substituting 1 and 0 for P(Y=1) in equation-1] and then taking the natural log of the odds [i.e., transforming the odds value in equation-(3)], the transformed variable, logit (p), will have a maximum and minimum values as +∞ to -∞, but the predicted probability will never produce impossible results below 0 or above 1. This means that when the best fitting line is calculated, it cannot produce impossible values of Y since the value of logit Y has no maximum or minimum values.

7.1.3 Logit-link Function - The Regression Equation in the Logit Model

By transforming the dependent variable into the natural logarithm of the Odds (Y=1), the procedure ensures that the logit has no upper or lower limit i.e., it has an unlimited range of values. As such log of odds transformation of the dependent variable ensures that the familiar linear regression equation can be retained with the log of odds of dependent variable (not with the dependent variable itself). Accordingly, with the logit transformation as link function, the regression equation can be written as a linear combination of the predictors (McCullagh and Nelder, 1983) in the model which is as follows-

$$\text{logit}(p) = \ln\left(\frac{p}{1-p}\right) = \alpha + \beta_1 X_{i1} + \beta_2 X_{i2} + \ldots\ldots + \beta_k X_{ik} \quad ---(4)$$

where i = 1,2,3, ..., n = numbers of observations (120 in the present model) and X1, X2, X3 ... are the set of explanatory variables. Although the left hand side of equation (4) differs slightly form that of conventional Multiple Regression (MR) equation, the right hand side of the equation is linear and similar to a MR equation. Here the Log-odds/ logit (p) are a linear function of the predictors. The above equation is identical to the multiple linear model except that the log-odds in favor of Y = 1 replaces the expected value of Y. Instead of multiple linear regression equation, it is called Logistic Regression equation which predicts the log of odds/logit of the dependent variable assuming a linear relationship between the predictors and log of odds/logit of the dependent (Karen Grace-Martin, 2001). However it does not assume the linearity between the predictors and the dependent variable.

Thus it is seen that whereas OLS regression has an identity link function, logistic regression has a logit link function (i.e., logistic regression calculates changes in the log odds of the dependent, not changes in the dependent itself as OLS regression does). Logistic regression is related to, and answers the same questions as, multiple regression analysis traditionally does with a discrete dependent variable, and even a multiple regression analysis with a dichotomous dependent variable. However, logistic regression is more flexible than the other techniques. So it is not that the logistic regression technique is being applied in the present for the categorical nature of the dependent variable only. In logistic regression, there is no need to assume any particular distributional pattern for the predictor variables in the model. In logistic regression, the predictors do not have to be normally distributed, linearly related, or it even does not require the assumption of equal variance within each group. Logistic regression analysis is especially useful when the distribution of responses on the dependent variable is expected to be nonlinear with one or more of the independent variables.

To solve equation-(4) so that one can return to the probability that Y = 1, the calculation needs to be reversed which turns the probability into odds. This is done by taking the anti-log. Accordingly, by taking the antilog, Equation-(4) may be written as –

$$P = \frac{\exp^{\text{logit}(p)}}{1+\exp^{\text{logit}(p)}} = \frac{\exp^{\alpha+\beta_1 X_{i1}+\beta_2 X_{i2}+\ldots\ldots+\beta_k X_{ik}}}{1+\exp^{\alpha+X_{i1}+\beta_2 X_{i2}+\ldots\ldots+\beta_k X_{ik}}} = \frac{\exp^{Z}}{1+\exp^{Z}} \quad ---(5)$$

Where, $Z = \alpha + \beta_1 X_{i1} + \beta_2 X_{i2} + \ldots\ldots + \beta_k X_{ik}$ = the utility function of the event P and it is nothing but the estimated logit (p) or log odds of the dependent variable. The β terms are the logistic regression coefficients, also called parameter estimates which are actually partial slope coefficients (Gujarati Damodar N., 2003). A greater value of Z implies a greater probability for the event to take place. When Z approaches infinity, P approaches 1, indicating a high likelihood for the event to occur. When Z approaches negative infinity, P approaches 0 thereby indicating a low likelihood for the event to occur and if Z equals zero, the probability is 0.50, implying a 50/50 chance for the event to occur.

7.1.4 Odds, Log (odds) and Probability - A Relationship

A probability and the odds are both measures of likelihood. They have a classic mathematical relationship. Odds are simply a ratio of two probabilities and hence basically a number. As such it can be written as –

$$\text{odss} = \exp^{\ln(\text{odds})} = \exp^{\text{logit}(p)}$$

Substituting $\exp^{\text{logit}(p)}$ by odds, we may re-write equation-(5) as –

$$P = \frac{e^{\text{logit}(p)}}{1+e^{\text{logit}(p)}} = \frac{e^{Z}}{1+e^{Z}} = \frac{\text{odds}}{1+\text{odds}} \quad -----(6)$$

There are two basic reasons underlying the development of the model above. First, probabilities and odds obey multiplicative, rather than additive, rules. However, taking the logarithm of the odds allows for the simpler, additive model since logarithms convert multiplication into addition. And, second, there is a (relatively) simple exponential transformation for converting log-odds back to probability (equation-6). This way of expressing the probability results in understanding the meaning of the regression coefficients. With a one unit change in a particular explanatory variable (Xs), the β_js represent the amount the logit (log-odds) changes holding the effects of others explanatory variables held constant. But this does not make much sense. By transforming the values of the coefficients estimated in equation- (1), one can easily get the logit value or log odds which again may be transformed in to P by using equation- (5). As such every respondent may be given a probability of the event of never enrolment and dropout. Thus, it is seen that the estimated coefficients can easily be transformed so that their interpretation makes sense.

7.1.5 Regression Estimation

The statistical procedure for estimating the parameters (α and βs) of a LR model is quite different from that of ordinary least square method applied to estimate the MLR model. The most used method for estimating the logistic model is maximum likelihood estimation procedure (Hosmer and Lemeshow, 1989 and Ryan, 1997). The maximum likelihood (ML) method is preferred over the weighted least squares approach by several authors, such as Haberman (1978) and Schlesselman (1982). Instead of minimizing the error terms with least squares, the logit coefficients (β terms) are estimated by maximum likelihood (ML), i.e., by searching for that set of βs which will make the observed responses maximally likely, i.e., a set of β that will in general assign a high probability to 1-responses and a low probability to 0-responses. In a process known as iteration, estimates of the parameters are calculated again and again in the hope that they will 'converge' to stable values and will produce the optimal set of βs. The iteration process will not successfully converge if the independent variables are too highly correlated. This is the familiar multicollinearity problem sometimes encountered in OLS regression.

The ML estimator is consistent. As the sample size grows large, the probability that the ML estimator differs from the true parameter by an arbitrarily small amount tends toward 0. The ML estimator is asymptotically efficient, which means that the variance of the ML estimator is the smallest possible among consistent estimators. The ML estimator is asymptotically normally distributed, which justifies various statistical tests. This indicates that the desirable properties of consistency, normality and efficiency will be retained as the sample size approaches infinity (Greene, 2003, ch.17, Judge et al.). Although there is no hard and fast rule for sample size, it is generally suggested that it is risky to use ML with samples smaller than 100 and 10 observation per parameter seems to be reasonable for modeling the logistic regression using ML method (Long Scott J., 1997).

7.2 The Variables in the Logit Model

It has already been stated in chapter-VI that data collection were limited to four villages (two each from one educationally backward and developed blocks) in the district of Uttar Dinajpur, West Bengal. All the villages are almost equally equipped with a primary school within the village, although the other basic amenities like, road, bus connectivity, electricity facility, are quite different. The detail of the same has been discussed in chapter-VI. The respondents were primarily the head of the family and thus comprise the male members of the family.

Logistic regression supports only a single dependent variable and for binary logistic regression, this response variable can have only two categories. Accordingly, two separate models using the same predictor variables are applied. The regression model assumes - i) either a household has at least one children who has never been enrolled or not and ii) either a household has at least one children who has been dropped out of school or it has not.

The description of variables with their notation is presented in a tabular form below:

Variables	Notation	Description
Binary Response		
Never enrolled	PBENRLMNT	1= if at least 1 child within a household was never enrolled, 0= no children within the household were ever enrolled
Dropped out of school	PBDOSCH	1= if at least 1 child within a household dropped out of school, 0= no child within the household dropped out of school
Independent Covariates		
Economic dependency ratio	ECONDEP	Ratio of non-earners to earners at household level
Proportion of educational expenditure	EDNTOTEX	Educational expenditure as a % of total expenditure
Mothers' empowerment	EMPMTH	1= if mothers' empowerment index is greater than or equal to that of father's, 0 = less than that of father's
Fathers' education level	FTHEDN	education in completed number of years
Female work participation	FWP	1= if female members work, 0= no female works
Pattern of income	INREGIRREG	1= if the main income of a household is regular, 0= if the main income is not regular
Mother's education level	MTHEDN	education in completed number of years
Opportunity cost of schooling	OPTNTCOST	1= if there is any children in the age group below 18 years and working, 0= if there is no children in the age group below 18 years and working
Monthly per capita expenditure	MPCE	Monthly per capita expenditure at household level (in multiples of Rs.10)

It is expected that as proportion of educational expenditure to total expenditure (EDNTOTEX), monthly per capita expenditure of the household (MPCE), educational level of father and mother (FTHEDN, MTHEDN) increase, the probability of never enrolled and school dropout will decrease continuously as a function of these variables and households with regular income (INREGIRREG) and with mothers' empowerment will also show the increase in the probability of never enrolled and school dropout. However it is assumed that increasing economic dependency representing the ratio of non-earners to earners (ECONDEP) and household dependency measured as the ratio of old age and sibling members to total number of schooling age children (HHDEP) will lead to an increase in the probability of the response variables and it will also be higher for the households where the female members work (FWP) in the paid market and where there is an opportunity for the children to be engaged as child labour (OPTNTCOST).

7.2.1 Selection of variables

It is important to note here that in a small sample size of 120 households, the number of predictors (10 explanatory variables proposed to be included) in the model is large. A small sample with a large number of predictor variables can cause problem of model 'overfit' in the analysis. Among others, a regression model is a situation where the aim is to find the 'best', most 'parsimonious1', model to predict the dependent variable or explain the variation. In such a situation, the resultant model will more likely to be numerically stable and also more easily to be generalized (Hosmer and & Lemeshow, 2000, pp 92). Hosmerand Lemeshow (2000, pp 95) suggest to perform a univariate analysis of each potential independent variable. Those whose univariate test has a p-value < 0.25 should be considered as a candidate for the multivariable model. Applying this methodology of variable selection, female work participation (FWP) and empowerment of mother (EMPMTH) has been excluded from determining the probability of never enrolment (PBENRLMNT). The table of univariate test is shown in Appendix-1.

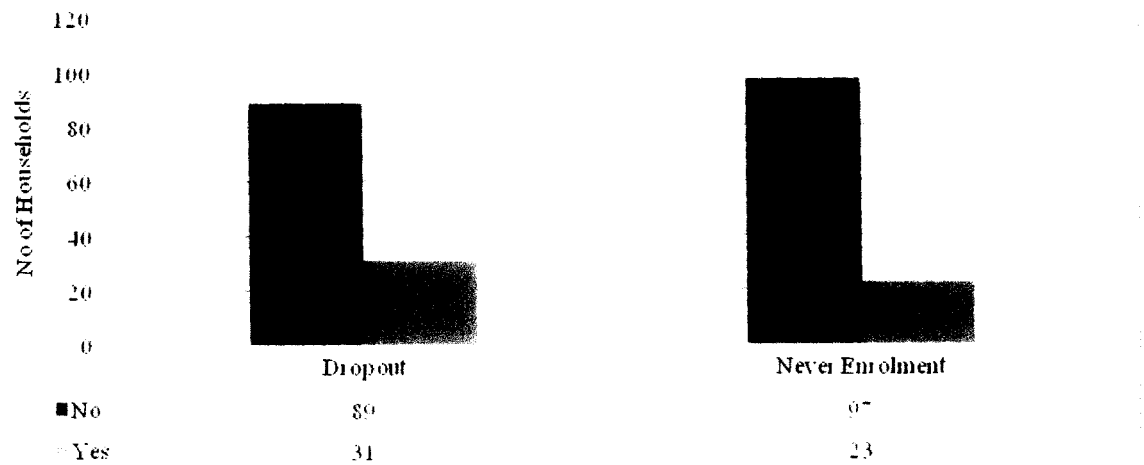
7.3 Reporting and Interpreting Logistic Regression2 Results

The results in different dimensions are being presented below. All statistics reported herein use 3 decimal places in order to maintain statistical precision.

7.3.1 Frequency Table: Binary Responses

Dealing with the two dependent variables in order to observe the magnitude of the problem that is to be predicted in the logistic regression model, calculation of the frequency table (annexed in Appendix-II) of the binary response variable has been undertaken (in SPSS, from Data Editor > Analyze > Descriptive Analysis > Frequencies) and the same has been graphically presented in Figure - 7.1.

Fg-7.1: Frequency of Binary Response



Thirty one households, out of total 120 households surveyed, were found where one or more children, once enrolled in school had dropped out of school. This represents that in case of 25.8% households, the problem of school dropout is somehow related. On the other hand, the problem of never enrolled is less common than school dropout. Less than 20% (23 out of 120 households) of the households are lagging in this case. This observation makes a comparison between two educationally disadvantaged scenarios. The whole representation briefs the problem as what is the likelihood or probability of a household to have or not have the problem of school dropout or never enrolment so far as the school age children within the household is concerned. The logistic regression technique actually does the job and statistically predicts this likelihood on the basis of some related covariates of the problem.

7.3.2 Evaluations of the Logistic Regression Model

After choosing a logistic regression model, although it would be more appropriate or rather conventional to interpret the logistic regression coefficients, after assessing how effective the model will be or how consistent the model will be with the data. An effective evaluation of the Logistic Regression Model can be judged by reporting on overall model evaluation, goodness-of-fit statistics, statistical tests of individual predictors, and validations of predicted probabilities (Peng, Lee, & Ingersoll, 2002).

