Chapter-I

Introduction

1.1 Background:

Human capital is considered an inseparable part of the process of economic development. In the post-industrialisation era, when machine replaced manual labour, the quality rather than quantity of labour force emerged an important factor in the production process. The quality of a nation’s human resources is found to have significant bearing on its economic growth and prosperity. Enhancement of the quality of manpower and actualisation of people's potential to maximise their contribution to the growth process through enhanced productivity is termed human resource development or human capital. Improving the quality of human resources in a country entails making people physically healthy and strong, intellectually competent, emotionally motivated, morally honest and committed to the large social will. In the views of Adam Smith, all these acquired and useful abilities of the people of a country are capital. In addition to the innate natural abilities, the acquired knowledge, skills and capabilities of a man are considered human capital by economists like Irving Fisher. Schultz (1961) considers these activities a process of capital accumulation to be drawn on in the process of production in the future and this is more evident in the case of education and training.
Besides these physical and intellectual aspects, motivation, moral commitment, social value judgments and sense of duty are also considered vital components of human capital by sociologists and philosophers. In their view, an individual's ability to translate his dormant potential into reality depends on these factors.

As Marshall puts it, human capital exhibits 'a tendency to increasing returns' in the process of production, while natural resources ultimately end up with decreasing returns. In the views of Paul Streeten (1983), investment in human resources, that is, human capital helps the development process both by raising productivity and lowering reproductivity. A healthy, skilled and well-trained population is more productive and can earn more, and educated and affluent families tend to have smaller families. There are also economists who have not only doubted the usefulness of human resources in economic development, but also questioned its role in raising productivity. Economic theory as such has failed to offer a conclusive analysis establishing a functional relationship between the level of human capital of a country and her economic development. Empirical studies have, however, come up with definite linkages between the two.

With the publication of the Human Development Report (1990) by UNDP, people have been conceived to be both the end as well as the means of economic development, and human development, not human capital, has been central to all.
developmental initiatives. Economic development is essential, but it is not sufficient for human development. Despite economic growth, human misery may increase due to increased poverty, lack of adequate employment for the masses, curtailment of individual freedom and over-exploitation of natural resources. Such a pattern of growth may not be sustainable over a long period of time. The development process itself may be reversed causing further misery to people. The Human Development Report, therefore, lays emphasis on enriching people’s lives. Development efforts could aim at increasing people’s capabilities to lead a full, productive and satisfying life so that economic development becomes meaningful. “High levels of human development promote economic growth, which in turn can promote human development. Conversely, weak human development is likely to result in low growth, further undermining the prospect of future human development” (UNDP, 1996).

According to Mehbub-ul-Haq, the originator of the concept, human development consists in enlarging people’s choice. The foremost wishes of a person are to lead a long and healthy life, acquire knowledge and gain access to resources needed for a decent standard of living. Besides, these choices include political and social freedom, self-respect and guaranteed human rights. Absence of these choices may stand in the way of achieving other opportunities of life. Human development, therefore, is
more than sheer economic attainment. "The defining difference between the economic growth and the human development schools is that the first focuses exclusively on the expansion of only one choice, income, while the second embraces the enlargement of all human choices – whether economic, social, cultural or political" (Mehbub-ul-Haq, 1971) Increased income can widen all other choices, but it is not so in all the cases due to lack of improvement in other capabilities of a person, which are conditioned by his social and political environment. It is evident that human development paradigm includes the entire society, not just the economy. Besides economic factors, political, cultural and social factors are also important for a person’s wellbeing. Possession of wealth may not entitle a person to all the opportunities available around him because of social discrimination and political irrationality.

1.2 The Problem:
Although activities like health care, primary education, adult education, female literacy, etc were given importance in the Five Year Plans of India, these activities were considered social services and ends in themselves. Only in the last few Plans, human resource development has been a high priority in India’s Plan strategy. The relevance of education to economic development has been well articulated by the Government of
India in their policy framework in the following words “Only education can imbue people with the knowledge, sense of purpose and the confidence essential for building a dynamic, vibrant and cohesive nation, capable of providing its people with the wherewithal for creating better, fuller and more purposeful life” (Challenges of Education A Policy Perspective, Government of India, 1985)

History has adequately established that education is a very important factor behind human development. Education enables a person to sharpen and realise his innate abilities and talents. It helps a person to develop the correct attitude towards himself and integrate himself freely and broadly with others in the society, thereby enabling him to be a part of societal development. It may be noted that economic development cannot be sustained without societal development.

Long back, economists while measuring the sources of rapid economic growth in the developed nations with the help of aggregate production functions had identified both formal and informal education as key components of the qualitative factors contributing to it.

In India, after sixty years of independence, 55 years of planning and huge expenditure on education, there is much to be desired. Despite high rate of growth since the 1980s and vocal emphasis on universal primary education, education remains a
neglected area at both policy and implementation levels. No doubt, the achievement of the country as regards literacy rate has been very significant during the last decade. Yet total literacy remains a distant dream, and the deadline by which total literacy is to be achieved is being extended year after year. In India, as per 2001 census, the literacy rate is 65.4%, while the literacy rate among the males and females are 75.85% and 54.16% respectively.

Besides low literacy rate at the national and state levels, disparities across regions, genders and social groups are yet another matter of concern in the education sphere. Female literacy rate has been increasing as in the case of men. But the former is much lower than the latter. Lower social development of women and various other social obstacles in the way of their mobility has aggravated the situation in the country. Low level of expenditure on education, especially primary education in the country, is another important issue. The country as a whole spends much less than the desired 6% of her GDP and primary education receives less than 50% of the allocation for education as a whole while the requirement is 70%.

