Chapter 2

Review of Literature: Theoretical and Empirical Perspective

2.1 Introduction

The last five decades have witnessed a volume of literature on the economic value of education, establishing the key role of education in development. Education is the most important factor in determining the quality of manpower. The educated, skilled, healthy and trained manpower is called human capital. Education enables a person to engage himself in a gainful employment. Now the fact is beyond doubt that education plays the central role in human capital formation and enabling a person to enhance his earnings by making him gainfully employed.

In the present chapter, an attempt has been made to present an account of the theoretical and methodological developments relating to the contribution of education to economic growth and development, role of education in human capital formation, public expenditure on education and
development of education in India. It is pertinent to mention at the outset that the coverage of the chapter has deliberately been selective, the major criterion being the relevance of the material to the purpose and scope of the present study as outlined in the previous chapter. The present chapter has been divided into five sections. The first section gives an introduction to the chapter. In second section of this chapter, an attempt has been made to review all those studies which focus on contribution of education to economic growth and development. The third section deals with the studies which deal with skill formation via education and training and their importance in today's age of globalization and technological advancement. The next section deals with the growth aspect of education in India. The fifth section of this chapter puts a light on the trends of public expenditure on education in India and in some other countries. After it, theme and scope of the present study has been given.

2.2 Contribution of Education to Economic Growth and Development

The role of education in development has been recognized ever since the days of Plato. Plato believed that a considerable part of community's wealth must be invested in education so that the citizens of a society may enable themselves to participate actively in the development. According to him, education has high economic value. Major contribution to the discussion on relationship between education and economic growth was first made by Adam Smith, followed by the subsequent studies by the classical and neo-classical economists until Alfred Marshall (1890) who emphasized that, "The most valuable of all capital is that invested in human beings. "In another study (1920, pp. 138-39 ibid) he states
that,” Knowledge is our most powerful engine of production. It enables us to subdue nature and force her to satisfy our wants”. Education is one of the most important components in capacity building. It provides a base for making a person capable of acquiring skills and becoming self-sustainable. Beginning with Kuznet’s study of American economy (Kuznets, 1955), there is a well documented body of research literature establishing the significant contribution of ‘residual factor’ to economic growth. For instance, a study on agriculture of 31 countries shows that 4 years of elementary education makes a farmer more productive than the farmer who has no education at all. In another study of 88 countries for the period 1960-63 and 1970-73, it was found that an increase in literacy rates from 20 to 30 percent contributed to increase in real GDP between 8 to 16 percent. A significant part of export led growth in South Korean economy over the last two decades is found to be attributable to skill development among its people. Personal earning and education have also been found correlated (UNDP, 1992). Finally, education contributes immensely to all round social development as exemplified by Kerala among the various Indian states (Agrawal and Naqvi, 2002).

The significance of an adequately educated and technically trained manpower has been specifically recognized in economic literature since the middle of fifties when research studies in the economics of education and growth, pioneered by Robert M. Solow (1957), T.W.Schultz (1961) and E.F.Denison (1962) highlighted the role of the ‘residual factor’, which mainly implied technology, education and health, in contributing to economic growth (OECD, 1963). For many years, the proposition that educational expansion promotes and in some cases even determines the rate of growth of overall Gross
National Product (GNP) remained unquestioned. Impressive statistics and numerous studies in the West were paraded out to demonstrate that it was not the growth of physical capital but that of human capital that was the principal source of economic progress in the developed nations (Devison, 1962).

In the beginning the unexplained proportion of economic growth, viz., the ‘residual’ was attributed to ‘technical progress’ (Svennilson, 1964). Later works (Denison, 1962; and Griliches and Jorgenson, 1966) clearly established that this residual was no ‘a coefficient of ignorance,’ as some critics (Balogh, 1963) argued, but human capital, particularly education forms a significant proportion of this residual. With (Griliches, 1964 and 1970) works, it was made clear that education could enter as an important input in the production function analysis. Correa (1963) analyzed the data for 48 countries. He compared enrolments in the age group 5-14 with the per capita income of the respective countries and co-efficient of correlation came out to be 0.617. This approach was found to be correct as a general comparison of education with the level of economic growth. Other cross-country evidence also supported the idea that human capital development in general and education in particular, was an important element in explaining variations in growth rates and level of per capita income. The quantification of human capital would be an exercise to understand educational development of different nations. This would lead to the question of disparities in human capital formation and the policy measures in that direction. Harbison and Mayers (1964), in their study on inter-country comparison of human resource development is one of the pioneering studies that quantify the human capital at macro level. In their study of comparing 75 countries on the basis of human resource development, the authors have used
arbitrary weights to arrive at a composite index of educational development which was the target of criticism from many quarters. There have been many studies subsequently which quantified educational growth of nations at national and international settings.