7.3.2.1 Goodness-of-fit indicators for overall model/Overall significance of the model

Overall model evaluation is a statistical test where it is investigated whether a logistic model provides a better fit to the data if it demonstrates an improvement over the intercept-only model (also called the null model). An intercept-only model serves as a good baseline because it contains no predictors. An improvement over this baseline is examined by using three inferential statistical tests: the likelihood ratio, score, and Wald tests. In general, the likelihood ratio statistic (often referred to as -2 Log likelihood) is superior to the Wald statistic (in the sense that it gives more reliable results), and accordingly the exercise will concentrate on the likelihood ratio (LR) statistic. (Larsen Pia Veldt, 2008). Before applying this statistic in the model, it is appropriate to define it at this juncture.

The likelihood ratio (not likelihood ratio statistic) is defined as –

$$\text{likelihood ratio} = \frac{LR}{LF} - - - - - (7)$$

The numerator (LR) corresponds to the maximum probability (likelihood) of an observed outcome under the null hypothesis (i.e. under the reduced model). The denominator (LF) corresponds to the maximum probability of an observed outcome under the full model (i.e. varying parameters over the whole parameter space). By taking natural log on both sides of equation-(7), it follows as -

$$\text{Log likelihood ratio} = \text{Log LR} - \text{Log LF}$$

This implies that –

Likelihood ratio statistic (LR Statistics) = - 2 Log likelihood ratio

= -2(Log LR- Log LF)

= (- 2 Log LR) - (-2 Log LF)

It is very evident that a regression model provides a better fit to the data if the likelihood of the reduced model is less than the likelihood of the full model. Hence, a smaller likelihood ratio indicates a better fit model. If the likelihood ratio becomes smaller (within the range of 1 to 0) the natural log of the likelihood ratio will become negative with greater magnitude and hence, minus the natural log of the likelihood ratio will be a bigger positive number3. So it is twice minus the natural log of the likelihood ratio. It turns out that under the null hypothesis, the LR Statistic [–2 log (LR / LF)] has an approximate chi-square distribution, with degrees of freedom equal to the number of explanatory variables in the model (Hosmer and Lemeshow, 1989). A finding of significance indicates that the model with the predictors is significantly different from the model with the intercept only.

In SPSS version 13, the table Iteration History in Block-1 of logistic regression output provides the initial – 2 Log Likelihood and also the – 2 Log Likelihood under full model. The LR Statistics (model chi-square) is calculated by subtracting the model – 2 Log Likelihood from initial – 2 Log Likelihood. In SPSS, the output referred as Omnibus Tests of Model Coefficients gives the model chi-square. In the present analysis, the likelihood ratio test results a significant chi-square value for both the model (Table-7.2).

Table-7.2: Overall Model Evaluation (Omnibus Tests of Model Coefficients)

Test	Chi-square	df	p	Model
Likelihood ratio test	56.880#	10	.000	PROBDOSC
	60.220##	8	.000	PRENRLMNT
Score test	38.990	10	.000	PROBDOSC
	41.424	8	.000	PRENRLMNT

(initial – 2 Log Likelihood = 137.117, model – 2 Log Likelihood = 80.233, hence LR Statistics = (137.113 – 80.233) = 56.880
(initial – 2 Log Likelihood = 117.271, model – 2 Log Likelihood = 57.052, hence LR Statistics = (117.272– 57.052) = 60.220

A finding of significance, as mentioned above, indicates that at least one of the predictors is significantly related to the response variable. One can estimate logistic models using block entry of variables or any of the stepwise methods (forward conditional, forward LR, forward Wald, backward conditional, backward LR, or backward Wald) as suggested in SPSS version 13. However, in the present model block entry of variables has been applied in the estimation process and as such there is no difference in the result of Omnibus Tests in step, block, or model chi-square values.

7.3.2.2 Hosmer and Lemeshow goodness of fit

Goodness-of-fit statistics assesses whether the fitted model adequately describes the observed outcome experience in the data (Hosmer and Lemeshow 2000).This statistic measures the

correspondence between the actual and predicted values of the dependent variable. In this case, better model fit is indicated by a smaller difference in the actual and predicted values on the dependent variable. The Hosmer-Lemeshow test groups observations into deciles based on predicted probabilities. In SPSS this is shown by Contingency Table for Hosmer and Lemeshow Test, which for the present model is shown in Appendix-III. It then computes a chi-square from observed and expected frequencies. A probability (p) value is also computed from the chi-square distribution4 with J-2 degrees of freedom (where j= number of groups dividing the observations) to test the fit of the logistic model. A good model fit is indicated by a non-significant (if the significance value is more than 0.05) chi-square value indicating that the model prediction is not significantly different from observed values. This inferential goodness-of-fit test yields a non-significant chi-square value for both the models in our analysis. i.e., both the model shows no evidence of lack of fit based on the Hosmer and Lemeshow chi-square test of goodness of fit statistic.

This statistic is the most reliable test of model fit for SPSS binary logistic regression, because it aggregates the observations into groups of "similar" cases and the test is considered more robust than the traditional chi-square test, particularly if continuous covariates are in the model or sample size is small which seems to be applicable for the present model (Garson G. David, 2009).

Table-7.3: Hosmer and Lemeshow Goodness-of-Fit Tests

Model	H-L Statistic	df	Sig
PROBDOSC	7.451	8	.489
PRENRLMNT	2.217	8	.974

7.3.3 R^2 for Logistic Regression

In OLS, to assess how well a model explains the data, R-square statistics or the coefficient of determination indicates the proportion of variation in the dependent variable explained by predictors in the model. But there is no equivalent statistic in logistic regression (Cohen Jacob, 2003) that makes a sense that proportion of variance accounted for as R^2 does in OLS. Nonetheless, a number of measures (SPSS uses R^2 like measures as Nagelkerke and Cox and Snell, EViews uses McFadden R-squared) have been proposed in logistic regression as an analog to R^2 of multiple linear regression and these are some times referred as Pseudo R-squares.

One widely accepted method is offered by Cox and Snell (1989), but it suffers from the problem that the index of measure as suggested by them does reach the maximum value of 1. However, the value of the index as found in the present two referred models is presented in Table-7.4. Nagelkerke (1991) has tried to adjust the problem of restricted maximum value of R^2 index as developed in Cox and Snell measure. As such the value of Nagelkerke R^2 statistics is always fairly higher and the same has been represented for the present models in the same Table-7.4.

Table-7.4 Model Summary

PROBDOSC				PRENRLMNT			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square	Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	57.052(a)	.395	.633	1	80.233(b)	.377	.554

Note: a. Estimation terminated at iteration number 8 because parameter estimates changed by less than .001.
b. Estimation terminated at iteration number 7 because parameter estimates changed by less than .001.

However McFadden R^2 is another measure of the goodness-of-fit of a logistic model that corresponds to pseudo R^2 as a measure of goodness-of-fit of models estimated by OLS (Krznar, 2004). McFadden R-squared is the likelihood ratio index computed as –

$$1 - \frac{LL(\beta)}{LL(\beta_0)}$$

where LL(β) is is the maximized value of the log likelihood function and LL(β0) is the restricted log likelihood or the maximized log likelihood, when all slope coefficients (except for the constant term) are restricted to zero. It has the property that it always lie between zero and one. A closer value of the statistic to 1 indicates a better fit model. From Table- 7.4, in both the models, the values are moderately high (0.415 for probability of dropout and 0.514 for probability of never enrolment). Combining all the results, it may however be said that the regression equations fitted for the two models is moderately accounted for explaining the dependent responses. But, based on these statistics, it would not be very scientific to say much about the variance of the dependent explained by the predictors in the model (Long, 1997, pp. 104–109; Menard, 2000). In addition, these measures of model fit does not bear correspondence to predictive efficiency or can be tested in an inferential framework (Peng, Chao-Ying Joanne Lee, Kuk Lida Ingersoll, Gary M., 2002).

7.3.3.1 Predictive accuracy of the Model: (Expectation-prediction table)

After assessing the significance of the variables in the model, one can explain the Predictive accuracy of the model. The predictive success of the logistic regression can be assessed by looking at the classification table, showing correct and incorrect classifications of the binary dependent variable. The logistic regression predicts the log of odds of the dependent which is the natural log of the odds (or probability/ [1–probability]) and hence it can be transformed back to the probability scale. The predicted probabilities can then be compared with the actual outcome to measure the validations of predicted probabilities. The degree to which predicted probabilities agree with actual outcomes is expressed as a classification table and vis-à-vis the present analyses, it is shown in Tables 7.5 & 7.6. From the Table 7.5, it is calculated that in determining the probability of dropout, 80 observations with the y=0 (nonevents) and 20 observations with the y=1 (events) are correctly classified by the estimated model. Now, the proportion of observation with y=1 that are correctly predicted is termed the sensitivity, while the fraction of y=0 observations that are correctly predicted is known as specificity. Overall, the estimated model correctly predicts 83.33% observations with a sensitivity of 64.52 percentage points and a specificity of 89.89 percentage points. The estimated model improves on the Dependent =1 predictions by 64.52 percentage points, but does more poorly on the Dependent=0 predictions (by 10.11 percentage points). Overall, the estimated equation is 9.17 percentage points better at predicting responses than the constant probability model. This represents a 35.48 percent improvement over the default model.

Table-7.5: Expectation-prediction table for Dependent Variable: PBDOSC

Dependent Variable: PBDOSC

Sample: 1 120

Included observations: 120

Prediction Evaluation (success cutoff C = 0.5)

	Estimated Equation			Constant Probability		
	Dep=0	Dep=1	Total	Dep=0	Dep=1	Total
P(Dep=1)<=C	80	11	91	89	31	120
P(Dep=1)>C	9	20	29	0	0	0
Total	89	31	120	89	31	120
Correct	80	20	100	89	0	89
% Correct	89.89	64.52	83.33	100.00	0.00	74.17
% Incorrect	10.11	35.48	16.67	0.00	100.00	25.83
Total Gain*	-10.11	64.52	9.17			
Percent Gain**	NA	64.52	35.48			

Similarly, in determining the probability of never enrolment, the estimated model correctly predicts 90.00% observations with a sensitivity of 65.22 percentage points and a specificity of 95.88 percentage points (Table-7.6). Here, the estimated equation is 9.17 percentage points better at predicting responses than the constant probability model.

Table-7.6: Expectation-prediction table for Dependent Variable: PBENRLMNT

Dependent Variable: PBENRLMNT

Sample: 1 120

Included observations: 120

Prediction Evaluation (success cutoff C = 0.5)

	Estimated Equation			Constant Probability		
	Dep=0	Dep=1	Total	Dep=0	Dep=1	Total
P(Dep=1)<=C	93	8	101	97	23	120
P(Dep=1)>C	4	15	19	0	0	0
Total	97	23	120	97	23	120
Correct	93	15	108	97	0	97
% Correct	95.88	65.22	90.00	100.00	0.00	80.83
% Incorrect	4.12	34.78	10.00	0.00	100.00	19.17
Total Gain*	-4.12	65.22	9.17			
Percent Gain**	NA	65.22	47.83			

7.3.4 Multicollinearity in the Model

Presence of collinearity causes similar problems in logistic regression as it causes in linear regression model. The maximum-likelihood estimation is not too accurate in the case of multicollinearity and the logistic model becomes unstable when there exist strong dependence among the predictors (Hosmer and Lemeshow, 1989 and Ryan, 1997). The detection of collinearity in linear regression model (e.g. tolerance statistics, Eigen values, etc.) is straightforward and available in most of the statistical packages (SPSS, STATA, Eviews). But no such standard statistics for logistic regression is available in the popular statistical packages so far. However, Menard, Scott (2002, page 76) has suggested to run an OLS regression model using the same dependent and independent variables that have been used in logistic regression model. He notes, "Because the concern is with the relationship among the independent variables, the functional form of the model for the dependent variable is irrelevant to the estimation of collinearity." The detection and diagnosis of collinearity in logistic regression in a similar way as linear regression have also been discussed in Hosmer and Lemeshow (1989). It is suggested that large standard errors associated with the logistic coefficients could be a collinearity warning.

Diagnostic information for multicollinearity (tolerance statistics, VIFs and also eigen values) for the predictors has already been calculated and shown in chapter-VI and no serious concern of collinearity was found so far. In addition to this, the standard errors associated with the logistic coefficients both for the two models are not very large (ranging from a lowest of 0.006 to a highest of 1.346; Table7.7 & Table-7.8). Hence, by prior selection of independent variables following a reasonable criterion and by investigating the standard errors it is expected that statistically fair estimates will be derived in the prescribed model. Sometimes, presence of collinearity tends to produce the β coefficients unreasonably high. It is suggested that (Menard, 2002, page-76) an un-standardized logistic coefficient greater than 2 or a standardized logistic coefficient greater than 1 is a caution for the presence of collinearity among the regressors. This criterion is also almost satisfied (Table7.7 & Table-7.8) in connection with the present models.

7.4 Interpretation of Logistic Regression Coefficients

After observing the Significance Tests (likelihood ratio, score, Wald, and Hosmer & Lemeshow tests) that suggests no such lack of model fit, it is time to concentrate on the basic results of regression where it will be seen the significant factors explaining the probability of dropping out of school and never enrolment can be identified. It may be noted here that the reference age group of the children has been assumed as 5 to 14 years. For each observation, the data available are the households grouped separately in two opposite categories (coded as 1 if at least one never enrolled or dropped out child belongs to the household, 0 if no5) along with a series of independent covariates stated earlier. By default, in SPSS, the logistic procedure will predict the "1" category of the dependent variable, making the "0" category the reference category. It is of primary concern to target those households where the event of school dropout or never enrolment occurs. This occurrence, as discussed earlier, is a chance expressed in probability manner when logistic regression equation is fitted. So, identifying the factors that determine this chance is the primary concern.