This has been attributed to the influence of non-economic factors, not economic ones (Tilak, 1995). Amartya Sen attributes the deplorable condition of primary education in India to insufficient funding and terrible management and organisation.
The organisation and management of the primary education system has been neglected, as a result of which goods could not be delivered effectively. Therefore, a desirable delivery mechanism needs to be devised. Even though access to education has widened and enrolment has increased, there has been no concern for what children learn, whether their learning whatsoever is relevant to their needs and if it can empower them and their family and community to improve their economic and living conditions.

India languishes under grinding poverty. 26.1% of her population still continue to live below the poverty line, without access to the basic necessities of life such as safe drinking water, housing and elementary education. The rich among the country’s population account for a larger proportion of consumption expenditure. The gap between the rich and poor has been widening along with planned development. This situation is attributed to the pattern of development in the country. Growth is not accompanied by proportionate increase in employment. The illiterate and poor are not employable due to lack of education, skill and training. Since they cannot be employed in the expanding modern sector, they cling to the shrinking traditional sectors with less productivity and income. These underprivileged sections of the society – the poor, women, and people belonging to the Scheduled Castes (SCs) and Scheduled
Tribes (STs) are voiceless and helpless for which they have been at the receiving end. As observed by Sundaram and Tendulkar (2003), in the 1990s, among all socio economic groups in India, it was only the STs who showed an actual rise in poverty ratio. Mukhopadhaya and Rajaraman (2007) found that among the social groups, the highest incremental unemployment in the early 21st century was faced by the Adivasis.

The proportion of SC and ST population taken together in the state of Orissa is the highest (38%) in the country and Orissa has also the dubious distinction of having the highest (46.1%) percentage of poor below the poverty line among the States of the country.

Tribals, in general, are poor. The large majority of them still remain ignorant, illiterate and gullible. There is need for an assessment of their deprivation of the basic needs. Is it that education in its present form has not made any impact on the tribals so that they remain beyond the pale of the development process? It is worth examining how education has increased their wealth, income, basic capabilities and opportunities for human development. Do they enjoy equitable access to opportunities or face political, social and legal barriers? What has been the impact of education on people’s economic and human development in the tribal areas of the country? These are some knotty problems,
which call for the attention of the researchers, policy makers and administrators

Of the different levels of schooling, primary education is considered the cornerstone in the social and economic development of a country. Elementary education develops reasoning skill of an individual and brings about changes in his beliefs and values as a result of which he develops correct attitude towards himself and society of which he is an integral part. It raises the level of his tolerance, self-confidence, social and civic responsibility. This implicit knowledge infuses in him the necessary capability, strength and resilience to respond to changing situations. As a result of this, he shows modernity in outlook towards social and political issues, work, savings, etc. These non-cognitive effects of primary education help production and economic activity.

The benefits from primary education are much more from the cognitive skills it imparts. It develops literacy and problem-solving ability in an individual. It helps people acquire and evaluate information for taking rational decisions. Primary education enables an individual to think critically, discipline himself and work towards achievement of his goal. Needless to say, primary education is the gateway to higher levels of education. With primary education, an individual should be able to overcome poverty. Especially, girls' education has favourable
impact on the health and education of the members of the family

1.3 Review of Literature:

Education is presumed to be a cornerstone of social development and a principal means of improving the welfare of individuals. It promotes economic growth and equality in income distribution, and ameliorates poverty and consequential health and nutritional problems (World Bank, 1990, 1993). Education, it is contended, reduces inequality, improves the quality of life and helps increase income levels.

The enabling impact of education on country’s development was captured in human capital theory. Having its basis on neoclassical school of thought (Solow Model, 1956) centering on individual behaviour, investment in education was considered desirable if the expected benefits exceeded the cost. This approach was extended to the macro-economic policy making decisions. The underlying idea is that investment in human capital increases productivity and causes rapid economic growth. Initially, the human capital studies focused on investment in education. The impact of education on economic development was analysed in terms of returns to the individual and society from investment in education. In this analysis, two different approaches can be observed (Sobel, 1978, Foster, 1982).
In the relatively early approach of Harbison and Myers (1964), the role of education in economic development was brought out by tracing the correlation between the educational measures and indices of development. In this approach, contribution of education to economic development was measured as the residue unexplained quality after allowing for what could be explained by the labour and capital inputs in production (Denison, 1962). Empirical studies based on this growth accounting approach revealed that specialised technical and vocational education was more effective in bringing about economic development than primary and secondary education. But this method was simplistic as it failed to trace the direction of causality. It is a fact that the more developed a country, the larger is her educational expenditure. But it is not enough to attribute causality. Further, the underlying suggestion of these findings favoured expansion in tertiary and specialist education. But such a policy prescription for a poor country with mass illiteracy led to wrong manpower planning, lopsided development, unemployment, and poverty.

The other approach of human capital theory takes both internal and external efficiency of educational investment into account. Therefore, it assesses the developmental impact of education in terms of returns to investment in education. This approach advocated that investment in education should yield
more than alternative investments and social rate of return on all types of educational investment should be equalised

Psacharopoulos (1973 and 1981) has made a good survey of studies on returns to educational investment. These studies have come up with high estimates of both social and private returns to education at all levels. Further, he asserts, the yield from primary education is much higher than that from higher education, and general education showed better return than technical and vocational training. It was further found that returns to educational investment in the less developed countries were more than that in the more developed countries.

The rates of return in this approach have been measured in the simple neo-classical framework and therefore, run the risk of misspecification of the real world situation. In the first place, the calculation of social rate of return of education was very difficult in view of the range of the associated externalities, which were essentially non-pecuniary and non-quantifiable. The quantification of non-pecuniary benefits of education depended upon value judgment.

Empirical research has established close association between education and productivity reflected by earnings not only in the organised sector, but also in the case of farmers (Choudhuri, 1974) and entrepreneurs (Koh, 1977).
researchers, Blaug (1988) raised doubts about the estimates of rate of return on investment in education.

The screening hypothesis and the related theory of credentialism contend that when information is inadequate, education helps employers in selecting workers, but not so much in raising productivity.