Adam Curle (1964) correlated educational indicators in the mid-1950s and per capita income 1954-59 in 50 countries, and found a correlation coefficient of 0.53 between GNP (Gross National Product) per capita and percentage proportion of GNP invested in education, and 0.64 between GNP per capita and post-primary enrollments. Similarly Bennet (1967) found in a study on 69 countries, high correlation between GNP per capita and secondary vocational education and low correlation between GNP per capita and general secondary education. He also found that enrollments in vocational education, as a ratio of general secondary education, increased in countries up to a GNP per head level of $500, and then decline with increase in income levels.

Krueger (1968) made a pioneering attempt to compare difference in per capita income between the United States and a wide range of other countries. Her technique consisted of breaking down the labour force by age, education and rural-urban areas for each country. Under the assumption that each of these categories had the same productivity as that of the United States, an estimate of ‘attainable income’ was worked out. In most cases, even if countries had the same factor endowment as the United States Krueger found that they would attain a per capita income only half that of the United States level, with the balance being attributed to the different levels of development of human capital. Bowman (1980), after making some modifications to Krueger's estimate has shown that in most cases, education accounted between 25 and
40 percent of the per capita income gap between the United States and other countries.

In the classical school of economic doctrine, later economists considered education as an effective measure for population control (Malthus, 1966), social justice (Ricardo, 1971) and civilized development of the society (Senior, 1928, 1939). Thus at the eighteenth and beginning of the nineteenth century, education was being mentioned as a means for bringing about improvement in purchasing power of labour force, economic welfare and social peace (Mill, 1909). In the Neo-Classical school of economic thought, education was considered as a strong source of human capital formation and an effective source to increase the income stream (Fisher, 1929). Blandy (1967) examined that the most valuable form of investment was investment in human beings. In non-economic field, education was regarded as a pre-condition for stock of society’s knowledge for geographical and occupational mobility (Samelsar, 1966) and for high degree of urbanization which were basic factors favourable to economic development (Charles, 1958).

In a regional study of Canada, Chaudhry (1971) also found out the significant relationship between educational level of workers and per capita provincial income. Some recent studies using econometric techniques analyzed the link between various aspects of economic growth and human resource development. N.C. Conclough 1971 asserts that, "of the African manpower plans which specify the assumptions made about the growth of Gross Domestic Product, almost 90 percent assumes that as the country develops, the employment of skilled people will feature more importantly in the structure of firms and other employment organizations".
Razin (1977) analyzed the data for eleven countries in 1950s and 1960s and found a positive correlation between the percentage of population aged 15-19 enrolled in secondary education and per capita income. His results suggested that an increase in the percentage enrolled in secondary education would lead to an increase in the rate of growth of national income.

Various approaches were adopted in the context of international comparisons; but most studies yielded similar results. In one of earliest major cross-country studies, Bowman and Anderson (1963) analyzed the relationship between literacy and economic development. They found that literacy contributed significantly to economic growth. 40 percent adult literacy rate was a necessary, but not a sufficient, condition for an economy to reach a GNP per capita level of US$ 200 (in 1950), and it was only when literacy rate exceeds 80 percent, that GNP per capita could cross $ 500. They also found from the evidence of 77 countries that primary enrollments in 1930s had a substantial explanatory power for income levels 20 years later, i.e., in 1955 (Bowman, 1980).