In the present analysis, the binary response variable in the first model (Model-I) is school dropout and in second model (Model-II) the response variable is never enrolment in school. In SPSS output, the parameter estimates appear in the "B" column of the "Variables in the Equation" table. Table 7.7 presents the results for the predicted logit of school dropout and Table7.8 for the never enrolment. Each Table shows the estimated logistic coefficient (β coefficients) its standard error (S.E.), the Wald statistic, degrees of freedom, p significance level for the constant and each predictor in the model. By observing the Wald chi-squared statistics, the result shows that the important variables contributing to the probability of dropping out of school are- proportion of educational expenditure (EDNTOTEX), Pattern of income (INREGIRREG), Mother's education level (MTHEDN) and Opportunity cost of schooling (OPTNTCOST).

Hence, the estimated logit equation can be written as -

Predicted logit of (dropout) = (2.088 - EDNTOTEX x 0.258 - INREGIRREG x 1.350 - MTHEDN x 0.611+ OPTNTCOSTx 1.476)

Table-7.7: Variables in the Equation- (Model-I)

1		B 2	S.E. 3	Wald 4	df 5	Sig. 6	Exp(B) 7
Step 1(a)	ECONDEP	.066	.363	.033	1	.856	1.068
	EDNTOTEX	-.258*	.107	5.784	1	.016	.773
	EMPMTH	.743	.640	1.347	1	.246	2.102
	FTHEDN	-.086	.134	.409	1	.522	.918
	FWP	-.363	.611	.352	1	.553	.696
	INREGIRRE	-1.350*	.649	4.330	1	.037	.259
	MTHEDN	-.611*	.261	5.469	1	.019	.543
	OPTNTCOST	1.476*	.594	6.172	1	.013	4.374
	MPCE	-.036	.037	.952	1	.329	.964
	HDEP	-.215	.615	.122	1	.727	.807
	CONSTANT	2.088	1.540	1.839	1	.175	8.067

a Variable(s) entered on step 1: econdep, edntotex, empmth, fthedn, fwp, inregirreg, mthedn, optntcost, mpce, hdep.

Similarly, from the regression coefficients and its associated significance level in Table- 7.8, the Wald chi-squared values for Fathers' education level (FTHEDN), Monthly per capita expenditure (MPCE) and Household dependency ratio (HDEP) are significant in predicting the probability of never enrolment. It may be noted that the variables were not at all significant in explaining the log of odds of the probability of dropout. It signifies that the socio-economic correlates are not the same for explaining the school level outcome attributes (e.g. dropout and never enrolment are being predicted significantly not by the same variables). Secondly, it may also be said that the household related socio-economic variables are of not much importance in determining the enrolment/non-enrolment decision taken by the households. This opens the scope of including supply related schooling facilities as additional variables in determining the enrolment decision of

the households. However it is beyond the scope of the present analysis. The estimated logit equation in predicting the probability of never-enrolment can be written as -

Predicted logit of (never enrolment) = (2.950- FTHEDN x 0.660 - MPCE x0.159 + HHDEPx2.179)

Table-7.8: Variables in the Equation- (Model-II)

		B	S.E.	Wald	df	Sig.	Exp(B)
1		2	3	4	5	6	7
Step 1(a)	ECONDEP	.455	.437	1.087	1	.297	1.576
	EDNTOTEX	.040	.108	.138	1	.710	1.041
	FTHEDN	-.660*	.277	5.693	1	.017	.517
	INREGIRREG	-1.265	.804	2.477	1	.115	.282
	MTHEDN	.126	.232	.293	1	.588	1.134
	OPTNTCOST	-.642	.741	.749	1	.387	.526
	MPCE	-.159*	.067	5.720	1	.017	.853
	HDEP	2.179*	.928	5.505	1	.019	8.833
	CONSTANT	2.950	2.199	1.799	1	.180	19.102

a Variable(s) entered on step 1: econdep, edntotex, fthedn, inregirreg, mthedn, optntcost, mpce, hdep.

The sign of the estimated β coefficients (indicating sign of partial effects of each predictor) corresponding to the significant variables is very important in analyzing the logit result. According to the first model (Table-7.7), the log of the odds of a child dropping out of school is inversely related to proportion of educational expenditure (EDNTOTEX), Pattern of income (INREGIRREG) and Mother's education level (MTHEDN) and and positively related with Opportunity cost of schooling (OPTNTCOST). In other words, the higher the proportion of expenditure on education, the less likely it is that a child would be dropped out of school. Similarly, the higher the chance of a household to have regular income, less likely it is that a child would be dropped out of school. The households where the level of mother's education is higher, it would be less likely that the children of the household will drop out of school. Again, in a situation where there is an opportunity of children to be engaged in child labour market, there will be a higher chance that a child is dropped out of school.

On the other hand, the log of the odds of a child being never enrolled in school is inversely related to Fathers' education level (FTHEDN) and Monthly per capita expenditure (MPCE) thereby representing that a higher level of father's education and monthly per capita expenditure of the households would lower the probability of never enrolment of the children and the same would be higher if household dependency on the children of schooling age becomes higher.

To determine the significant factors by observing the Wald Chi-square value and to make a judgment over the direction of relationship by assessing the sign of the estimated β coefficients, is just beginning of interpretation of logistic regression coefficients. Contribution of significant explanatory variables to the dependent variable is the central point to be discussed in the interpretation of logistic regression coefficients.

Logistic regression has a logit link function and accordingly, in any logistic regression equation, the parameter estimates (β coefficients) associated with explanatory variables represent contributions to estimated log-odds (logits are the log odds of the event occurring). To put it differently, the estimated β coefficient assigned for a particular independent variable measures the change in estimated logit in favor of Y = 1 with one unit change in that particular variable on average, with other independent variables held constant. For example, for a 1 % increase in proportion of educational expenditure, the estimated logit that the households will have at least one dropped out child decreases by a factor 0.258 controlling for other variables present in the model (from Table 7.7). Thus, the logistic regression calculates changes in the logit or log of odds of the dependent variable, and not changes in the dependent variable itself as OLS regression does. Also, if all predictors are set equal to 0, the predicted log-odds in favor of Y = 1 would be the constant

term α. The β coefficients vary between plus and minus infinity, with 0 indicating the given explanatory variable does not affect the logit (that is, makes no difference in the probability), whereas, a positive or a negative β coefficient indicates that the explanatory variable will increase or decrease the logit of the dependent. It is not natural to think in terms of logit/log-odds as because it sounds more statistical than real life expression. One actually needs to provide information that can be used to judge the practical significance of these parameter estimates.

As an alternative of representing the β coefficient directly, the parameter estimates of a logistic regression can be interpreted in terms of odds ratios which is simply the exponential transformation of β coefficients, i.e., odds ratio = exp(β) which implies that β = ln(odds ratio). This exponential transformation of β coefficients i.e., exp (β) is termed as odds ratio and this transformed "coefficient" is pretty useful and more easily explainable. So, if one takes the exponent constant (about 2.72) and raises it to the power of β then the odds ratio is obtained. For example, if the regression result indicates the partial regression slope (β coefficient) is 0.75, the odds ratio is approximately 2.12 (because, $exp^{0.75} = 2.72^{0.75} = 2.12$). In SPSS, odds ratios appear as "Exp(B)" in the "Variables in the Equation" table.

In the present analysis of result, the Odds Ratios will be used to interpret the result. In the analysis, the dependent variable (both) has been coded as 0, 1. Thus the higher category has been predicted and the lower category is used as the comparison of reference by default. The odds ratios corresponding to the estimated coefficients are shown in the last columns of Table-7.7 & 7.8. It may be of worth to note here that interpretation of odds ratio corresponding to any quantitative variable (continuous covariates), can simply be expressed as a percent change in odds, i.e. for continuous variables, the odds ratio represents the change in odds (p/1-p) for a one-unit change in the independent variable controlling for other variables in the model. Complexity arises when all or some independent variable/s are also dichotomous (our model contains both continuous and dichotomous independent variable). Odds ratios will differ depending on whether a dichotomy is entered as a dichotomous covariate or as a categorical variable in the estimation procedure. If a dichotomy is declared categorical, then the prediction is for the lower category and the higher category is the reference. If, on the other hand, the dichotomous independent is left as a dichotomous covariate, then the prediction is for the higher category (usually 1 category, reference category is the lower category usually the 0 category). For example, if covariate coding of sex (0=male, 1=female), and if the odds ratio is 1.751, we can say that the odds of occurring the event compared to non-event are increased by a factor of 1.751 for being female rather than male, controlling for other variables in the model.

In entering such independent variables Mothers' empowerment (EMPMTH), Pattern of income (INREGIRREG) and Opportunity cost of schooling (OPTNTCOST) in the model, preference is to enter them as a dichotomous covariate, coding '1' in favour of the event, and '0' for the non-event. This methodology of interpretation of the continuous and dichotomous independent variables has been followed in the present analysis. In general, the β coefficients can vary between plus and minus infinity, with 0 indicating the given explanatory variable does not affect the logit6 (that is, makes no difference in the probability of the dependent value equaling the value of the event, usually 1); whereas, positive or negative b coefficients indicate the explanatory variable increases or decreases the logit of the dependent.

7.4.1 The Use of Odds Ratio in the Analysis: A Discussion

7.4.1.1 Household Expenditure

While examining the effect of households' expenditure (assumed to be a proxy of income of the households), the partial slope coefficient in Table-7.8 shows that monthly per capita expenditure is reasonably significant exerting its negative impact on the logit of never enrolment and hence on the probability of never enrolment too.

But the important question is how much variance in dropout is explained by the MPCE. The estimated β coefficient here is as low as -0.159 that results an odds ratio equal to 0.853. With respect to odds, the influence of each predictor is multiplicative. Thus, for each 1 unit (Rs.10.00,

because MPCE is measured in multiples of Rs.10) increase in Monthly per capita expenditure (MPCE) the predicted odds of never enrolment decreases by a factor 0.147 (1 − 0.853). This explains that a 1 unit increase in MPCE (Rs. 1.00 because MPCE is measured in rupees) will lower the odds of the event that at least one child within a family is never enrolled in school by 14.7%.

Educational expenditure as proportion of total expenditure (in percentage term), on the other hand, is found to be significant having a negative sign too in predicting the event of dropout only. In other words we can say that higher the expenditure on education as proportion of total expenditure, the less likely it is that a child would be dropped out from school within a household. The odds ratio is = Exp (β) = $e^{-0.258}$= 0.773 which explains that for each 1 per cent increase in Educational expenditure, the odds of dropout of school by one or some children within a household decrease by 22.7% (1 − 0.773) or by a factor 0.227, adjusting for other variables in the model. Comparing the above, one can say that MPCE, which is calculated from total annual expenditure of the family (crude measure of family income), remains significant in determining the probability of never enrolment but has no impact in determining the probability of children's dropout from school. While proportion of educational expenditure, although significant in determining the probability of children's dropout from school, has practically insignificant in determining the probability of never enrolment.

7.4.1.2 Parental Education

Educational level of parents is entered in the model as a continuous covariate measured in terms of completed years of education. A higher level of parental education is expected to lower the chance of probability corresponding to the occurrence of both never enrolment and dropout of school in our model. The Wald chi-squared values for father's education are significant with its expected sign in explaining the probability of never enrolment while mothers' education remains insignificant here. Whereas, mothers' education has emerged as statistically significant also with expected negative sign of β coefficient in explaining the event of some of the children is dropped out of school but insignificant in predicting the probability of occurrence of the event of never enrolment/enrolment. This suggests that an educated father is more active in taking the decision that the children will be enrolled in school, while an educated mother takes the active part in ensuring the continuation of the children's education or dropping out of school.

The odds ratio (Table 7.8) corresponding to β coefficient of father's education is 0.517 (<1) which indicates that the odds of never enrolment compared to all children enrolled decreases by a factor of 0.483 (1-0.517) for each one year of additional increase in level of father's education, controlling for other variables in the model. Similarly, the odds ratio (Table-7.7) corresponding to β coefficient of mother's education is 0.543 (<1) which indicates that the odds of dropping out compared to all enrolled children attending school decreases by a factor of 0.457 (1-0.543) or by 45.7% for each one year of addition to level of mother's education, controlling for other variables in the model.

7.4.1.3 Nature of income

Nature of income has been assumed to be a dichotomous covariate in our model. It has been assigned with the score 1 for the households with regular pattern of income and 0 if the main income of the family is irregular. The β coefficient of this variable (-1.350) is significant for predicting the probability of dropout. The corresponding odds ratio is 0.259. We would therefore say that the odds of one or some children within a household compared to all enrolled children attending school are decreased by a factor of 0.259 when the respondent's main income is regular compared to those with irregular income pattern, controlling for other variables in the model. Briefly, it suggests that in households with regular income pattern, less likely will be the chance of school dropout and vice-versa provided the other covariates of dropping out remains the same.

7.4.1.4 Opportunity Cost of Schooling

The availability of work opportunity where the children may be engaged is often reason enough for households to withdraw their child/children from school and send them to the labour market as wage labourers. In economic terms, this is opportunity cost of sending the children (i.e. the income

to be accrued from child labour) which has to be sacrificed if instead the parents send their ward/s to school. This opportunity cost of schooling is not directly calculated here. Instead, a dummy has been introduced in the form of yes/no category. If it is found that one or some schooling age children in a household work in the labour market then the household was given a score 1 and 0 otherwise with the assumption that it will have an adverse impact on schooling outcome. The variable is found to be significant in predicting the dropout pattern of the children within a household although it is not found to be significant in predicting the enrolment decision. The official age (5+ years) of child to be enrolled in the first grade of any primary school in this state does not actually appear to be favourable for a child to work as a wage earner. Accordingly, statistical result also supports the logic. However, in the advanced stage of primary grades and during the upper primary schooling, the enrolled children may be withdrawn for financial support of the family. The regression coefficient has the positive sign (1.476) which indicates that the presence of job opportunity for children will increase the likelihood of dropping out of school. The corresponding odds ratio is 4.374 representing that the problem of dropout of school will be four times more likely if there is job opportunity of children for which the households send their ward/s to work rather than to send their ward to school.