The underlying assumption of the rate of return argument is that wages are a function of productivity – a neoclassical idea. This may be possible if the labour market is free and functions in the manner described in the neo-classical theory. But the nature and functioning of the real world labour market is very complicated. Here, earnings of the worker depend, besides education, on the worker’s ability, his experience, structure of the labour market, institutional factors and other measurable variables. Further, earnings differential at a particular point of time may be due to the presence of scarcity rent and as such, may be a very misleading indicator (Phelps and Brown, 1977, Dore, 1976, Arrow, 1973, and Brown, 1976). These estimates have failed in capturing the benefits arising from education caused by technological improvement, small family, and so on (Bery, 1980, Bownan, 1980). So, there seems to be nothing sanguine about these estimates of rates of return to investment in education.

To overcome some of these defects of the rate of return studies, particularly the bias arising out of omitted variables like
ability, quality of schooling, social linkages, characteristics of residential area, etc., attempts have been made by Behrman and Birdsall (1983) and Behrman and Wolfe (1984). Following Denison (1974), Blaug (1976) has estimated the earnings due to ability at one-third of the earnings measured in regression excluding ability and the remainder of earning is attributed to education. To separate the earnings purely due to productivity of education from that due to access to employment through credentials, Boissiere et al. (1985) have conducted studies based on Kenyan data. For a measure of reasoning ability, they have used Raven’s progressive matrices and for cognitive skills, the literacy and numeracy scores.

In the analysis of correlation between education and economic growth in the recent years, two distinct approaches can be discerned (Siranese and van Reenen (2003): (1) Augmented Solow model and (2) New Endogenous Growth theories.

In the extended Solow model, human capital is included in the production function as a distinctly separate extra factor (Mankiw and others, 1992) in the traditional growth model. In the context of macro-economy, it is capable of handling human capital externalities. In this model, the impact of education on growth is assessed by considering human capital as an exogenous factor. The above studies show that countries investing more in human capital experienced significantly higher rates of growth, though human capital like physical capital was subject to diminishing
returns. This model fails to yield unbound growth in the long run. As per this model, levels of income in a country rise with factor accumulation, but it is inadequate to bring about long run growth. Long run growth being a function of technological progress, human capital accumulation may have only a short term impact on the rate of growth. However, the model predicts that it may lead to very high rate of growth per capita in the medium term due to secondary level enrolment expansion induced human capital. It may be noted that in terms of growth theory medium term extends over decades and as such, the role of education cannot be minimized. This model is fairly flexible and can be adapted for alternative specification according to available data.

The central role of education in the growth process was highlighted with the emergence of endogenous growth and augmented Solow models since the 1980s (Lucas 1988, Romer (1986, 1990), Eliasson et al (1990), Kim & Lau (1996), Barro (1991, 1995, 1997). The key idea of these theories is that technology is very crucial in causing growth and determining growth rate, and technology, which was earlier considered exogenous, is in fact, endogenous. Technology, in its turn, depends, besides other factors, primarily on education and knowledge (Siranese and van Reenen, 2003).

The new growth theories highlighted that technological progress is internally determined by the variables of the model.
Long-run growth in a country can be affected by government policy, but not by exogenous technological change. These models view that over and above the static effects, human capital has additional effects on the level of output in a country.

Lucas (1988), by including human capital as a factor in his production function, underlines its central role in the development process. He holds that human capital, in turn, depends on the average educational attainment and quality of educational institutions.

With the availability of internationally comparable data on income and price levels (Summers and Heston, 1988), studies have been conducted to explain wealth differences between countries, which lend qualitative support to the neo-classical growth model of Solow (Barro and Sala-i-Martin, 1995). A modified Solow model (Mankiw, Romer and Weil, 1992), in which capital includes human capital, the cross-country wealth differences could be accounted for.

Romer (1990), Grossman and Helpman (1991) have come up with growth models which focus on technological progress, research and development. In their view, technological progress in an economy is the result of domestic research and innovations. Profit maximizing entrepreneurs adopt innovations in order to raise productivity, which, in their turn, bring about long run economic growth through the existing stock of human capital. But Lucas

It is likely that a developing country may procure improved technology by way of transfer from the innovating country. But application of the new technology in the receiving country takes place provided there is an educated and skilled labour force. It is possible that a technologically deficient country may catch up with an advanced country by raising productivity if she has a large stock of human capital. This view has been confirmed by Lucas (1990) who attributes slow flow of physical capital from the advanced to the backward countries to the non-availability of adequate stock of complementary human capital.

Mankiw, Romer and Weil (1992) show that countries investing more in human capital experience significantly higher rate of growth, though human capital is subject to diminishing returns as physical capital. Kim and Lau (1996), in their empirical test of economic growth in East Asia, find that human capital and physical capital explain the entire growth performance in these countries and technical progress contribute virtually nothing to the growth process. It may be, they conclude, that new knowledge generated by investment in research and development may cause...
sustainable development as far as it complements higher education, which facilitates dissemination of knowledge.

Micro-level studies also lend support to the correlation between education and higher productivity as reflected by larger earnings (Ashenfelter and Rouse, 1996, 1998, Card, 1998) Arias and McMahon (1998), analysing the earnings at different levels of education over time observe education pushing up the rates of return and they predict a very high rate of growth per capita in the medium term. This growth has been attributed to secondary level enrolment-expansion-induced human capital.

The idea of conditional convergence has been developed basing on Baumol’s and Romer’s empirical studies. Mankiw, Romer and Weil (1992) while testing for conditional convergence have concluded that the steady state of a country is determined by her investment, population growth rate and human capital stock, and there is no common steady state for all the countries. With passage of time, there has been many a study to test this theory of convergence, which has brought in the significance of human capital, particularly education in the process of economic development.