The studies reviewed in the previous section have indicated that education was not only an important basic need in itself (Wood, Jr. 1980; Burki and Haq, 1981; Hicks, 1982) but also that it helped in the realization and satisfaction of a number of other basic needs. Rightly so a majority of developing countries has been laying high priority on expansion of primary education (Burki, 1980). Studies have also shown that the primary education has the efficacy in increasing productivity, especially among the poor. Researchers have shown that educated farmers are more productive than the uneducated, particularly in modernizing agricultural technology. In South and
East Asia, a study (Lockheed, 1980) has indicated that four years of school education directly results in about 8 percent of increase in the earnings of the small farmers. In another study, it has been found that public financing of primary education has a strong and positive effect on the distribution of income by redistributing income in favor of the lower income groups (Jallade, 1979).

B.H.Dholakia in 1974, in one of the earliest attempts to estimate the contribution of education to increase productivity, improve quality of labour force and to enhance economic growth in India, found that the relative contribution of education to increase in productivity per person was estimated to be as high as 14.01 percent during 1948-49 to 1968–69 and 0.36 percent of improvement in quality of labourforce was attributable to education. In the same year, another study was conducted by J. Mincer (1974) in which he analyzed human capital in terms of two inputs- education and experience .This implies investment made before entering the labour market (education) and investment made after becoming employed respectively (training). Both the investments lead to human capital formation that further aid to economic growth and development.

Some recent studies using econometric techniques analyzed the link between various aspects of economic growth and human resource development. A growing body of recent economic research is consistent with the proposition that more schooled and trained workers more readily muster the new technologies (Hamermesh and Grant 1979).

It has been very clearly noted that the investment in education in India is economic (Heyneman, 1980).
Analyzing the relationship between the development in human resources and economic growth in 86 countries, during the period 1960-77, Hicks (1980) found that the twelve developing countries, with the fastest growth rate, were well above the average levels of literacy and life expectancy. The author further developed a growth model in which growth rate of per capita output was observed to be related to three factors i.e., the growth rate of imports, the level of investment as a proportion of GDP (Gross Domestic Product) and the level of human resource performance. These three factors were found to explain about 60 percent of the variations in per capita growth rate in developing countries.

Wheeler (1980), with the help of a simultaneous equation model for 88 developing countries (for two periods 1960-63 and 1970-73), found that education, literacy and nutrition contributed to growth of output not only directly, but also indirectly by increasing the rate of investment and by lowering the birth rate. He also observed a positive relationship between manufactured export growth, health and education measures. G. Psacharopoulos and M. Woodhall in 1985 strongly emphasized in their study that the acquisition of human capital is central to development and growth. General education to meet the educational needs of a society in transition can have no match (King, 1985).

Most of the studies on education and economy relationship mentioned earlier are centered on economic growth i.e., growth of income. But development is a broad concept including within itself growth plus qualitative change in various parameters of social, political, cultural, religious and economic life (Foster, 1987). However growth may be considered as one of the
most important indicators of economic development. The studies concerning education and economic growth may be examined on the basis of the investment approach. Hick's study observes positive relationship between the level of income and the levels of attainment in education (Hicks, 1987). But the relationship is not supposed to be a causal one as the result is based only on the correlation method. Many other micro level studies also corroborated this result (Wheeler, 1980; Marris, 1982; Hallak, 1980). Colclough (1982) summarizing studies in several less developed countries, argued that primary education made a substantial contribution to economic development and its social rates of return was considerably greater than secondary and higher levels of education. Similarly, according to another study (Selwsky, 1981) the mean rates of return for Brazil, Colombia and Chile were primary education (25.1 percent), secondary education (17.0 percent, and higher education (10.9 percent).

Tilak (1986), using a linear regression model, analyzed the relationship between education and economic development in 75 countries of the world. Classifying the countries into very poor, poor, rich and very rich countries, Tilak found that in very poor and rich countries education had a positive and significant relationship with economic development. On the other hand, in poor and very rich countries the relationship between the two was found to be positive but statistically not significant. While primary and secondary education was significantly related with economic development in the very poor countries, in rich countries, it was secondary and higher education which had significant impact on economic development. In both poor and very rich countries only secondary education was found to have some
impact on economic development. Though with the developmental process picking up, no doubt, we shall be having access to abundant natural resources and good quality of physical capital, still then, we need a wide range of manpower and human skills to utilize the complex form of modern physical capital. Therefore, there arises an added urgency to improve and upgrade the human resources. Human capital can never be a substitute for physical capital (Ansari, 1987, pp-1).