7.4.1.5 Household Dependency

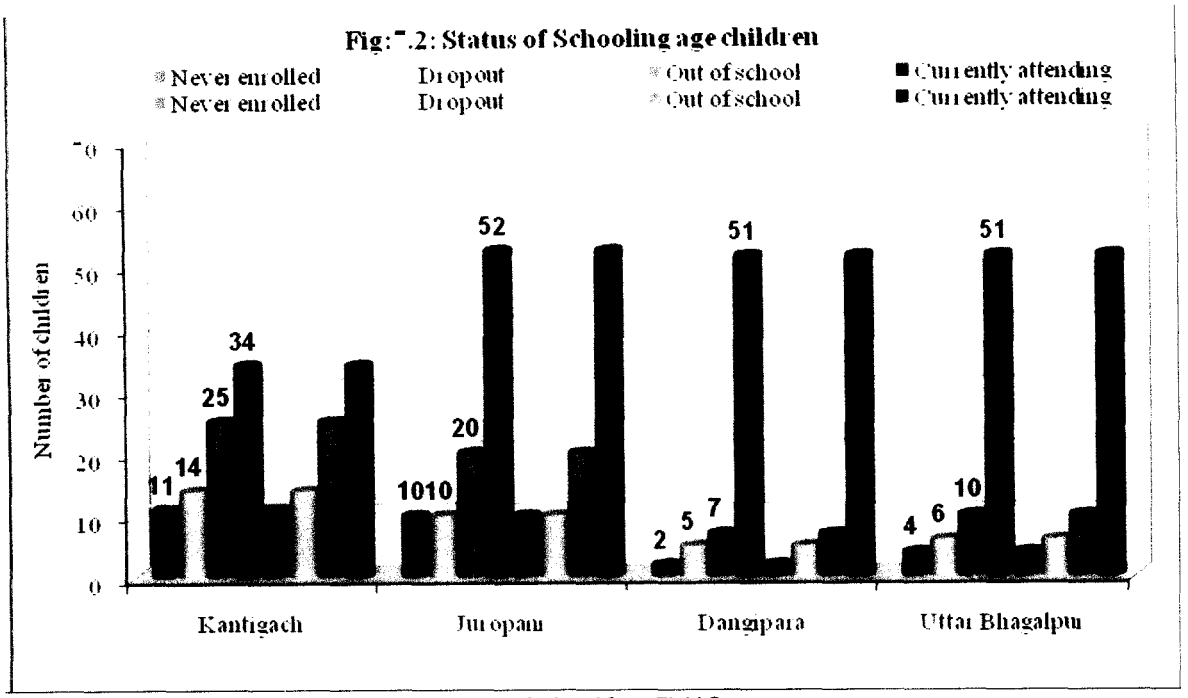
Household dependency has been constructed as a ratio between the total number of siblings and old age members to total number of schooling age children [(siblings+old age)/ children] and introduced in the regression equation as a continuous covariate with the assumption that it will adversely affect the schooling behavior/decision. Statistical findings indicate that this non-financial burden shouldered by the schooling age children in a family is significant in predicting the probability of never enrolment while making it insignificant for the dropping out of school as such. The regression coefficient (2.179) and corresponding odds ratio (8.833) suggests that for each one unit of increase in household dependency ratio there will be an increase in the odds of never enrolment compared to all children enrolled in school by about 9 times.

7.5 School Enrolment- Parental Viewpoint: A Qualitative Analysis of Survey Data: Reasons for Enrolment

Enrolment and dropout are two important educational outcomes that have a close correlation with the parental behavior. Actually, to enroll a child in school is mostly a parental decision guided by some socio-economic correlates. The event is realized partly by the consciousness of the parents about the benefits of education (both direct and indirect). This section is primarily concerned with "Why" a child is being enrolled by the parents. In order to investigate this particular parental behavior, it was of special interest to review the response of the guardian on the reasons for enrolling children to school, based on the interviews with the respondents (parents). This qualitative analysis may provide some additional information on parental behavior for the education of their children. This also may convey some of the parental consciousness on the direct and indirect benefits of education.

The survey conducted in four villages and thirty households in each village were selected randomly from all the households in each village. As such 120 households comprise the sample size of the study. In these 120 households, there are total 250 children in the age group of 5-14 years of which 51.2% (total - 128) belongs to the primary age group and the remaining 48.8% (total- 122) in the upper primary age group (9+ to 14 years). Out of these total children, 89.2% (223 in total) have been once enrolled in school and they have been declared as literate. The remaining 27 children have never been enrolled in any school. These 27 children come from among 23 households for which the response on the question whether one or some children has/have never been enrolled in school was positive and coded accordingly as '1'. For the remaining 97 households the responses have been negative. Now, of the total enrolled children (223), all are not currently attending the school. It was found that 35 enrolled children were not currently attending school. They are literate but creating another educational problem as they had dropped out of school before completing the eight years of schooling. These 35 children came from 31 households for which the response on the question whether one or some children has/have

been dropped out of school was positive and coded accordingly as '1'. These two are the dependent binary responses which have been separately predicted from a series of household related socio-economic covariates in the logistic regression analysis. The empirical findings have already been discussed in the previous section of this chapter. However the current status of the children is represented in Figure-7.2.



Source: - calculated from Field Survey

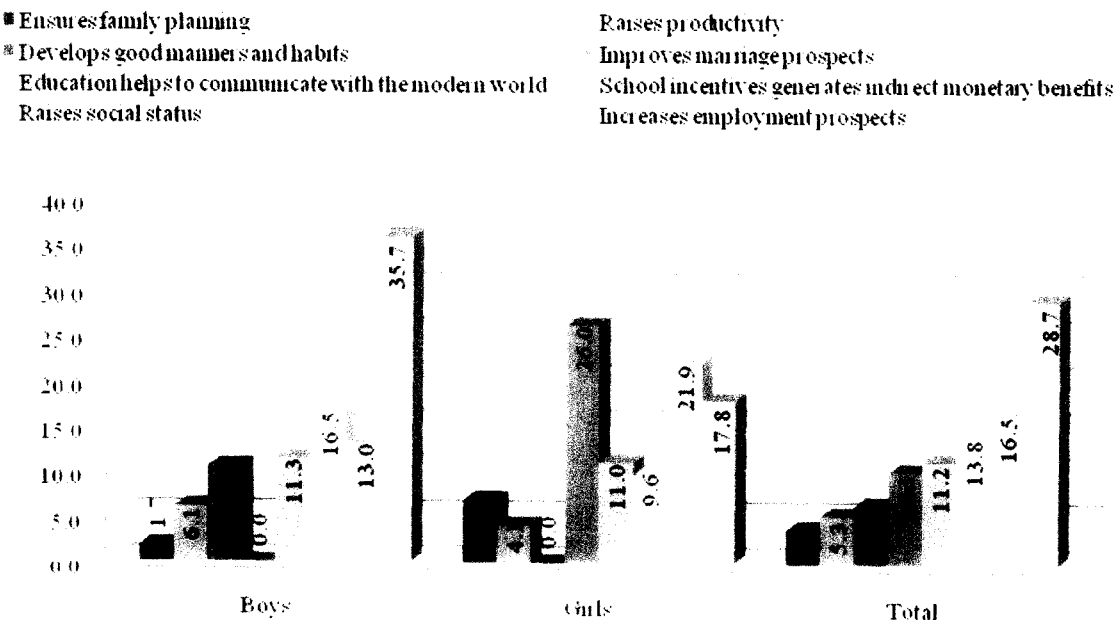
In absolute percentage, 24.80% (62 out of 250) children are found to be out of school of which 10.80% (27 out of 250) are never enrolled and the remaining 14.00% (35 out of 250) are dropped out of school. The problem of both never enrolment and dropout of school is more prominent in Kantigach followed by Juropani and Uttar Bhagalpur. In Kantigach, 42.37% children are out of school followed by Juropani (27.78%). It is earlier noted in these two villages, children were seen to be engaged in labour market for the availability of work. The empirical findings in the previous section thus support this view.

It has been an experience that most of the Indian parents (more than 90%) want their children to be educated (PROBE Report, 1999 The Pratichi Education Report, Number-I, 2002). But in practice, this aspiration is not usually seen to be realized. In order to find the reasons of this gap, it will be interesting to know the parental view on the question that why they get their children admitted to school. The reasons that have been mostly considered by the parents in this respect have been collected from the survey. For the purpose of this, a specific question was asked where the respondents were asked to cite three reasons for enrolment of their children to school. This question was built-in with some ready responses broadly categorized as economic and non-economic reasons. Among the economic reasons, the responses were incorporated with the following alternatives - increases employment prospects, school incentives generates indirect monetary benefits, enhances earnings, raises productivity and others. The non-economic response categories with predetermined alternatives such as - raises social status, improves marriage prospects, develops good manners, ensures family planning, enhances the feeling of security, education helps to communicate with the modern world and others. If a respondent fails to cite any answer, his/her response was recorded as no reasons given. The reasons that a particular respondent cited have been ordered and the first one for each of the child is collected. Among the above two broad categories, eight types of responses were cited as first reason for enrolling the children by the respondent apart from the reason 'no reasons given'. As such, information collected for this purpose for 188 children in total who are currently attending school from the sample villages. Out of this, 115 children are boys and 73 are girls. The information collected in this respect has been depicted in Figure-7.3.

It is seen from this figure that there are several socio-economic issues that have been considered by the parents in sending their children to school. In total, most of the children (around 28.7%) are getting enrolled considering their better future employment prospect. This particular reason appears to be more important for the boys' education (35.7%). The second major reason (for 16.5% children) that has mostly been considered by the rural parents is that education will raise social status of the family. This social aspect is mostly associated with girls' education (21.9%).

In the recent period, especially after the introduction of DPEP, school incentives for the children in the form of free text-book, uniform, mid-day-meal etc. have been introduced in the government run schools with the objective that these will create an indirect economic benefit for the parents in terms of opportunity cost of schooling and accordingly it will also enhance the school enrollment and retention rate. As such it is considered as an economic reason, rather than an institutional one. Our objective is also to have an idea about the explanatory power of this issue. It has been observed that out of total 188 enrolled children, 26 (13.8%) were enrolled and continued with education with the consideration of this reason. Again education as a social variable that helps to communicate with the modern world is also taken to be an important consideration (for 11.2%) on the part of the parents in enrolling their children in school. A major reason cited by the parents (for 9.5%) for the education of their girl children. These four major reasons together have been considered as the basic reasons (for around 70% of the total children) for the enrolment of children in school. Apart from these, four other socio-economic issues are also being considered in this respect. The detail has been shown in Figure -7.3.

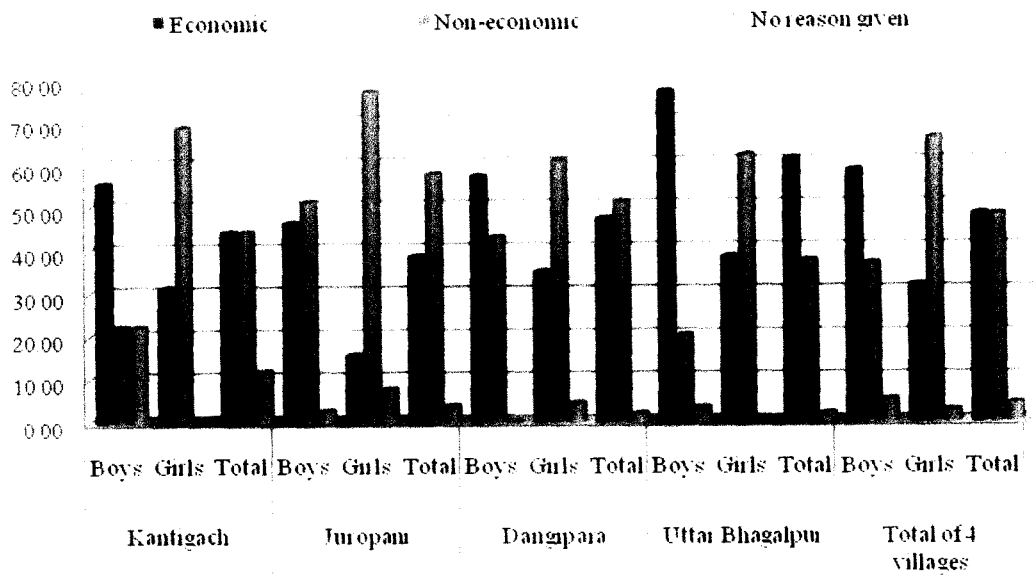
Fig-7.3: Socio-Economic Reasons for School Enrolment



Source: - calculated from Field Survey; N= No. of responses = 188

All the cited reasons when classified into economic and non-economic categories, produces an interesting result. Among the enrolled girl children (73 in total), 65.75% (48in total) have been enrolled in school for the reasons associated with non-economic purpose. It may however be noted here that the non-economic reasons are being considered with a view to comprehending the future benefits of education. These are, in a sense, indirect benefit accruing from educating a child. This consideration is more important for bringing a sound educational development in an area. However, this consideration varies from village to village and of course from household to household. A village level data on the reasons cited by the parents broadly categorized into economic and non-economic reasons are shown in Figure-7.4.

Fig-7.4: Reasons for School Enrolment- Economic & Non-economic (in %)



Source: - calculated from Field Survey; N= No. of responses = 188

It is seen from the village level data that in all the villages, boys' education is mostly connected with economic reasons, while the girls are enrolled with the consideration of non-economic benefits from education. Girls' education is also viewed for economic reasons too. But its intensity is smaller than the boys. Summarily, in all the study villages (irrespective of the sex of the children), however, the non-economic reasons are being given equal importance while getting the children admitted in school except in Uttar Bhagalpur village. Figure-7.4 provides an additional important observation. In spite of low educational background of the parents, only eight in case of eight children, respondents were not able to cite any reasons for the purpose.