In 1995, Islam used panel estimation method to explain how changes in human capital and income per capita were related. Human capital was measured in terms of average years of schooling of the population aged more than 25 years. He came up
with higher speed of conditional convergence than those obtained by Mankiw and others (1992)

Convergence hypothesis of the neo-classical growth theory implies that the gap between the rich and poor countries tend to disappear over time as the latter experience faster growth than the former. Those like Mankiw and others (1992), Barro and Sala-i-Martin (1995) and Barro (2001), who have observed convergence in their empirical studies contend that poor countries experience faster economic growth only when the country's human capital stock is more than the required minimum adequate level, otherwise the gap between the rich and poor countries would widen.

Bassanini and Scarpeta (2001) used a new pooled-mean group consistent estimator to the data for OECD countries for panel estimation. In their estimation, they allowed for different speeds of convergence for various countries and used annual data of the variables in the regression. They have taken resort to extrapolation as data were available at 5-year intervals. Their empirical study reveals that one additional year of education raises output per capita by six per cent. They assert that this is in conformity with the findings at micro level. Doubts have been expressed by others about the findings of the study, which predicts a very high speed of convergence (about 15% per year), probably due to use of annual data in panel estimation.
With a more refined panel estimation method, Barro (1997) took up study for 100 countries for the period 1960-1990 to examine the relation between schooling and GDP growth rate. He used three equations for the purpose in which growth rate of income per capita was the dependent variable and there were a number of explanatory variables of which male schooling was one. Barro took care of the endogeneity problem by estimating a model of three simultaneous equations and using instrumental variables.

His findings show that secondary and higher level schooling of the males aged 25 years and more has very favourable impact on the growth of all the countries taken together. Surprisingly, he has not found female education helping the growth process. Quantitatively speaking, extra one year of schooling at the higher level raises the growth rate by 1.2% per year. However, when only the OECD countries are considered, increased educational spending does not seem to raise growth rates both in the short run and long run.

Mauro (2000), and Bils and Klenow (2000) have carried out studies to find the impact of investment in schooling on economic growth and have traced a positive relation between the two. The former has tested different models in the context of different regions of Italy. Bils and Klenow have shown that not only the actual accumulated schooling years of a person, but also those of
their elders have favourable impact on the growth rate of an economy.

In the empirical growth model advanced by Benhabib and Spiegel (1994), it has been claimed that advancement in education and improvement in new capital formation through import would be possible subsequently due to human capital externalities. Reasoning in the same way, it may be noted that human capital facilitates growth in two ways. First, human capital accelerates domestic innovation. Second, the speed of adoption of imported technology is heightened by the stock of human capital. In their subsequent study (2003), they pointed out that accelerated growth would be possible if a minimum level of human capital is ensured in the country. They have used a very generalized technology diffusion model in which specification of total factor productivity is non-linear.

Pissarides’s (2000) study relating to India indicates significant contribution of human capital to industrial production. It is estimated that one year of additional schooling raises industrial output by almost 30%.

Some scholars have quantified the impact of education on economic growth. It is presumed that the estimates in regression analysis capture the magnitude of the impact. In their review of the empirical studies in this direction, Sianesi and Reenen (2003) find that the magnitude of impacts is not uniform. Moreover, they...
question the correctness of regression co-efficient when the
elasticity of human capital does not represent its share in factor
income of the country

For the calculation of the share of human capital in total
labour income of a country, back-of-the-envelope calculation
method has been adopted in some cases Mankiw and others
(1992) estimate the return to education in the US at about 50 to
70 per cent of labour income under the presumption that minimum
wage measures the return to labour without education and it
ranges from 30 to 50 per cent of average wage income in the US
But it may be noted in this context that the minimum wage is
more and more enforced by default in the developing countries for
which a correct measure of effective minimum wage is difficult in
these countries Pritchett (2001) has used distribution of income in
the measurement of return to human capital Overall estimates put
the contribution of human capital at 1/3rd of labour income of a
country

In the endogenous growth models, education facilitates
economic growth not only through the production effect of human
capital, but also through its spillover effect But viewing the
spillover effect of education generally as returns to education is
not well-defined and is not a consistent measure, for which doubts
cloud the relation between education and economic development
(Pritchett, 2001)
Jones (1995) is critical of any empirical estimate of the impact of education on economic growth on the ground that any functional relation between stationary variables and non-stationary variables without the assumption of co-integration between them is biased. Time-series per capita income growth rate is stationary as evidenced from the US and OECD countries’ experience. But the education level parameters, such as, year of schooling and number of technical personnel are non-stationary. Therefore, any empirical testing of the impact of education on economic growth has been called into question. Such a measure will be dependable if education exhibits a permanent effect on the growth rate.

After theoretically establishing a strong correlation between education and rate of economic growth, Sala-i-Martin (2002), Easterly (2001) and Pritchett (2001) empirically found a weak relation between the two across countries. Temple (2001) attributes this weak correlation in cross-country data to measurement error and varying influence of other factors in different countries. They find educational growth rate, level of education, gap between male and female education to be weakly correlated with economic growth. They find that the health component of human capital and institutional factors like free market, rule of law, etc. are very important for economic growth compared to the educational aspects.
Researchers like Bils and Klenow (2000), while accepting the correlation between education and growth have described the causal relation running from growth to education on the basis of the findings of a calibrated micro-foundation model. Since education and economic development serve as each other's cause and effect, the total impact of education on economic growth cannot be explained by the observed measure of growth.

Individual case studies have been taken up to test the correlation. Most of the studies are based on cross-sectional data. But the findings of cross-sectional data are not very exact as the rates of return to education and quality of education differ substantially across the countries. There are very few studies based on the time-series data for a single country. One such study was conducted by Jenkins (1995) for the UK using time-series data from 1971 to 1992. No general conclusion can be drawn from the study based on limited size of data. Other single country studies relate to India, Egypt, Tanzania, and Chile.