Qualitative aspects of population are of great importance from the point of view of development of a nation and also welfare of the people. Healthy, educated, trained and well-fed people contribute a great deal to the development of a nation (Rani Gopal, 1987).

Growing demand for skills in service jobs is partly driven by the growth of information technologies. This is best illustrated by the growing use of computers. These technologies need more trained, educated and enthusiastic people- hence human capital (R.M. Cyert and D.C. Mowrey, 1987). Psacharopoulos (1988) reviewed the evidence on the nexus between education and development and concluded that it provided grounds for confidence that investment in education was a major contributor to development.

Mehta (1988) examined the data pertaining to 41 Asian and the Pacific countries in order to find out as to how education in terms of literacy rate, net enrolment ratios, gross enrolment ratios and economic growth in terms of per capita GNP were related to each other. There was a constant relationship between literacy rate and per capita GNP with log functions as the best fit. Asia and Pacific countries were divided into four sub-groups on the basis of literacy,
gross enrolment ratio, net enrolment ratio and per capita GNP. This had also been supported by another study (Veeraraghavan and Prakash, 1988).

A substantial part of available research including the studies conducted by A. Noor (1980) and the World Bank (1993) seemed to have concentrated on analyzing the positive effects of literacy and primary education on poverty and other aspects of social and human development. In the less developed countries including India, the employment structure which shows the tendency of tertiary sector to grow and to provide more employment opportunities in the economy, have greater demand for the liberal and independents professions and for the non-manual and non-technical occupational skills. (R.L. Irizarry, 1983).

In a study of 17 major states of India, Zaidi (1988) explored relationship between economic development and educational attainment. Here, economic development was measured in terms of per capita income, and educational attainments in terms of literacy rates, enrolment at primary and middle levels and per capita expenditure on education. The trend observed that prosperous states were educationally advanced while poor states were not with the exceptions of Karnataka, Kerala and Tamil Nadu. It also observed positive correlation between per capita expenditure on education and economic development. Thus, the study concluded that generally states having higher levels of income also possessed higher levels of educational attainment, but the states having lower income did not necessarily have lower levels of educational attainment.

Tilak (1988), in another cross-country analysis, estimated the relationship between education and economic development by using data on
100 countries for vocational secondary education vis-à-vis general secondary education with the help of a semi-log regression model. Classifying the countries into low income, middle income and high income countries and using one year, 10 year and 15 year time lag on enrolments, the author found that vocational education contributed positively to economic growth only in case of middle income countries. In low and high income countries the contribution of vocational education turned out to be negative and statistically insignificant. It was concluded that vocational education could contribute positively and significantly to economic growth of those countries which have GNP per capita more than $400 and less than $5000.

Ram (1989) examined that the schooling played a vital role in reducing income inequality and poverty in less-developed countries. About a dozen empirical studies on the subject were briefly discussed and some new evidence of a preliminary kind was presented. He examined that the number of teachers in developing countries increased three-fold over a 25 years period. A similar increase appeared to have taken place in the number of students and in real expenditure on education. Further, he examined that education especially female education, might make a major contribution towards reducing fertility and population growth, and raising the quantity and quality of schooling of the next generation. He stressed that female education should be considered important in raising the status of women in less developing countries, which could be regarded as a major dimension of economic development. At the end, he concluded that educational expansion might serve as an increasing tool in provision of basic needs, reduction of poverty, and increasing equalities of income, living standard and economic opportunities. The economic
development governs certain basic determinants of education i.e. educational infrastructure, allocation of resources to education and economic base of households to support education of their children. Similarly, education directly contributes to the economy through its effect on the determinants of economic development i.e. productivity, earnings, job mobility and entrepreneurial skills and technological innovations (Verspoor, 1990). Some scholars are of the view that education –job mismatch have serious implications for labour market. Even MBAs and MCAs are working in call centers. However, it does not suit to their qualification. Over-education, a common phenomenon in India is known to affect labour turnover, occupational choice and job satisfaction (J. Hersch, 1991).

But Behrman and Schneider (1992) argued that India did not reap much gain from investment in human capital in terms of economic growth and poverty alleviation and that there might be substantial, potential gains to be reaped in the future from India’s human capital. So they present a bright picture of India’s human capital base in the years to come. This will lead India on the path of economic prosperity and development.