Note

1. Parsimony is also a factor in statistics. In general, mathematical models with the smallest number of parameters are preferred as each parameter introduced into the model adds some uncertainty to it. Additionally, adding too many parameters leads to "connect-the-dots" curve-fitting which has little predictive power. In general terms, it may be said that applied statisticians (such as process control engineers) value parsimony quite highly.
2. The logistic regression analysis has been carried out by the Binary Logistic procedure in SPSS/version 13.0 (SPSS Inc. 1989-2004) in the Windows XP Professional version 2002. However, in order to evaluate the logistic regression model which needs different significance tests for binary logistic regression, the statistical package EViews version 3.1 (Quantitative Micro Software, 1994-98) is also used.
3. But one should not make it as an objective sense as the LR Statistic is a cumulative measure across all cases and its size is therefore highly dependent on number of observation.
4. Hosmer and Lemeshow (1989, p.141) report that extensive simulation indicates that the distribution when the model is correct is well approximated by a χ^2 distribution.
5. We have coded 1 as a response for those households where at least one child, once enrolled, currently not attending school. It may be the case for the households where more than one child is not currently attending school. If such response coded separately, then multinomial logistic regression would have to be applied.
6. When $\beta = 0$, Exp $(\beta) = 1$, and an odds ratio of 1 corresponds to an explanatory variable represents that it does not affect the dependent variable. If β moves to positive infinity then exp (β) will also moves to positive infinity. But if β moves toward negative infinity, the exp (β) converges to 0. This implies that exp (β), i.e., the value of the odds ratio ranges between 0 to positive infinity.

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APPENDIX

Appendix-7.I Result of Univariable Analysis

Model-I, Dependent Variable- PBDOSC

PBDOSC		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	ECONDEP	0.338	0.202	2.800	1	0.094	1.401
Step 1(a)	EDNTOTEX	-0.301	0.086	12.341	1	0.000	0.740
Step 1(a)	EMPMTH	-0.513	0.422	1.478	1	0.224	0.599
Step 1(a)	FTHEDN	-0.332	0.101	10.715	1	0.001	0.717
Step 1(a)	FWP	-0.620	0.431	2.070	1	0.150	0.538
Step 1(a)	INREGIRREG	-1.943	0.533	13.274	1	0.000	0.143
Step 1(a)	MTHEDN	-0.656	0.205	10.227	1	0.001	0.519
Step 1(a)	OPTNTCOST	1.514	0.441	11.775	1	0.001	4.543
Step 1(a)	MPCE10	-0.076	0.026	8.690	1	0.003	0.927
Step 1(a)	HDEP	0.406	0.322	1.591	1	0.207	1.501

Model-II, Dependent Variable- PBENRLMNT

PBENRLMNT		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	ECONDEP	0.948	0.255	13.843	1	0.000	2.580
Step 1(a)	EDNTOTEX	-0.183	0.076	5.732	1	0.017	0.833
Step 1(a)	EMPMTH*	-0.440	0.467	0.888	1	0.346	0.644
Step 1(a)	FTHEDN	-0.637	0.210	9.176	1	0.002	0.529
Step 1(a)	FWP*	-0.159	0.467	0.116	1	0.733	0.853
Step 1(a)	INREGIRREG	-1.384	0.545	6.453	1	0.011	0.251
Step 1(a)	MTHEDN	-0.456	0.179	6.468	1	0.011	0.634
Step 1(a)	OPTNTCOST	0.669	0.471	2.017	1	0.156	1.952
Step 1(a)	MPCE10	-0.163	0.046	12.639	1	0.000	0.849
Step 1(a)	HDEP	1.540	0.410	14.135	1	0.000	4.665

*Not included in the model; Sig. > 0.25

Appendix-7.II Frequency Table- Logistic Regression

Statistics

		pbdosc	pbenrlmntt
N	Valid	120	120
	Missing	0	0

pbdosc

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	89	74.2	74.2	74.2
	1.00	31	25.8	25.8	100.0
	Total	120	100.0	100.0	

pbenrlmntt

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	97	80.8	80.8	80.8
	1.00	23	19.2	19.2	100.0
	Total	120	100.0	100.0	

Appendix-7.III Contingency Table for Hosmer and Lemeshow Test

Model-I, Dependent Variable- PBDOSC

		pbdosc = .00		pbdosc = 1.00		
		Observed	Expected	Observed	Expected	Total
Step 1	1	12	11.998	0	.002	12
	2	12	11.968	0	.032	12
	3	11	11.842	1	.158	12
	4	12	11.573	0	.427	12
	5	12	10.871	0	1.129	12
	6	10	10.012	2	1.988	12
	7	8	8.684	4	3.316	12
	8	5	6.109	7	5.891	12
	9	5	3.782	7	8.218	12
	10	2	2.162	10	9.838	12

Model-II, Dependent Variable- PBENRLMNT

		pbenrlmntt = .00		pbenrlmntt = 1.00		
		Observed	Expected	Observed	Expected	Total
Step 1	1	12	12.000	0	.000	12
	2	12	11.999	0	.001	12
	3	12	11.984	0	.016	12
	4	12	11.922	0	.078	12
	5	12	11.717	0	.283	12
	6	11	11.223	1	.777	12
	7	11	10.550	1	1.450	12
	8	7	8.374	5	3.626	12
	9	7	5.648	5	6.352	12
	10	1	1.582	11	10.418	12

Chapter 8

Summary and Policy Implications

8. Introduction

The world has now entered the age of the knowledge economy, where human capital plays a critical role in driving economic growth. Reviewing the literature on inter and intra country analysis pertaining to the growth theory, it is mostly found that human capital led growth model is more effective than physical capital led model. In the stages of growth and development, investment in physical capital is important at early stages of industrialization, but the role of human capital increases with industrial development and in due course grows in relative importance. This is not only true for the world's most advanced economies, but also in those emerging economies that are currently practicing reflective transformations and periods of rapid growth and development. India is a unique example of such an economy. Moreover, India is the second largest populous country in the world sharing more than 17% of world's total population. Considering this quantitative importance of population, it is imperative to examine the qualitative enhancement of the population in India in respect of educational achievement. It is by qualitative transformation that the country can globally become a decisive factor.

In the post-globalisation period several policies and measures have been undertaken both at international and national platform. At international level the World Declaration on Education for All (EFA) was adopted at the World Conference on Education For All held in Jomtien, Thailand in 1990 and at Dakar, Senegal in 2000, both sponsored by several UN agencies. The "Education For All" movement gained particular prominence in the same year when world leaders, on behalf of nearly every country, unanimously adopted the Millennium Development Goals in 2000. Almost all the goals were targeted to be achieved within 2015 and hence mid-term review of progress is being carried out at country level by different organization and agencies.

At the dawn of Indian planning regime (1950), Constitutional commitment was made to ensure the education of the children belonging to the age group of 5-14 years within 10 years. Having failed to achieve the goal of education for the children even after 50 years of Independence, the Indian government again has expressed a strong commitment towards education for all during the post globalization era. The Constitution of India was amended at the beginning of the Tenth Plan period (2002-2007) to make education a Fundamental Right of the child between the ages of 6-14 years (The 86th Constitutional Amendment Act 2002).

In very broad terms the following dimensions with regard to the child education have been identified as crucial under the 11th Plan:

Universal enrolment of 6–14 age group children and focus on disadvantaged and educationally backward areas and social groups that are lagging behind

Dropout at primary level to be eliminated and the dropout rate at the elementary level to be reduced from over 50% to 20% by 2011–12.

With such an international and national background, the present research has been undertaken with a view to make an assessment of progress of India's educational development with special reference to literacy development and achievement of elementary education. In particular, the study is carried out primarily to identify and measure the nature and extent of educational backwardness in India at a disaggregated level. In doing so, it also examines the necessity of formulating area-based micro planning instead of universal common policy measures in order to get rid of the lingering shame of being one of the poorest performers among the developing nations in promoting elementary education in the country. For this, a historical background of educational development in India has thoroughly been examined to bring to light the trend of development between the periods 1950-51 and 2000-2001. In order to comprehend the educational variation within the region of the country, a state level analysis of educational development is briefly discussed. From the review and analysis of the state level literacy trend and educational

development, West Bengal has been found as one of the educationally backward states in India. Again, in order to identify the educationally deprived area of West Bengal, an inter-district analysis has been carried out along with its extension to sub-district level (block level). This analysis again categorically locates the regional development pattern within the state and identified the regions at the most disadvantaged position. Among the 18 districts of the state, Uttar Dinajpur has been identified as the most backward district in respect of literacy development and achievement in elementary schooling. Accordingly, a detailed analysis of the educational pattern (both enabling attributes and achievement attributes) is carried out at sub-district and Mouza level. Here an attempt has also been worked out to identify the factors held responsible for such an abysmal educational performance of the district. Finally, a supportive micro level study is carried out in four villages of the district with a view to identify the major factors for educational backwardness of the study area. Two specific statistical techniques have been applied for the analysis of data at micro level study and have been detailed out for understanding how far the specific methodology is useful for the selected study. A comparison of micro level findings with those of the macro level study is also judged for better understanding of the problem of educational backwardness in the state in particular and in the country in general.

The major findings of the research at various disaggregated level are summarized below.

8.1 Summary Findings

Chapter 1, provides an introduction to the study, describing the relevance and significance of the research, research questions that have been addressed, overview of methods, and a brief review of available literature.

Chapter-2, while elaborating on the history of elementary education in pre and post independent era, a trend analysis of public finances to the education sector with special reference to the elementary education in India during the post planning regime (1950-51 onwards) has been laid out. Further, literacy development in India during the period 1950-51 to 2000-01 and development trend of elementary schooling in India within reference period of time as 1950-51 onwards, have raised the following critical issues among others.

It is observed from the history of development of education that universalisation of primary education was advocated even under British rule and a constitutional commitment was also made in free India. But the very basic need of the children regarding their education has still remained illusive and as a distant goal. It also appears that time and again it was decided to achieve the goal from the end of government. But whatever time limit has been targeted has proved itself to be unrealistic. Even the target year of 2010 of Sarba Siksha Abhijan by which it is being tried to universalise eight years of schooling does not appear to be a realistic one. One thus has to look forward to the international target year of 2015 for the goal fulfilment.

Financial assistance to education was a subject of neglect of both the British and post independent national government and still the view has not changed much meriting a detailed outlining. Per capita spending on education in India is significantly low even when it is compared with the less developed countries like Bangladesh, Korea, Thailand and Sri Lanka. Actually India is spending what is only half of what is required for UEE.

During the entire post-independence period, government expenditure on education has been remaining well below the Kothari Commission recommendation of 6% of GDP, thereby witnessing the government's apathy to reach the goal of UEE.

In India, primary responsibility of school education lies with the state governments but being a subject in the concurrent list, the Central Government cannot bypass its responsibility in this respect. It has been observed that the Centre has been sharing a sizeable amount of finances for the development of the elementary sector of education only after 1990-91. Yet the actual total expenditure by the Centre compared to the states together is very marginal.

The first post-Independent census indicated only 18.3 percent of India's total population as literate, while the same becomes 64.8 percent in 2001. Still half of the females and one fourth of males in

India are illiterate (as per Census 2001), whereas several other developing countries in the world are approaching universal literacy.

Significantly during the last two decades (1981-91 & 1991-01), increase in female literacy has got an edge over the male and the same is also seen for rural literacy compared to the urban segments. This suggests that the country has been approaching a more equitable literacy development in respect of gender and regional pattern in the process. Still there is a gender gap in literacy achievement by 21.6% at the national level and it is more prominent in rural areas 24.6% than in the urban (13.4%) frame of the country.

The overall achievement in literacy development has been satisfactory in the rural India. Till the decade 1971-81, it is the urban literacy rate that has grown faster than the rural literacy rate. Since then, the scenario has become promising over the last decade with the rate of increase in rural literacy recording at 14.01 percentage points which is more than doubled compared to the rate of increase in the urban areas (6.82 percent). But in achieving a regional balance in literacy (person) there is still a substantial gap of 21.2% between rural and urban areas of the country. In gender terms, the gap in female literacy rate is 26.8% and for male literacy rate it is 15.6% between rural and urban areas so far as the last Indian Census is concerned.

There has been a quantum jump in the number of educational institutions over the period 1950-2005. There has been a fourfold jump in the number of primary schools and upper primary schools by more than 20 times, as has been observed from educational statistics.

However, this increase in the number cannot be awarded its due credit unless and until it is found that schools are located within a reasonable distance of the rural households and a reasonable pupil teacher ratio is maintained in the schools. According to the 7th All India Educational Survey (2002) nearly 13% of the rural habitation (1.6 lakh) was still uncovered by any primary school and 22% (2.7 lakh) by upper primary school. One thing that seems to be encouraging is that the coverage has been steadily increasing since 1973 and as such one can expect more rural households to be covered by schools as soon as the VII survey report is published. The increasing number of schools was however not accompanied by a desirable pupil-teacher ratio. The decadal trend in pupil-teacher ratio at primary level is a clearly pointer to the failure to provide adequate access to primary education in the country. The ratio remains as high as around 60 students per teacher (60:1) throughout the last decade (1991-2001) as against the official norm of 40:1.

There is also a serious discrepancy in the numbers of male and female teachers in India, although it has been an area of concern and debate over the preference and success of female teachers in ensuring universal enrolment. Shortfall in the number of female teachers in comparison to male teachers is visible at elementary level of schooling. Proportion of female teacher, especially at primary level, around the world is much higher compared to the Indian average. Though the proportion has been increasing, yet it is quite low at around 35% at elementary level of education, by international standards.

The Gross Enrolment Ratio (GER) at primary level has declined from 114 to 104 for the boys and from 85.5 to 85.2 for the girls during the period from 1990-91 to 1999-00 (Selected Educational Statistics 1999-2000, MHRD, GOI, 2001). This trend is also being observed for the upper primary level too.

The dropout trend of the children has been gradually slowing down but the girls are more dropping out of school than the boys both at primary and upper primary level. At the same time the problem has become more acute at upper primary level than at primary level of education. A recent trend in the fall in the absolute number of out of school children albeit marginally, is an assurance for the achievement of the 2nd MDG.