Serge Coulmbe, Jean Francois Tremblay, and Sylvie Marchand (2004), in their study for OECD countries have tried to assess the impact of literacy score on economic growth. They have adopted conditional convergence growth approach by using panel estimation technique. To overcome the difficulties arising from heteroscedasticity in the case of panel estimation, alternative estimation technique has been used by these...
researchers. In their analysis, they used average test score of the population aged between 17 and 25 as the measure of human capital investment. On the basis of their findings, they concluded that investment in literacy had very significant impact in the long run - three times the impact of investment in physical capital. They also found 1% higher literacy in a country enabled her to achieve 2.5% and 1.5% higher labour productivity and GDP per capita respectively on an average in the steady state. Considering the impact of educational attainment of males and females separately, they have come up with a surprising result that investment in women's education has a much stronger effect on subsequent growth than investment in men's education. In this estimation, of course, the regression is controlled for fertility rate and the relative women labour market participation rate.

Relationship between literacy and per capital GDP growth, they observe, is positive and significant, but no causal relationship can be ascertained. In an open economy, education helps the highly educated increase their productivity through learning by doing.

1.3.1. Quality of Education:

In the case of OECD countries, no significant correlation between investment in education and growth rate could be traced. Panel data method and use of instrumental variables rectify some of the biases in estimation, but virtually to no effect. Therefore, researchers turn to the quality of data used. Attempts have been
made to normalize the errors arising out of varying educational systems across countries and consequential measurement errors.

One such attempt was made by Hanushek and Kimko (2000). They incorporated the quality of labour as measured from the scores of the students in an international assessment of science and mathematics. They calculated measures of labour force quality for 31 countries over the period 1960-1990 and ran regression for these countries. They had considered many more variables other than the quality of education. Their estimation reveals a positive, but insignificant impact of quantity of schooling on growth while the quality of education had a very highly significant and positive impact. They have pointed out that though the quality of schooling was important, nothing can be said about the impact of the amount of expenditure on education on the country’s development. It may be noted here that the inclusion of both the quantity and quality of schooling as explanatory variables in the same regression may cause multi-collinearity problem, when it is observed that the quality of education is usually poor in the country with lesser schooling.

Barro (2001) also made a study to assess the impact of education on economic growth by using direct measures of the quality of schooling in a country. He used the same data as Hanushek and Kimko (2000) and conducted panel regression as in his study of 1997. In this regression, data for the quality of
schooling differed for each cross-country unit, but remained unchanged for the sub periods of 5 or 10 years. He had the same explanatory variables as in the study of 1997, in which per capita economic growth rate was the dependent variable. He found that the quality of education was very strongly significant compared to the quantity in explaining a country’s rate of economic growth.

In their paper, de la Fuente and Domenech (2000, revised in 2002) have tried to improve the quality of the schooling data used in panel estimation method by rectifying the inconsistencies in time series data. With the help of improved quality of data, they have come up with a high measure of elasticity of output with respect to average years of schooling.

1.3.2. Female Education:

The above literature survey is concerned with the impact of educational level of the population as a whole on economic growth. It is of interest to see how women’s education is inter-related with economic growth. A study by Dollar and Gatti (1999) shows that women’s education may contribute to economic growth provided they are given opportunity to get employed and earn income. They have traced a convex functional relationship between women’s education and income. It implies that when the developing country is developing and extremely poor, education has little impact on the developments, but, in a middle-income country, women’s
education promotes growth when the country becomes a
developed one. This type of non-linear relationship between
women's education and economic development has been reflected
in the studies of Benavot (1989), Schultz (1995), Hill and King
reported that higher level education of women had a weak impact
on economic development because the expertise of the well
educated women was not fully utilised in those countries. These
studies have taken resort to panel estimation technique. In the
absence of continuous annual data, measurement by panel
estimation technique is likely to yield higher coefficient, that is,
greater impact. Lorgelly (2000) and Knowles, Lorgelly and Owen,
(2002) extend Solow's augmented model and find that decrease in
the gap between the educational attainment of the male and
female causes faster economic development.

Theoretical models have been provided by Galor and Weil
(1996) to relate fertility and economic development in terms of
wage and educational gap across genders. By using an overlapping
generation models, the researchers in both the cases concluded
that gender gap in education adversely affects economic growth of
the country.
1.3.3. Other Explanations:

There are other explanations emerging from history, sociology, psychology and politics for the positive correlation between education and development. Looking at the issue from the angle of economic history of the nations, doubts have been raised by some (Feinberg, 1975, Aran et al., 1972, Colclough, 1982) But in a modern technological society, labour force needs to adapt itself to the changing situation by the process of learning and training. The more educated can adopt economic and technological changes more readily.

Sociologists contend that changes in social values, people's faith and their aptitude can be brought about through education. Education can enlighten people and inculcate in them a scientific attitude, conducive to development (McClelland, 1961, Holsinger, 1974).

The causal relation between education and economic
development met with strong challenges from the left as well as
right radicals. In their view, education does not raise productivity,
it is merely a screen or sieve to select candidates for employment.
People born with a silver spoon in their mouth grab lucrative
positions, and as a result, the old class structure reappears, may
be in another form. This class division destroys social cohesion and
cause dislocation in the development programme, if the market
sends wrong pricing signals. The moderates among the radicals
advocate not general education, but more practical education like
technical, vocational and even non-formal education. But in such
an approach, all educational plans have failed and efforts to rectify
these failures have been inadequate. It may be noted that pricing
of education through market forces may send a wrong signal,
which is likely to cause dislocation in the labour market with
surpluses and deficits in different pockets. Practical education also
has not yielded any encouraging result in countries following such
a strategy (Coombs and Ahmed, 1974).