Educational systems strongly influence and are influenced by the nature, magnitude and character of a countries developmental progress. The educational systems will have to match the skill needs of the industrial structure, not just in the quantity of graduates in different disciplines, but also in the quality of training and the relevance of the curriculum (Lall 1993). So, only educational expansion in terms of number of graduates /post graduates is not sufficient, their quality and adaptability to changing demands of labour market should also be considered.
Most developing nations have been led to believe that it is the rapid quantitative expansion of educational opportunities, which holds the key to national development. The role of education in building a strong human capital base can have no match (Russel 1993, Bharadwaj and Balachandran 1992).

Tilak (1994) examined the major determinants of economic development—both supply side factors (technological progress and accumulation of physical and human capital) and demand side factors (government involvement and export expansion) in the context of South Korea and Taiwan. The authors investigated the role of human capital measured by output growth in enlarging the labour income share, by using both Cobb-Douglas production function and Ordinary Least Square (OLS) methods. The empirical results indicated that investment in human capital, especially through improved education had accelerated the economic growth. This finding corroborates the assertion made by Schultz (1961) and the cross-country study by Schultz (1988).

Yusefi (1995) examined the role of education as an important determinant of economic development of Iran. He included education as an independent variable in his functional relationship along with per capita income, level of investment, resource endowment and infrastructure development such as transport and communication to determine the growth of industrial sector as a proxy for economic development. The results of the study indicated that the level of economic development and industrialization had positive and significant relationship with per capita income, level of education and resources mobilization in Iran. Further, he highlighted the importance of education in improving quality and quantity of human capital or for the
provision of efficient decision makers, managers, skilled labour and technicians for industrial development of Iran.

Lin (2003) analyzed the effects of education and the role of technical progress in economic growth in Taiwan over the period 1965-2000. A structural earnings function and indicator for average schooling years were applied to measure the role of education, and a transcendental production function was used in the model. Findings of the study revealed that education had a positive and significant effect on growth, but the role of technical progress did not appear to be extraordinarily important. According to the complimentarity test, no markedly significant relationship existed between capital and education or between education and technical progress. Rizwanul Islam in his study of Jan. 2004 concludes that investment in human capital plays a major role in boosting economic growth. He has maintained a nexus between economic growth, employment and poverty alleviation based on cross-country data.

Self and Grabowski (2004) analyzed the relationship between education at primary, secondary and tertiary level and economic income growth in India for the time period 1966-1996. Time series techniques were used to determine whether education had a causal impact on growth for each category. Having found these encouraging correlations, they utilized Granger Causality Test to analyze the predictive powers of each level of education of future growth in the presence of its own lagged values. Over and above allowing for a test of causality, this technique was helpful in Times Series Regression Analysis since it also helped to eliminate any possible serial correlation by adding legged values of the dependent variable on the right hand side. The results showed that education which according to the correlation analysis indicated a strong
positive relation between all education levels and growth, was found to be causal only at the primary and secondary level. Further, the results showed that female education at all levels had potential for generating economic growth. Education of males, on the other hand, appeared to have a causal impact on growth at primary level and perhaps, weakly, at the secondary level.

In one of the studies Kaur (2006) tested the hypothesis that knowledge and skills embodied in human beings directly raised productivity in all the sectors and increased the economy’s ability to grow and adopt new technologies. The study examined the impact of different levels of education on the economic growth of 17 major states of India for the period 1999-2000 through regression analysis. The study concluded that educated workers were likely to reap more financial benefits than the uneducated ones as these workers generate more value additions. The evidence from the study was found to be consistent with the view that measures aimed at increasing the quantity and quality of the stock of human capital should be an important part of any growth promoting policy package.

Inclusive growth is regarded as the new mantra of development. Tilak (2007a) critically looked at the approach to the development of education outlined in the Approach to the Eleventh Five-Year Plan and highlighted the weaknesses and the continuation of the big policy vacuum. Tilak found the approach paper full of contradictions, lack of vision for development of education and absence of a critical outlook of the strategies required. It did no focus adequately on the glaring and widening inequalities in education, social, economic, gender, and regional, and to propose clear strategies of developing an equitable system of education. According to Tilak, equity was not the main
concern of the approach paper, it was quality that occupied the attention of the Planning Commission and the commission assumed that quality would automatically promote equity.