India, with its wide range of variation and diversification in the socio-economic sphere, it is necessary and significant to analyse the regional pattern of educatonal status at state level rather than considering the problem for the country only. Chapter-3 thus undertakes the task of analysing the problem at state level for a disaggregated view. By using the UNDP's Range Equalisation Methodology and with the help of Principal Component Analysis (PCA), a detail of regional issues

in respect of literacy development and elementary education at state level has been oulined in Chapter 3. The discusiion and analysis pinpoints some important issues. Briefly they are as follows.

Analyzing the international data, it is observed that the target of primary completion rate of Dakar Goal seems to be attainable, while it will be difficult to accomplish the official target of adult literacy rate within the given period of time unless the rate of growth in adult literacy rate picks up. Internationally, the problem of illiteracy is most significant in the most populous countries. These are: Bangladesh, Brazil, China, Egypt, India, Indonesia, Mexico, Nigeria and Pakistan (the E9 countries; UNESCO, 2008). As such literacy development and variation is first undertaken.

Following the UNDP methodology of Range Equalisation, the revised literacy achievement index has been calculated for two distinct time periods 1951 and 2001 for each State in the country in order to review the growth pattern of the States. The arithmetical difference between the index values of 1951 and 2001 is calculated in order to review an average progress of achievement over the period from 1951 to 2001. The progress so far achieved by different States shows that it had been quite satisfactory in Himachal Pradesh followed by Maharastra, Punjab, Madhya Pradesh, Tamil Nadu and Kerala. While Jharkhand remains at the bottom position in this respect along with Uttaranchal, Chattisgarh, Gujarat, Bihar and Jammu & Kasmir. West Bengal is closer to the country's national average.

Education as a social variable has received due importance across the world especially over the last decade (1991-2001). By observing the decadal variation in literacy rate (1991-01), it is found that the states with lower literacy rate in 1991 have shown higher decadal increase and vice-versa. While, in aberrations to this, Tripura, Uttaranchal and Himachal Pradesh with a comparatively higher literacy rate than the states like Assam, West Bengal, Karnataka and Punjab have shown a higher literacy jump. Thus it may be said that acceleration in literacy rate is not simply due to a region's past disadvantaged educational background. There might be other variables with socio-economic characteristics that have an impact on literacy development. However, the average literacy progress of the country in the last decades (1991-2001) has occurred because of the better performance of some low literate states. Chattisgarh and Rajasthan have both registered the highest literacy jump at 21.8% over the last decade (1991-2001) followed by Madhya Pradesh, Andhra Pradesh, Uttar Pradesh, Orissa, Uttaranchal and Himachal Pradesh. Still, a sizeable proportion of the population (304,102,917) in the age group of 07 and above, are still illiterate, out of which, 36.38% are males and 63.62% are females (Census 2001). In India, there are 35 States and Union Territories of which 11 have arrived at the literacy target of 75 per cent (the official target to be reached by the year 2007). These 11 states altogether comprise only 14.9% of the country's population thereby leaving around 85% of the population at a literacy level whose average is below the desired level. Again, 13 states lie below the national average literacy rate (64.8%) which together comprises 55.2% of total population, i.e., more than half of the country's total population still remains below the national average. This shows a wide range of variation in literacy attainment in spite of tremendous leap in this respect. The regional pattern of literacy achievement is therefore very important to understand the critical gap in literacy in the country. In all, it is found that educational backwardness in India is more serious among the rural population and most importantly in the case of rural females.

By calculating the literacy development index (LDI) with the help of PCA, it is perceived that out of 35 States and UTs, 18 States have been identified where none of the districts ranked in the high LDI (LDI> 0.750) group both in 1991 and 2001. Again out of these 18 States, Bihar, Jharkhand and Arunachal Pradesh even did not have any of its districts ranking in the middle LDI (LDI>0.600 but < 0.750) group too. West Bengal in this respect also shows an unsatisfactory result. Out of its 17 districts, 04 were found with middle LDI and 13 with low LDI in 1991. The ranking in 2001 has improved with 04 more districts entering the category of middle LDI and with none of the districts getting entry into the highest quartile of the literacy category.

With respect to educational performance at school level, the enrolment ratio is much higher and it is comparable with the educationally developed countries. Discussion thus needs to concentrate on

two main issues - Primary Grade Completion Rate and Dropout Rate to identify the critical State in the country. A little above 70% (2006-07) of total enrolled children in India completes the primary level of education. State wise, Bihar, Rajasthan,Uttar Pradesh, Assam along with Uttaranchal and Jharkhand are found to be the lagging states in this respect. Similarly, the relatively advanced states (Kerala, Himachal Pradesh, Tamilnadu, Maharashtra and Karnataka) also maintain a higher survival rate. West Bengal has been remaining just above the national average and very much closer to the national rate. At primary level, the rate of school dropout is calculated at 8.61% in the country (2006-07). In this respect, Tamil Nadu, Kerala, Himachal Pradesh, Punjab are again doing well in maintaining a lower rate of dropouts in the recent years (2004-05, 05-06 and 06-07). West Bengal occupies 13th position out of 20 major States and its performance is worse than Jharkhand, Assam, Bihar, Madhya Pradesh etc. Thus the state needs special intervention to bring it in line with the other better performing states in the country. Considering such a low performance level as well as lower access to school education scenario, West Bengal has been ranked in the 32nd position out of 35 Indian State and UTs with respect to elementary level of education. Considering the value of the indices (Access, Infrastructure, Teacher and Outcome) used for the ranking by NUEPA in constructing the EDI, it appears that in West Bengal, the value of access index is sufficiently higher at primary level. But at upper primary level it occupies the bottom most position (34th as per DISE 2006-07). Apart from this, the state has very poor infrastructural facilities both at primary and upper primary level (Rank is 29th &31st as per DISE 2006-07). It is thus a matter of conflict and also a question that, why West Bengal with a moderately higher literacy rate of 68.64% (9th among the 21 states in 2001) has been occupying such lower ranks among the states in India.

Given the challenges that surround the educational development in the state of West Bengal, Chapter-4 gives special emphasis on this particular state with a view to observe the nature and causes of educational development at a further disaggregated level. The district and sub-districts (CD blocks) have been taken as unit of analysis to investigate the problem of educational backwardness in this particular state. The important findings are noted below.

Following the UNDP Methodology of Range Equalization, ranking of the 17 districts in the state has been done for both rural and urban areas separately. The rank analysis shows that Murshidabad, Malda and Uttar Dianajpur are the three districts whose ranks in rural literacy achievement during the last 50 years have remained in the lower rungs of the literacy ladder. As far as the urban trend in literacy achievement is concerned, Murshidabad and Malda again retain the bottom most position throughout the census periods. Uttar Dinajpur in this respect is well ahead compared to the above two districts. Thus it may be said that rural areas of Uttar Dinajpur district are able to generate special interest for a researcher.

As per the Census 2001, 10 out of 17 districts in the state have a literacy rate below the state average. Out of these 10 districts, five are from the northern part of the state which is known as North Bengal or Uttar Banga. The specific three other districts (Bankura, Birbhum and Puruliya) of southern part of the state (known as South Bengal) also registered as low performance region.

In order to capture the literacy achievement while identifying the underlying gender bias more accurately, a Gender Disparity Index in Literacy Rate (GDLR) has been constructed in addition to the simple Gender Gap in Literacy Rate (GGLR). Based on this index, Puruliya has been found with the highest index value (66.98 in 2001) followed by Uttar Dinajpur (45.89) and Bankura (43.08) thereby suggesting that these are the most female disadvantaged districts in the state. The female literacy rates are the same (36.5% in 2001) for both Uttar Dinajpur and Puruliya (lowest in the district), but the male and consequently the total literacy rate in Puruliya (73.72% and 55.57% respectively) is much higher than Uttar Dinajpur (58.48% and 47.9 respectively). This implies that the females in Puruliya are excluded from the overall educational development process.

After calculating the literacy rate of each of the villages in West Bengal (37, 956 populated villages in the State as per Census 2001), the villages with a literacy rate below 25% are identified and termed as Educationally Deprived Villages in the state. It is found that 843 villages in the state show a minimum of 25% literacy rate. The distribution of these educationally backward villages

throughout the districts reveals that Uttar Dinajpur with 207 (25% of total 843 deprived villages) villages in this category tops the list, which suggests that the educational deprivation is mostly concentrated in the districts where literacy rate is very low.

In order to analyze the causes of such differential performances in literacy development in the state, a multiple regression analysis has been performed where the 17 districts as well as the 341 blocks of West Bengal are taken separately as unit of analysis. A series of socio-economic variables as well as institutional supply side factors are regressed on male and female literacy rate individually. The regression result shows that both at district and block level analysis, holding of no assets by the household bears a significant negative impact on both male and female literacy rate. Beyond the level of income, the source of income or the composition of income does bear significant influence on literacy rate. The study found the literacy rate to have a decreasing trend when the proportion of agricultural workers (AGRLB) in total work force is increasing and vice-versa. While the case is opposite when there is an increase in cultivators in the total workforce. Thus it appears from the study that redistribution of land among the landless workers who are still depending on agriculture may be an economic policy measure for progress in education.

Most of the Indian studies (Pandey, 1990; Jeejeebhoy, 1993; Krishnaji, 2001 and Mukhopadhaya, 1994) have established the negative impact of female work participation rate (WPRF) on literacy and enrolment. The analysis at district and sub-district level partially supports earlier findings. In secondary data analysis at block level, this rate appears to have a depressing effect on both male and female literacy rate and the coefficient is found to be much higher in the case of explaining the female literacy rate. This suggests that the absence of a female member in a family is substituted by the presence of another female member and thus the mother's absence does not have a very strong depressing impact on male literacy. However the variable does not appear to be significant at district level.

The proximity of school within the habitation and a primary school within it and an upper primary school within a distance of 3 kilometers have been taken as a measure of availability and accessibility of school. It is found from the regression result that it is only the availability of upper primary school that has a positive impact in enhancing literacy rate. This availability is found to be more powerful in explaining the female literacy rate. The result in this respect indicates that access to upper primary school within a reasonable distance has a great positive impact in enhancing the female literacy rate.

India has a fewer number of female teachers compared to males and its impact on educational development and it is an area of concern and debate. Because of the nonavailability of data, the variable is used only at district level regression analysis and the result is found to be illuminating. The proportion of female teacher at primary level is significant for enhancing the female literacy rate, while no such statistical significance is being found for enhancing the male literacy rate.

According to Census 2001, the state of West Bengal occupies the middle most position on the basis of literacy rate. Whereas, the educational development index (EDI) of NUEPA, on the basis of school education indicators, ranks the state as one of the most backward (32nd out of 35 States and UTs) states. This paradoxical finding requires further exploration which needs a separate study that is beyond the scope of present study. However, an asymmetry is observed here. Internationally the indices pertaining to human development [Human Development Index (HDI) of UNDP and Education for All (EFA) Development Index (EFA-DI) of UNESCO] measures only the outcome related indicators. In India, the Working Group on EDI has considered three access-related, five infrastructure related and six teacher related indicators along with nine outcome related indicators in the process of construction of EDI. Some of these are enabling indicators while others are achievement indicators which are distinguishable from the international indices. For this, a multiple regression analysis is carried out using selected number of enabling indicators as explanatory variables and some selected achievement indicators as dependent variable in the regression equation. The result of regression application displays some significant associations. The proportion of schools with student-classroom ratio of 60 and above, the proportion of schools with girls' toilet, average student-classroom ratio – all exert a positive impact on achievement

attributes like GER, Dropout Rate, Retention Rate etc. The availability of upper primary school compared to primary schools/sections also positively affects the achievement attributes.

Finally, the literacy and school level outcome indicators are found to be disappointing in specific regions of the state. District wise, Uttar Dinajpur appears to be the most deprived one along with some other districts of the state.

As per the available data on literacy and elementary schooling at district level, Malda, Murshidabad, Uttar Dinajpur and Puruliya have been found at the lower ranks in West Bengal. However educational deprivation in Uttar Dinajpur appears to be most alarming. It is the least literate district in the state and it could barely maintain its rank at 518 out of 593 districts in India as per the Census 2001. At the same time, it is placed at the rank 505 out of 569 districts for which EDI has been calculated. Moreover, the Government of India has identified some districts that need special focus. The districts have been identified based on the number of out-of-school children and districts concentrated with Scheduled Castes and Scheduled Tribes population. Uttar Dinajpur has been found as one of such districts with a concentration of Scheduled Castes population and having more than 50000 Out Of School Children in its possession. Apart from this, the report of the Sachar Committee (GOI, 2006) has identified top 100 Districts (by size of Muslim Population, 2001 Census) among which Uttar Dinajpur occupied 16th position as per its Muslim population size (absolute). The socio-economic indicators of the Muslim population like dependency on agriculture (80% of the total worker), Female literacy rate (25.5%), size of the urban population (2.1%) etc. are mostly staggering in this particular district. Accordingly, a special focus has been given on this particular district and Chapter-5 makes an attempt to investigate educational problem of the district at sub district and village level.

Observations on secondary data analysis for Uttar Dinajpur district are provided below -

Urban Literacy Rate in the district (80.50%) is almost equal to the state average but Rural Literacy Rate of the District (42.9%) is much below the state (63.4%). A little more than 30% of the females in rural areas of the district are found to be literate (Census, 2001).

Subdivision wise literacy rate shows a sharp variation between the two subdivisions- Islampur (38.5%) & Raiganj (58.1%).

Out of the 10 least literate blocks of West Bengal (2001), 5 were found in Uttar Dinajpur and all these 5 Blocks were in Islampur subdivision.

Hemtabad block of Raiganj subdivision with a 56.72 % literacy rate is the highest literate block in the district and Goalpokhar-I of Islampur subdivision is the least literate block with only 31.6% literates (FLR-19.8%).

Muslim population in this district (47.36%) is much higher than the state average (25.2%) while the literacy level of the muslims in the district (36%) is much below the state average (57.47%) of that particular religious group. Again, there is a large variation in literacy rate between muslims (36%) and non-muslims (58%) in this particular district. Apart from this, the literacy rate among the Scheduled Tribe population (28.7%) is lagging far behind the district average along with a block level variation too. Specific policy intervention is therefore necessary for these two sections of population.