The fact remains that economies, such as, Japan and South
Korea, which committed themselves to education and training
made great strides in both human development and economic
growth. Education has remained tremendously important in all the
countries of the world and a lot of money is invested in education
Particularly in the developing countries, a large chunk of
government money is spent in providing education to millions of people

1.3.4. Primary Education:

The discussion in preceding paragraphs adequately establishes the fact that education causes and helps economic growth. However, developing countries earmark a very small proportion of their GDP for education. In India, the situation is in no way better than that in other countries as the expenditure on education continues to be below the desired level even after more than 55 years of developmental planning. The intra-sectoral allocation and expenditure on education is determined by non-economic considerations, rather than economic ones. A similar situation is obtained in almost all the states of the country irrespective of their levels of development. For sound educational strategy, it becomes imperative not only to allocate funds to the educational sector but also to earmark funds for different types and levels of education.

But the level-specific questions in education have been addressed by only a few researchers. It is a well-known observation in labour economics that the impact of different levels of schooling on economic development is not the same. A good survey of the literature on rates of return to different levels of education has been made by Psacharopoulos and Patrinos.
On the basis of comparisons across countries, it is contended that the rates of return to education are different for different levels of education. One way of measurement of the effect of different levels of education is the rates of return to educational levels, i.e., years of schooling.

This may be true at the micro-level, when the effect of education is measured by what difference it makes to the individual’s wage. But noting the externalities of education like increase in social welfare, technological development, etc., the impact of education at the macro-level can be captured from how it affects economic growth in the country.

Level specific effects of education have also been assessed in the endogenous growth framework. The underlying idea behind this measurement is that the individual benefits from primary education by way of improvement in basic cognitive skills, which raises his contribution to the production of final goods, but higher-level education enables him to adopt new technology and boost the knowledge-base of the economy. In the augmented Solow model, different levels of education--primary, secondary and technical schooling--are treated as separate inputs in the production function and their impact is captured accordingly.

Even though in the standard approach the aggregate of human capital is considered, there have also been level-specific
studies for the impact assessment of education in order to set up norms for intra-sectoral allocation of funds and policy orientation. In order to maximize the returns from education, the sector bestowing higher benefit on the society needs to be the larger recipient of funds. Considering different types and levels of education, it is contended by researchers that the private rate of return is the maximum in the case of primary education and when social return is taken into account, the rate of return of primary education works out still higher as it confers on the society both cognitive and non-cognitive benefits.

Temple (1999) found different impacts of varying levels of education on growth in different countries.

Pritchett (2001), in his analysis of cross-national data, did not find any association between educational level of the labour force and the rate of growth of output per worker. He has advanced three possible reasons for this wider variation across countries:

1. Mismanagement by government has led to channelisation of human capital to privately remunerative and socially unproductive activities.
2. Excess supply of education capital compared to demand has caused rapid decline in returns to schooling.
3. Deterioration in school system so that schooling does not add to skill.

Jones (1995) has questioned the use of regression with growth rate on the level of education as mis-specified and complicated on account of the way in which parameter restrictions are imposed. In these models, growth rates almost do not change and remain stationary, but the education level has been constantly increasing for which relationship between the two cannot be stable. The problem can be solved only when non-stationary education level is co-integrated with non-stationary level of income.

While assessing the impact of educational attainment with a set of control variables for a large number of countries, Barro and Sala-i-Martine (1995) have distinguished between different variables. They found that the number of years of male and female primary education had no significant effect on economic growth. A possible explanation for this puzzling finding is the collinearity of education variables considered (Klasen, 2002).
Subsequently, in his work of 2001, Barro has again taken up the issue for investigation. He observes that it is not the 'quantity' but the 'quality' of schooling which matters in the case of primary education. But these studies have failed to obtain any clear-cut view about the impact of primary education on growth, though education in general is found to have impact on growth.

Gemmel (1996) distinguished between different levels of education—primary, secondary, and tertiary—in order to assess the impact of education level for three groups of countries, advanced, developed, and developing. His findings indicated that the impact of primary and secondary education was very much pronounced in the case of developing countries, while tertiary level education had significant impact in the advanced OECD countries.

In their cross-country regression to examine the interlinkage between education and growth, Petrakis and Stamatakis (2002) used a smaller sample. Their findings confirmed the results of Gemmel. They also found that primary education had greater impact on growth in the developing countries compared to the developed ones and the effect of higher education was more significant in the developed countries. In other words, the impact of education level on growth depends on the stage of development the country is in.
Looking at the issue from a different angle, Papageorgiou (2003) conducted an empirical investigation into the impact of primary and post-primary education on economic growth. He found that primary education is very helpful to the production of final goods, while post-primary education causes furtherance of knowledge by facilitating adoption of innovation and new technology. However, these conclusions appear to be weak in the context of subsections of the sample.

In his investigation of the impact of different levels of education on economic growth, Loening (2005) has taken up the case of Guatemala. His empirical results traced well-pronounced endogeneity problem in the case of primary education. He found that schooling and economic development were positively and very highly correlated in the case of Guatemala and it was more so as regards secondary and tertiary education. Considering long run economic growth, he found primary education more effective than secondary and tertiary education. This is in line with the observation of de Ferranti and others (2002) that a critical threshold level of primary education is an absolute necessity for basic skill requirement and adoption of new technology. After the base is laid down for the grounding of new technology, higher educational level will smoothen the process for the creation of more specialized skills.
Based on micro-economic research, it is contended that primary education helps increase income of the individuals. An estimate by Psacharopoulos & Pattnos (2002) shows that global private return on primary education is as much as 27% on an average.

Realising that primary education inculcates a sense of responsibility in an individual, Godoy and Contreras (2001) have, through their research study, indicated that it contributes to better natural resource management like conservation of tropical rain forest, prevention of soil erosion and environment consciousness.

Porter (1998) and Hanushek and Kimko (2000) contended that primary education trains people how to learn and adopt new technology and innovation to their advantage. Therefore, rapid spread of primary education facilitates faster diffusion of knowledge and information across the economy, as a result of which workers' productivity increases in both the traditional and modern sectors.