In another article, Tilak (2007b), critically examined the recommendations on higher education in India submitted by the National Knowledge Commission to the Prime Minister. According to Tilak, the report did not seem to have been based on any in-depth analysis of the higher education system in India. Secondly, the commission seemed to be strongly favouring privatization of higher education, the growth of private and foreign universities and correspondingly and more importantly a drastically reduced role of the state. Tilak lamented that basically, the knowledge commission did not recognize the importance of public education and the significant role that the state played in the development of higher education for it to contribute to national development in most civilized parts of the world.

Nayyar (2007) in his study reflected upon the intersection of and explored the inter-connections between globalization and higher education in the wider context of development. According to the study, in the past, it was land, natural resources, labour skills, capital accumulation or technical progress that were the source of economic growth and prosperity. He observed that in the future, knowledge would be critical in the process of economic growth and social progress. The widening gap between the haves and have-nots could then be transformed into a widening gap between those who knew and those who knew not. Nayyar concluded the entire debate with an old Buddhist proverb which said that "The key to the gate of heaven is also the key which could open the gate to hell". Markets and globalization provided a mix of
opportunities and dangers for higher education. According to Nayyar, markets and globalization should not be allowed to shape higher education. Instead, we should shape our agenda for higher education, so that we could capture the opportunities and avoid the dangers unleashed by markets and globalization.

2.3 Skill Formation via Education and Training and its Importance in Globalization

On the contrary, some scholars assert that only education and traditional schooling system do not hold key to development and to overcome the problem of unemployment until and unless it is accompanied by efficient training system. Education alone is not the most crucial factor in economic growth. As the quality of human input is the main contributor to the productivity, determined largely by the amount of formal education and training embodied in human beings. It is no wonder that developing countries place major emphasis on training policies to survive in today’s tough period of globalization and internal liberalization.

J. Benhabib and M. M. Spiegel in 1994 have shown that secondary education helps in innovating technology and in sustaining growth. It is secondary and higher education that provides skills that could be useful in labour market. They specified a model in which growth rate of Total Factor Productivity (TFP) depends on a nation’s human capital stock level.

The HDI variable included by B.B.Bhattacharya and Arup Mitra in their study of 1997, measures the impact of socio-economic development on the employment structure of an economy. They arrived at a conclusion that as a country develops; the percentage of labour force employed in tertiary sector goes up. These jobs require specific skills and training. India has a huge stock
of science and technology, manpower consisting of scientists and engineers but
the myth of the third largest stock of scientific and technical manpower in the
world stands exploded if one carefully examines the quality of manpower and
their utilization level. For example, for every one million population, there are
only about-130 scientists/engineers in India in 1990s. While in many countries
the corresponding figure is 10-30 times higher. This reflects the quality of
science and technology manpower India has. Their level of utilization is also
very low. The share of scientific and technical manpower in the volume of
educated unemployed is high (J.B.G. Tilak, 1997).

Normally, ever increasing population is thought to be a burden for the
developing countries. But this large population, when trained and educated on
sound lines, can itself become an asset in accelerating economic growth and in
ensuring social change in the desired direction (Singh, 1997). A country, which
is unable to develop the skills and knowledge of its people and to utilize them in
the national economy effectively, will be unable to develop anything else (Singh,
2002). In the era of globalization, each sector occupation requires educated
workers who can benefit from the market situation. International competition
would intensify the need for skilled manpower. The uneducated workers would
have little or no space in the labour market (Singh, 2004)

Globalization and internal liberalization have induced the use of new
and improved technologies. These technologies have a positive inclinalational
towards physical capital. But at the same time, for the physical capital to be
utilized effectively and efficiently, it must be supplemented by human capital.
So, physical capital and human capital are observed to be complementary in
nature (Goldin and Katz, 1998). Employees need higher skill levels or must be
multi-skilled. There is a need for more enterprise level training and life long training. There is also increased unemployment situation of the less skilled. Further, recent changes in the world economy present paradox. Because, on one hand, rapid globalization and competitive pressure have made it imperative for nations to invest in the development of education and training of their labour force. On the other hand, same global forces have led to segmentation of labour market and reduced employment opportunities for those having low and inflexible skills. (International Labour Organization, 1998)