The district has only 71% (state average is around 74 percent) mouzas that are covered by primary schools. The situation is more critical in case of the accessibility of upper primary schools. Only 9.14% (state average is around 15 percent) of the villages were served as per the census, 2001 report. Accessibility of primary school in three blocks of Islampur subdivision, namely, Goalpukur-I, Goalpukur-II and Karandighi is far below the state and district average.

The data on proportion of female teacher in the district consistently shows a positive bias in favour of the blocks of Raiganj subdivision and in favour of the urban frame too. Goalpokhar-I block has the lowest proportion of female teacher (5.61%) followed by Chopra (8.40%) and Goalpokhar-II (9.45%), while it is the highest in Raiganj block (31.48%) followed by Kaliyaganj (28.52%), Hemtabad (22.40%) and Itahar (19.93%).

Against the policy norm of 40 students per teacher (PTR) at primary level, the state average was 56.8 and district average was 57 in 2002-03. For the upper primary stage, this ratio was 79.1 at state level and 73.7 at district level. The PTR at primary level across the blocks is found to be the lowest in Kaliyaganj (43.7) of Raiganj subdivision and highest in Goalpokhar-II (102.9) of Islampur subdivision. The ratio is more than double in each block of the Islampur subdivision compared to Kaliyaganj block at primary level.

The dropout rate at primary level is found to be the highest in Chopra block (63.4% in 2005-06) as against the district average rate of 34.8%. Along with this, the primary grade completion rate is alarmingly low in this block (24.7%).

Against this backdrop a multiple regression analysis has been carried out. Inferences drawn on the regression exercise performed at the district and block level (for each blocks separately) taking mouzas as unit of observation in both the cases, are firstly spelt out for a district level view and later blockwise results are compared with the district result. An intra-block comparison has been developed in order to capture the more specific socio-educational characteristics of each block separately.

The DEPRATIO (Non-worker/Worker) is calculated as a ratio of total worker to non-worker at the district, block and mouza levels. This variable is found to be significant and exerting a high negative impact on literacy rate so far at district level regression equation is concerned. But the variable is not found as significant at block level regression analysis in most of the blocks. Especially, in the blocks of Islampur subdivision, it is insignificant except in Goalpukhur-I, while, the ratio appears to be significant with strong negative impact on literacy rate in the blocks of Raiganj subdivision except Kaliyaganj. It may be noted here that the ratio is found to be significant in those blocks where the value of the ratio is comparatively low. It implies that households with larger number of non-workers exert increased economic pressure on the earner/s of the family.

Female work participation rate has been estimated to have a negative coefficient that supports the earlier studies at district level. But at sub-district level the result is not uniform. Only in two blocks (Goalpokhar-I and Raiganj) it is found to be statistically significant with negative impact on both male and female literacy rate. In Karandighi it is found to be significant in influencing male literacy rate and in Itahar, the female literacy rate. In other five blocks (Chopra, Islampur, Goalpokhar-II, Kaliyaganj, and Hemtabad) the female workforce participation rate does bear a statistical relation with the literacy development of those areas.

Agricultural Dependency of any region has been measured by the proportion of workforce engaged in agricultural activities either as a cultivator or as an agricultural labourer. An interesting result has also been observed at the mouza level analysis. Across the blocks, the AGRWRKR has its significant negative impact, while cultivators in some blocks exert positive significant impact. At district level, only AGRWRKR is found to be significant with negative impact on literacy achievement.

In the present analysis, at district level, the proportion of Scheduled Tribe population characteristically has exerted its negative impact on literacy rates with a substantial depressing effect on overall female literacy rate. However, quite unusually, the proportion of Scheduled Caste population significantly influences the overall literacy rates in a positive direction. This result supports the secondary data as because the literacy rate of the SC population (50.1%) in this district is marginally higher than the overall literacy rate (47.89%).

The regression result shows that the explanatory power of a particular variable does vary according to the area in which it is applied. This explains that any policy measure taken even at a district level may not produce the same impact throughout the district. Area-specific micro level planning for some selected issues may give better result along with a universal planning at district level.

While analyzing the education scenario of Uttar Dinajpur district, it has been found that educational deprivation in the district is mostly associated with Islampur sub-division leaving the

Raiganj subdivision comparable with the state average. The study is therefore becoming more focused and the educational backwardness appears to be more challenging in Islampur subdivision of the district. Observing this deprivation, a detailed household survey is carried out in four villages of Islampur subdivision in two relatively highly literate villages and two comparatively lowly literate villages. Literacy rate and elementary schooling are examined. Chapter-6 deals with the investigation of literacy rate at household level and the factors influencing the same. Multiple regreesion analysis is applied for observing explanatory power of household related factors on literacy rate. The result so found is given below in a summary form.

In explaining the literacy rate at district and block level in chapter-4, asset holding has been used as a surrogate for income. There it was observed that holding of no assets by the household bears a significant negative impact on both male and female literacy rate at block level in the state. However, it does not bear any significant impact on female literacy rate at district level. In the present analysis, two expenditure related variables have been tested to see the impacts on literacy achievement. Monthly per capita expenditure (MPCE), which is commonly used as a proxy for income, remains as a significant variable in determining the overall literacy rate (PLR) and male literacy rate. On the other hand, expenditure on education as proportion of total expenditure (EDNTOTEX) has been found significant in explaining the overall and female literacy rate. The explanatory power of EDNTOTEX (0.909) is much higher than the conventional MPCE (0.053) in explaining the overall literacy rate. Again, EDNTOTEX has been remaining significant in analyzing the female literacy rate while it is insignificant in explaining the male literacy rate. This gender difference explains to some extent that it is the intention of expending more income on education that may enhance the female literacy rate.

In Chapter-IV, while analyzing the district level and block level regression equation in West Bengal, the variable has been found as significant exerting its negative impact on literacy rate. The mouza level analysis (in Chapter-5) exposes the variable as both significant (at Goalpokhar-I block) and insignificant (at Chopra block) one. Female work participation may originate due to the fact that the female members are well equipped with the knowledge for participation in the labour market. Or, it may be that the earning of the male members is not sufficient to maintain the economic well being of the family. From the cross tabulation of data on mothers' education level it is observed that out of total 116 mothers, 58 mothers are completely illiterate and 36 out of the remaining 58 literate mothers, are barely primary literate. As such, the second reason seems more plausible given the socioeconomic scenario of the villages in the study area. With such poor educational level, it would be very optimistic to assume that the mothers are well acquainted with the economic and social benefit of education. Consequently, in the present primary data analysis, it has remained as insignificant to determine literacy rate.

Economic dependency ratio (ECONDEP) has been tested at mouza level where it has been found that the ratio is significant in those blocks where the value of the ratio is comparatively low (Chapter-5). In the present analysis it is found significant in explaining the overall literacy rate, but separately it does not bear any statistically significant effect on male or female literacy rate.

Among the parental characteristics, educational level of mothers has been tested to be a statistically significant variable. Mothers' education however is insignificant in determining the male literacy rate while it has strong positive impact on female literacy rate. Similarly, fathers' education remains insignificant in determining the female literacy rate, but it exerts a positive role on male literacy rate. It explains that in order to literate the females in an educationally deprived area, the girl children have to be schooled and well equipped with a minimum literacy skill. These educated girls within a reasonable time after being a mother in the society will provide support to enhance their next generation learners.

Households with a regular income pattern are more likely to have a high male literacy than those with irregular income pattern. But no such relation is found in determining the female literacy rate in the study area.

Assigning a numeric code 1 to those households where at least one child has been working in labour market and 0 other wise, the dummy variable as such exerts its strong negative effect in explaining the female literacy rate.

Out of nine explanatory variables that are incorporated in the model, seven variables (EDNTOTEX, MPCE, ECONDEP, INREGIRREG, OPTNTCOST, FTHEDN and MTHEDN) show statistically significant relationship with the literacy characters (PLR, MLR, FLR) of the households. In order to compare the relative magnitude of regression coefficients the Partial and Semi-Partial correlation coefficients between the dependent and explanatory variables separately for each predictor have been calculated. From this it is found that it is the educational level of mothers that captures the overall (PLR) and female literacy rate (FLR). Monthly per capita expenditure which was a proxy of income may be posited as the next relatively important factor in explaining the overall literacy rate. The opportunity cost of sending a child to school is the third most important factor among all the predictors in explaining the PLR. The pattern of income (INREGIRREG) which has been assigned the largest regression coefficient in OLS analysis is not as significant in the partial and semi partial correlation analysis, although it has considerable importance in explaining the variations in PLR and MLR.

In explaining the MLR, MPCE is found to be the most important variable along with income pattern (INREGIRREG) and educational level of father. In explaining variations in FLR, after mothers' educational achievement, the proportion of educational expenditure plays a vital role than the other predictors included in the model. It may be noted that female work participation affects the FLR adversely with a high magnitude. This variable however has negligible impact on other literacy characteristics.

One of the important findings in Chapter-6 is that parental education level can have an enhancing impact in determining the literacy level of the household. Putting it in another way, education itself is an important significant factor that can further the development of education at least at household level. Accordingly, policy initiative to ensure minimum of eight years of schooling for all children is necessary so that within a near future this meaningful literate section will further generate a more educationally advanced human resource for the society. This requires, among other things, universal enrolment and a minimum school dropout and accordingly high retention rate. As such the final investigation of the present research concludes with an assessment of universal enrolment and dropping out of school in connection with the children belonging to the elementary level age group (5-14 years age) in Chapter-7. Logistic regression has been used as an econometric tool its technique has been detailed for use in the present data set. The regression model assumes i) either a household has at least one children who has never been enrolled, and ii) either a household has at least one children who has dropped out of school or has not. It is of primary concern to target those households where the event of school dropout or never enrolment occurs. This occurrence is a chance expressed in probability manners when fitting a logistic regression equation. So, identifying the factors that determine this chance is the primary concern of the exercise. The results in different dimensions are briefly presented below. Before running the multiple regression, a univariable analysis of each potential independent variable has been carried out in order to find the 'best', most 'parsimonious', model to predict the dependent variable or to explain the variation in the dependent variable. The independent variable showing a p-value < 0.25 in the univariable test that has been considered as a candidate for the multivariable model.

By observing the Frequency Table it is found that 31 households, out of total 120 households surveyed, have been found where one or more children, once enrolled in school, dropped out of school. This represents that in case of 25.8% households, the problem of school dropout is somehow related. On the other hand, the problem of never enrolment is less common than school dropout. Less than 20% (23 out of 120 households) of the households are lagging behind the target of universal enrolment.

Overall, the estimated model correctly predicts 83.33% observations with a sensitivity of 64.52 percentage points and specificity of 89.89 percentage points and in determining the probability of

never enrolment, the estimated model correctly predicts 90.00% observations with a sensitivity of 65.22 percentage points and specificity of 95.88 percentage points.

Diagnostic information for multicollinearity (tolerance statistics, VIFs and also Eigen values) among the predictors has already been calculated and shown in simple multiple regression analysis and no serious concern of collinearity was found. In addition to this, the standard errors associated with the logistic coefficients both for the two models are calculated and found to be not very large (ranging from a lowest of 0.006 to a highest of 1.346). Hence, by prior selection of independent variables following a reasonable criterion and by investigating the standard errors, it is expected that the results are statistically fair estimates in the prescribed model.

By observing the Wald chi-squared statistics, the result shows that the most important variables contributing to the probability of dropout of school are - proportion of educational expenditure (EDNTOTEX), Pattern of income (INREGIRREG), Mother's education level (MTHEDN) and Opportunity cost of schooling (OPTNTCOST) and from the regression coefficients and its associated significance level the Wald chi-squared values Fathers' education level (FTHEDN), Monthly per capita expenditure (MPCE) and Household dependency ratio (HDEP) are observed to be as significant in predicting the Probability of Never Enrolment. It may be noted here that the significant variables in explaining the log of odds of the probability of dropout and never enrolment are categorically different from each other. It signifies that the socio-economic correlates are not same for explaining the school level outcome attributes (e.g. dropout and never enrolment are being significantly affected by different variables). Secondly, it may also be said here that the household related socio-economic variables are relatively less important in determining the enrolment/non-enrolment decision compared to the problem of school dropout by the children. This opens the scope of including supply related schooling facilities as additional variables in determining the enrolment decision of the households which may be separate study in itself.

Contribution of significant explanatory variables towards the dependent variable is the central point to be discussed in the interpretation of logistic regression coefficients. In doing so it is found that -

From the logistic slope coefficient it is found that for each one unit increase in MPCE (Rs.10.00, because MPCE is measured in multiples of Rs.10) the predicted odds of never enrolment is decreased by a factor of (1 − 0.853) or by a factor 0.147. This explains that a 1 unit increase in MPCE (Rs. 10.00 because MPCE is measured in rupees) will lower the odds of the event that at least one children within a family is never enrolled in school by 14.7%. It is also found that higher the expenditure on education as proportion of total expenditure, the less likely (β = -0.258) it is that a child would be dropped out from school within a household. The odds is 0.773 which explains that for each 1 per cent increase in educational expenditure, the odds of dropping out of school by one or more children within a household decrease by 22.7% (1 − 0.773) or by a factor 0.227, adjusting for other variables in the model. Comparing the regression result of the two expenditure related variables, it is observed that MPCE, which is calculated from total annual expenditure of the family (crude measure of family income), remains significant in determining the probability of never enrolment but has no impact in determining the probability of children's dropout from school. While proportion of educational expenditure, although significant in determining the probability of children's dropout from school, is practically insignificant in determining the probability of never enrolment.

Educational level of parents is entered in the model as a continuous covariate measured in terms of completed years of education. A higher level of parental education is expected to lower the chance of probability corresponding to the occurrence of both never enrolment and dropout of school in the model. The Wald chi-squared values for fathers' education is significant with its expected negativity (β coefficient is 0.517 <1) in explaining the probability of never enrolment while, mothers' education remains insignificant here. Mothers' education is found to be statistically significant with expected negative sign (β coefficient is 0.543<1) of β coefficient in explaining the event that some of the children is dropped out of school but insignificant in predicting the

probability of occurrence of the event of never enrolment/enrolment. This suggests that an educated father is more active in taking the decision that his children will be enrolled in school, while an educated mother takes the active part in continuation of her children's education or dropping out of school.