Research has postulated that economic development on a sustained basis cannot be achieved with low levels of education. It is evident from the findings of Azariadis and Drazen (1990) that a country is likely to be trapped in a low returns equilibrium if her average level of human capital accumulation falls short of six years of schooling. The country's growth path can usher in a
higher steady state macro economic growth trajectory after her level of human capital accumulation rises above the threshold of six years of schooling

Studies in several countries have shown that primary education infuses modern and democratic outlook in an individual. Barro’s (1999) findings based on a study of more than hundred countries covering the period 1960 – 1995 suggest that propensity for democracy is positively related with primary education of both males and females and reduces the gap between their attainment.

Primary education plays a significant role in reducing poverty and income inequality in a country. The poor in the society are usually illiterate and therefore, do not have access to opportunities of employment arising in course of the development process. Primary education plays a catalytic role in this context by qualifying these vulnerable groups – girls, ethnic minorities, orphans, people with disabilities, SCs and STs and people living in rural areas to participate in production more effectively and thereby contribute to economic development. As pointed out by O’ Connell and Birdsall (2001), primary education is “the people’s asset.”

On the basis of an international adult literacy survey, Birdsall & Londono (1998) have indicated a high correlation between income inequality and inequality in the distribution of
literacy across countries. They suggest that equitable distribution of education in a country brings about faster economic growth and causes income inequality to decline. They point out that unequal distribution of education affects economic growth adversely and very strongly. Expanding primary education is a “win-win” strategy for government as it simultaneously promotes income equality and economic growth.

The study of Self and Grabowski (2003) sought to determine the impact of different levels of education on economic growth in Japan. For the purpose, they considered the pre- and post-World War-II period. They took primary, secondary, tertiary and vocational levels of education into consideration and found that while primary education was causal to growth in both pre- and post-War period in Japan, secondary education was so only in the post-War period and tertiary sector impacted growth indirectly only in the post-war period. In their study, vocational education did not appear to have any effect on growth in either period.

In his effort to test the endogenous growth and augmented Solow models, McMahon (1999) analysed empirically the data for the East Asian countries by applying production function to educational externalities. He found that secondary education would cause higher rates of investment and higher per capita
income growth only when universal primary education was achieved.

The impact of primary education is quite extensive and far-reaching. In the views of Amartya Sen, primary education enlarges human capabilities and enables a person to reflect, make better choices, articulate his views and enjoy a better life. It has also been said that primary education would help the achievement of the millennium development goals.

Primary education for girls is particularly significant in reducing fertility (Smith & Haddad, 2000, World Bank, 2001) and promoting health and nutrition awareness among people (Gregson, Waddell and Chandiwana, 2001, Kelly 2000, Vandemoortele & Delamonica, 2000).

Lau and others (1991) have attempted an estimate of the effects of the primary and Secondary Schooling for five regions. Their findings reveal that primary education has positive and significant effects only in East-Asia, negative effects in Africa, Middle East and North Africa, and insignificant effects in South Asia and Latin America.

member by way of sharing of information. Drawing on data from Bangladesh and India, Kaushik, James Subramanian (2000) have shown that intra household externality from literacy is quite substantial.

It is imperative now to assess the factors in the way of achievement of universal primary education, particularly in the tribal areas where literacy level remains discouragingly low. Is it because schools are not available or because all the persons who have opportunity for education do not avail of it or because all those who enroll themselves at the primary level do not remain in the schools so as to complete the minimum years of schooling?

1.4 Objectives of the Study:

Of the different levels of schooling, primary education is considered the cornerstone in social and economic development of a country. Elementary education develops greater reasoning skill in an individual and brings about changes in his beliefs and values for which he develops correct attitude towards his self and the society of which he is an integral part. It raises his tolerance, self-confidence and level of social and civic responsibility. Knowledge acquired by him lends him the necessary strength, capability and resilience to respond to the changing situations. As a result, he develops modern outlook towards different issues.
affecting life. These non-cognitive effects of primary education help production and economic activity.

The benefit from primary education is much more than the cognitive skills it imparts. It develops literacy, numeracy and problem-solving ability in an individual. It helps people acquire and evaluate information for decision-making.

With primary education, an individual would be able to overcome poverty. Girls' education in particular has a favourable impact on health and education over generations.

To be specific, the objectives of the study are:
1. To assess the impact of education of the head of the household on the education of his children,
2. To trace the correlation between education of a person and his income level,
3. To examine how family education promotes family's health and hygiene and
4. To analyze the impact of education on the family's general awareness in the case of tribal households.

1.5 Hypotheses to be Tested:

1. Education of the head of the household favourably affects the education of children.
2. Mother's education is more effective than father's in the context of children's education.
3. The impact of education on family income is less in the case of poorer families than the richer ones.
4 Education of all the family members, not that of the head of the household and his spouse only, is important for family's health care and hygiene level

5 General awareness level, not merely the level of education, is important for human well-being

1.6 Methodology:

The objective of the study is to measure the levels of various aspects of life of the tribal respondents for which indices were developed. These indices have been constructed by using a variant of the method used by the UNDP for the construction of Human Development Index (HDI).

In a study at the national level, the ideal value for each indicator is available at the macro-level. Alternatively, the best at the international level can also be taken as the norm. So will be the case with regard to the minimum value. But, in a local study, the national or international level norms will not be relevant as the typical circumstances determine what is feasible at the most. In view of this, the ideal parameters were fixed on the basis of what has been possible at the maximum under such circumstances.

It was found that the maximum a sample family has spent on hygiene is 4.78 per cent of its total income. Considering the
situation in the state, the maximum or ideal value for the estimation of this parameter was fixed at 5 per cent.

2. A sample household was found to have spent 23 percent of the family income on health. It is a fact that at times one has to spend a large chunk of income for the treatment of patients suffering from chronic diseases. Keeping this in view, the maximum for the parameter was fixed at 30 per cent for the purpose of estimation.