Nature of income has been assumed as dichotomous covariate in our model. It has been assigned with the score 1 for the households with regular pattern of income and 0 if the main income of the family is irregular. The β coefficient of this variable (-1.350) is significant for predicting the probability of dropout. The corresponding odds ratio is 0.259. We would therefore say that the odds of one or some children within a household compared to all enrolled children attending school are decreased by a factor of 0.259 when the respondent's main income is regular compared to those with irregular income pattern, controlling for other variables in the model. It suggests that more the households with regular income pattern, less likely will be the chance of school dropout and vice-versa provided the other covariates of dropping out remains the same.

Opportunity cost of sending the children to school measured in terms of job opportunity of children which is found to be significant in predicting the dropout pattern of the children within a household although it does not have any significant predicting ability towards enrolment decision. The official age (5+ years) of child to be enrolled in the first grade of any primary school in the state acts as a deterrent to child labour. Accordingly, statistical results also support the logic. The regression coefficient has the positive sign (1.476) which indicates that the presence of job opportunity of children will increase the likelihood of dropping out of school. The corresponding odds ratio is 4.374 representing that the problem of dropout of school will be four times more likely to occur if there is job opportunity of children for which the households send their ward/s to work rather than sending them to school.

Statistical findings also point out that the non-financial burden shouldered by the schooling age children (i.e., caring for the siblings and old age members in a family) in a family is significant in predicting the probability of never enrolment while making it insignificant in affecting the dropping out of school. The regression coefficient (2.179) and corresponding odds ratio (8.833) suggests that one unit increase in household dependency ratio will increase the odds of never enrolment by about 9 times compared to all children enrolled in school.

8.2 Concluding Remarks

This section brings the present dissertation to a logical conclusion while outlining certain policy prescriptions towards literacy achievement and educational attainment. The study has attempted an investigative study to determine the factors affecting the variations in educational development in India with a special reference to West Bengal. Based on the findings and conclusions in the previous sections, several implications for further research are subsequently outlined in the closing of the present chapter. The study has been carried out by observing the secondary data at several levels of disaggregation as well as household level survey based data because some of the significant variables found affecting literacy achievement and educational attainment are difficult to be captured within the policy frame at national or state level and even at a district level. Considering such typicality, policy prescription is made against two different perspectives suggesting some general policy measures and certain micro level policy measures.

8.2.1 Overall Policy Prescription

On observation of literacy data, it is found that educational backwardness in India is more serious in the rural section and worse in the case of rural females. A comprehensive policy to bring the Indian female children into the fold of education, especially in the rural areas, thus may be framed separately for a better balanced educational development.

Following the UNDP methodology of Range Equalisation, average progress of literacy achievement between the period commencing 1951 to 2001, shows a large spatial variation in the literacy in the country. Some of the regions have performed poorly, while some others have virtually failed to improve on the achievement levels. Construction of literacy development index

(LDI) supports the view too. Thus it is expected that region specific measures may also induce some improvement in this respect.

By analyzing the decadal variation of literacy rate, it is found that the average literacy progress of the country during the last decade (1991-2001) has occurred because of the better performance of some low literate states. However, aberrations to the rule exist. Notably, Tripura, Uttaranchal and Himachal Pradesh with a comparatively higher literacy rate show a literacy jump higher than the states like Assam, West Bengal, Karnataka and Punjab etc. (Fig-3.2). Thus it may be said that there might be other variables with socio-economic characteristics that have an impact on literacy development and the major task of the study has been to identify those variables and their explanatory power in enhancing the literacy rate especially in the disadvantaged areas of the country. The present study covers one laggard state and has tried to find the causes of such inadequacies. Further research on the leading states may be undertaken in order to find out the enabling and enhancing factors of education.

Growth in the number of educational institutions is commendable. But by reviewing the growth pattern of pupil teacher ratio, it is found that the ratio has not improved since 1950 as it should have been at primary level. On the other hand, at upper primary level, starting with a considerably lower PTR, the ratio has been successfully remaining at around 40:1 level, the official norm. At the same time, a low proportion of female teachers at primary level of education have consistently been observed. Thus policy measures may be taken to recruit more primary teachers giving special emphasis on female reservation. Both the indicators are quite unfavourable towards literacy and educational attainment in the state of West Bengal and accordingly policy at state level may specially be designed to provide favourable educational environment in the state.

Government expenditure on education has been remaining well below the 6% of GDP (Kothari Commission's recommendation) recommendation, thereby witnessing the government's apparent apathy to realise the goal of UEE. It is far below if the comparison is made with most of the developed countries in the world. Considering the international scenario, the present study advocates the increase in public expenditure on education to the recommended 6% of GDP level for the 11th plan period (2007-12) for achieving the MDG and EFA Goals within 2015.

Review of Elementary Education in India in chapter-3 exhibits a severe discrepancy in respect of school availability in regions of India. Only 16.64 % of total number of government schools in the country is stage-integrated schools that have the scope of continuous education up to elementary level (class-I to VIII). West Bengal in this respect remains at the bottom of the list with only 1.2% of total schools in West Bengal having such stage-integrated schooling facility. Moreover, insufficient number of upper primary schools compared to primary schools especially in rural India has been remaining as one of the major problems of school education. In such a situation, as opposed to providing more schools under the format of conventional primary or upper primary or upper primary with secondary and higher secondary schools separately, establishment of schools having the facility of education from Grade-I to at least Grade-VIII (i.e., primary with upper primary schools) especially in remote areas may aid in the completion of eight years of schooling. A comparative study reviewing the educational development of elementary school children in such two opposite provisional scenario may throw light on this matter.

The district level analysis of literacy trend and analysis of school education system has categorically identified the five districts of northern part of West Bengal along with three other districts in the south-western part as the lowly performed districts that need special attention. Gender disadvantage is acute in two specific districts namely, Puruliya and Uttar Dinajpur.

Educational deprivation is also found predominantly among two sections of the population, namely, Scheduled Tribes and the religious minority, the Muslims in the State. The latter being the economically disadvantaged in position and their educational backwardness is identified in Uttar Dinajpur district. The sheer numbers of Muslims (47.86% of total district population), SCs (27.7% of total district population) and STs ((5.1% of total district population) in Uttar Dinajpur district are overwhelming and hence the district's backwardness is represented by their backwardness. Women amongst these socially and economically marginalised groups are special areas of concern

that needs special attention. Additional Government recognized Madrasahs are required to be established to encourage the children of the religious minority to enroll in the schools.

It has been an experience that after the introduction of cooked Mid-day meal scheme in the primary schools and thereafter up to the elementary level in the country, significant improvements in enrolment rate and school attendance rate are being observed. But the system is not being universally operated in a proper manner. Hence the scheme should have to be further strengthened. Block and Panchayet level monitoring committee comprising of local political representatives, guardian representatives and teacher representatives may be constituted along with the government officials to regularly monitor the operation of the scheme in different schools under the blocks/panchayets.

The study at the mouza (revenue village) level for literacy rate of all the inhabited villages in West Bengal finds 843 villages where more than two-third of its 7+ age group population as illiterate. Uttar Dinajpur with 207 villages in this category tops the list followed by Malda (154), Midnapur (123) and Bankura (72). Some of these villages show even show zero literacy rate. It is highly recommended to formulate micro level (village specific) planning for immediate socio-economic transformation of these villages. The present study empirically established the causes of such educational deprivation in one of the districts namely, Uttar Dinajpur. Similar micro studies may be carried out in the other deprived districts too for understanding of the root of the problem.

In general, the secondary data analysis in the state at district and sub-district level shows that holding of no assets, presence of agricultural workers, inaccessibility of upper primary school within a reasonable distance and fewer number of female teachers at primary level, are the main reasons for low performance in literacy development in the state. Apart from institutional deficiency at upper primary level compared to primary level and in the number of female teachers, certain quality based provisions such as overcrowded classrooms in a school (student classroom ratio 60 and above), absence of Girl's Toilet also disturbs the achievement attributes like GER, Dropout Rate, Retention Rate. Accordingly, review and re-strengthening of the state government's popular measure of land reforms may also bring about a change in the occupational pattern of workers from predominantly agricultural labourers to cultivators. Micro level survey based study also supports the need of such policy measure. This may alleviate the poverty level too. Moreover, school education is a subject of state responsibility and accordingly provision of stage integrated schools and engaging more female teacher at state level may impact the overall educational development.

8.2.2 Micro level Policy Intervention

The findings at national and state level study raise the need for micro level planning and open the scope of further area based study in the state. Along with this there are some influencing factors that are difficult to be accounted for at macro level. This section therefore, suggests some micro level intervention strategies that may be undertaken on the basis of empirical findings that are broadly outlined in chapters – 5, 6, and 7 of this dissertation.

Female work participation rate although found to have some negative impact on literacy rate, remain insignificant in most of the blocks (at mouza level analysis based on secondary data) thereby opposing marginally, the secondary analysis. Even at household level survey based study, the variable shows its significant positive impact on female literacy rate on the ground that additional earning of the female members may raise the educational expense deployed for a girl child. Illiterate female workers are more commonly seen in the labour market and are occupationally depending on agricultural work. Thus the recent policy initiative under NREGS may be helpful for a better job opportunity for the females by giving more opportunity to the female workers in the study area.

Empirically, it is found that in comparison to MPCE, expenditure on education is a powerful factor especially in influencing girls' education. Since expenditure decision making is a behavioural indicator with individual decision making playing a detrmining role in the household, it is difficult to impose measures to increase household expenditure on education. Thus, providing cash

incentives to the households who are sending their children to school may be an attractive policy measure for households living below poverty line (BPL). This cash incentive should necessarily be over and above the existing incentives like Free Text Book Grant, Provision of Midday Meal and other similar programmes. Awareness programmes regarding the benefits of education for both the sexes in the targeted area may also have positive outcomes at Gram Panchayet level.

In order to compare the relative magnitude of regression coefficients the Partial and Semi-Partial correlation coefficients between the dependent and explanatory variables separately for each predictor have been calculated. From this it is found that it is the educational level of mothers that impact the overall (PLR) and female literacy rate (FLR). Formal education is hardly in any use for the mothers. Instead of formal education, enhancing the level of mothers' education in informal way may be effective. Especially, Total Literacy campaign (TLC) is suggested in this district as because the success of the programme is quite satisfactory in other areas. More than 70% of targeted learners (5.6 lakhs) were enrolled and among them around 66% learners achieved the National Literacy Mission (NLM) norm since the inception of NLM programme in this district in 1998-99.

The implementation of the Child Labour Prohibition Act be strengthened in the blocks where child labour is evident along with low enrolment and high drop out rates.

On examining the probability of never enrolment and dropout it appears that household level socio-economic factors are less significant in explaining the enrolment/non-enrolment decision compared to the problem of school dropout by the children. This opens the scope of including supply related schooling facilities as additional variables in determining the enrolment decision of the households.

The present research, although supports some of the findings of similar earlier studies, adds some new directions too. In a nutshell, it raises some issues that have to be reconsidered, and provides suggestions in terms of policy measures that may be taken and finally opens the scope for further research in the related issues. In India, the Constitutional commitment of ensuring schooling to every child for at least eight years has remained illusive for the past fifty years and more. International focus and concerns are also to be recognized to reach the MDGs. Parental aspirations are also being raised in the wake of new media for dissemination of information and adoption of new technology based learning methods. Future of millions of children in the country is at stake. In order to promote this basic social need of Right to Education in India and thereby educating the children for better future generation, a sincere effort has been made in the present research with the hope that this may provide some direction for policy measures in an effective way.

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ADDENDUM

Clarifications:

1. The house hold survey has been under taken in two phases. In the *first* phase a complete enumeration (household census) of each and every *household* in the villages was conducted where the *presence* of schooling age (5-14) children have been collected. The procedure facilitated in distinguishing the households categorically into two groups -

   Sub-stratum-I consisting households with having one or more children in the age group 5-14 years old.
   Sub-stratum-II consisting households without having any children in the age group 5-14 years old.

   In second phase, a sample size of 30 households from each village has been drawn randomly from among the Sub-stratum-I. The extensive survey is undertaken in the selected households.

Since the present study is to identify factors determining the literacy and educational attainment, it was felt necessary to interview households having children who were of school going age i.e., 5-14 years, the age group to attend classes between Class 1 to Class 8 defined as the elementary level of school education. The logic was to investigate as to what were the enabling social and economic factors leading the parents to send the children to school or factors compelling them to keep them away from school or from receiving education..

2. The independent variables that were significant at the macro level secondary data based study (district level, block level and mouza level analysis) had had altered significantly in the micro level study. For example, most of the Indian studies (Pandey, 1990; Jeejeebhoy, 1993; Krishnaji, 2001 and Mukhopadhaya, 1994) have established the negative impact of WFPRF on literacy and enrolment. In Chapter-IV of the present thesis, while analyzing the district level and block level regression equation for West Bengal, the variable Female Work Participation Rate (FWPR) was also found to be significant in exerting its negative impact on literacy rate too. But the micro level study, does not find any negative effect of this WFPRF, moreover, it is found to be insignificant in the case of male and total literacy rates. In case of female literacy rate, on other hand, the factor exerts its strong positive effect in enhancing the female literacy rate.

   Again, DEPRATIO (non-worker to total worker ratio within a household) has been included in both macro level in chapter- 5 and micro level in Chapter 6&7. In case of secondary data based study at district and block level, the variable was found to be significant at district level (regression results) and was also found to be significant in 02 blocks in the district. In micro level survey analysis, DEPRATIO has been categorised into two types - non earner/ total earners, which is termed as Economic dependency (ECONDEP) and, household dependency (HHDEP) measured as Ratio of non-earners (old-age and siblings) to schooling age children. In almost all the cases, both the variables were found to be insignificant variables.

   Similar observations can be made for several other variables. Thus it may be said that macro results may not be carried over to micro situations where the ground reality may be different.

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