Proceeding in the manner described above, index numbers were estimated for each aspect of human wellbeing as discussed in the study, namely, hygiene, health, and general awareness. Finally, a simple average of these indices was calculated to derive the overall index of wellbeing.

Correlation and regression techniques were employed when necessary to examine the impact of education of the head of the household and that of his/her spouse on the family’s educational achievement, hygiene and health concern, and general awareness. Statistical and econometric techniques were employed whenever required.

1.7 Data:

It is an empirical study to assess the impact of primary education on the income, hygiene and health consciousness and general awareness of tribals. Therefore, a survey was conducted in
two tribal districts of Orissa, namely, Mayurbhanj and Rayagada by canvassing questionnaires among the sample population. The respondents were asked probing questions to elicit the required information. The study, therefore, is essentially based on primary data.

Secondary data were also necessary in connection with the study for the background and overall appraisal of the situation. These were collected from official records, non-official documents and various research works, both published and unpublished.

The sources of secondary data are:
1. UN Publications
2. World Bank Publications
4. Census Reports
5. Survey Reports of NSSO
6. Official records of the Government of Orissa
7. Non-official documents
8. Research work, both published and unpublished
9. Publication and Records of SCSTRTI

For primary data, survey method has been taken resort to. Two districts, namely, Mayurbhanj and Rayagada with high concentration of ST population were selected for the sample survey. In these two districts, the respective percentages of the STs in the district population are 57.87 and 56.04, next only to
Malkangiri district in the State where the STs constitute 58.36 per cent of population. The choice of these districts is also significant as they are from two Revenue Divisions and represent the north and south regions of the State. Mayurbhanj is relatively advanced compared to Rayagada. Moreover, Kashipur block in Rayagada district is known for abysmal poverty, backwardness and frequent outbreak of epidemics. The findings of the study would, thus, give a picture of the gap in the conditions of the tribals in a backward and in a relatively better-off area.

District being a vast area and difficult to handle, one Community Development block in each of the two selected districts was sampled randomly. The sampled block in Mayurbhanj district was Gopabandhunagar and that in Rayagada district was Kashipur. In the next stage, on random basis 4 gram panchayats were selected in each block for household survey and in each panchayat 50 households were sampled to be contacted for intensive survey by canvassing questionnaires. It was originally envisaged that the sample size in each district would be 200 and the total sample would add up to 400. But, in the course of survey information could be collected for 231 households in Mayurbhanj district for which total sample size increased to 431 households.

The set of questionnaires embodied questions relating to the economic condition, educational status, health and hygiene.
consciousness and general awareness of the respondent households. To be specific, the questions were designed to gather the following pieces of information:

1. Educational attainment of the family members and the support given to the children to pursue studies.

2. The health and hygiene concerns of the family. Here information has been collected about the source of drinking water of the family, distance and location of kitchen and cowshed vis-à-vis living place, use of mosquito repellants, participation in immunisation programme, maternal and child morbidity, expenditure on detergents, health expenditure, etc.

3. General awareness of the head of the family and his family members.

To know about the respondent’s level of involvement with the social, economic and political environment he lives in, his exposure, and ability to utilise his latent abilities, questions were asked to find out his sources of information about the outside world, his involvement in social and public activities, adoption of family planning, considerations at the time of children’s marriage, and so on.

Data were collected from the sample area and sample households by canvassing pre-designed questionnaires, which contained questions regarding the educational level, income and asset position, health and hygiene related expenditure, socio-
political concerns and level of awareness of the respondents. It was not possible to include all the information collected for purposes of analysis, as at times some of the respondents were evasive or not sufficiently articulate. Such respondents could be dropped from the sample, but this would have reduced the sample size. Therefore, it was decided to exclude the ambiguous data from the analysis. Of course, the respondents did cooperate in answering the key issues used in the analysis.

The education of a person was indicated by the years of his schooling. For brevity, his educational level was determined from the number of years he has attended school.

For information on health and hygiene of a family, respondents were asked questions about the location and proximity of the kitchen and cowshed to residential houses, use of toilet and mosquito net, sources of drinking water and the distance covered to collect it. The information collected was processed for the purpose of analysis by using binary indices of 1 and 0. To the simple average of these numbers was added the proportion of income spent on detergents for the calculation of the hygiene index of the family.

To assess the health and morbidity concerns of the family, the proportion of family income spent on health care was taken into consideration.
To assess the general awareness of a family, a number of questions were incorporated in the questionnaire. The respondents were asked whether they read newspaper, listened to radio and watched programmes on television, their sources of information on public events, if they were members of any association/SHG/Co-operative etc. Their participation in community activities, casting of votes in elections, consulting doctors at the time of sickness and pregnancy, place of delivery of children, adoption of family planning, awareness of epidemics and AIDS, school dropouts, if any, age at the time of marriage and so on were taken into account. The binary indexation technique of assigning 1 to positive answers and 0 to negative answers was used for the construction of the index number. A simple average of these indices represented the level of general awareness of the family.

The overall index of the family was obtained from the simple average of these indices.

1.8 Period of Study:

Collection of data started in the month of February 2006 and was completed in all respects by the month of December of the same year. Analysis of the data collected and writing of the dissertation were taken up in 2007.
1.9 Limitations of the Study:

It is an empirical study based on sample survey. The respondents were mostly tribal and illiterate. They not being very articulate, it was difficult to elicit information from them and more so in the expected form and manner. Crosschecking was often made as the information given by the respondents was based on their memory. However, the inaccuracy of data, if any, could be rectified by verification and repetition of the survey, whenever necessary.

This is a cross sectional survey in the two specified districts, as a result of which the variations over time could not be captured.

The scope for generalizing the findings of area-specific studies to other areas is limited. However, the findings in one case could act as a benchmark for future study and action.