The sectors that have been growing rapidly in terms of value added are those with low employment elasticity. Conversely, the sectors that generate more employment at margin are those that have not been growing fast in terms of value addition (J. Ghosh, 2000). Current phase of growth of technical education in country was initiated after 1991, with the process of liberalization, globalization and privatization (LPG). It has opened up the avenues for multinational companies to invest in India. The rates of Foreign Direct Investment in different sectors in India are increasing. This has led to a greater demand on technical institutions to produce technocrat of intentional standard (M.N.Sivaram, 2000).

Lex Borghans, Francis green and Ken Mayhew in 2001 in their study have asserted that the development of skills has a key role to play in both economic growth and the changing distribution of wages observed in many industrialized countries in the recent times. The skills will have to be updated in tune with the changing demands of labour market and composition of trade. Similar views have been given by some other scholars. Technically efficient labourforce is likely to be demanded in near future because of rapidly
increasing technology expansion. Rudra Dutt in 2001 has shown that at the all India level, between 1994 and 2000, there was a decline in the incidence of unemployment among the technically qualified youth from 27.3 percent to 23.7 percent as also among those with education above secondary level, however, there was an increase in overall unemployment.

The whole world has become a global hub. Technologies, capital and labour all are movable from one nation to another. Now changes in work and workplace in the post-industrial economy, due to technology, management innovations and competition in the global market are transforming the kind of knowledge, skills and attitudes needed for successful employment and work performance (Stasz, 2001)

The stock of human capital can be increased and preserved by the adequate education and training. The acquisitions of skills not only makes people more productive, but in an era of rapidly changing technology it also makes them more adaptable to technological process. Further, recent increase in wage inequality is most likely due to acceleration in skill bias. Twentieth century has been characterized by skill biased technical change because the rapid increase in supply of skilled workers has induced the development of skill complementary technologies. The recent acceleration in skill bias is in turn likely to have been a response to the acceleration in the supply of skilled labour during the past several decades. (Acemoglu,1998,2002).

In a study by Cohen in 2002 asserts that the accumulation of human capital itself depends more on human capital investments rather than on output. Investments in human capital can take many forms like investments in health, education, on-the job training and also off-the job training. This
assertion has been supported by some other authors also. For sustaining the process of economic development, a large amount of expenditure needs to be spent on development of human capital, especially, for the development of diversified skills. Because human capital formation is the determinant factor in economic development and human development as well (Mehta, 2002).

As India has also committed to the contentions of WTO (World Trade Organization). It has sharpened the competition on international level and on the national level as well. To sustain this cut-throat competition, India’s poor human capital base will have to be strengthened. For this, education is the only remedy. Whichever economic activity may be, production, consumption, distribution or exchange the quality and standards are being matched on a global level. For this, Indian labour force will have to wear a global outfit. Education and adequate training can bridge this gap (G. K. Chadha, 2004).

Philippe Aghion, Costas Meghir, Jerome Vanden Bussche in 2005 examined the contribution of human capital to economy wide technological improvements through two channels of innovation and imitation. Again, these two channels require skilled and educated manpower. They provide evidence in favour of their hypothesis for several countries between 1960 and 2000.

One of the principal means of enhancing ability of human beings is to invest in education. In Indian context, It is found that technical change in the manufacturing sector has been skill biased in the period between 1993-94 and 1999-2000. Thus, it has increased the relative demand for skilled workers (Unni and Rani, 2005).

2.4 Development of Education in India
A number of cross-country and inter-state studies have examined the inequalities of education development (Panchamukhi, 1970; Rudolph and Rudolph, 1972; Heyneman, 1979; Manocha and Sharma, 1979; Ram, 1989; Reddy and Reddy, 1992; Bhatt, 1998; Tilak, 2007). The results of these studies were not uniform because the nature and number of variables considered were different, the methods were different from study to study and the reference period was not the same. For example, Pandit and Heyneman ranked the states by pooling together, the un-weighted individual rank order of Rudolph and Rudolph. On the other hand, Panchamukhi (1970) used principal component analysis to construct a composite index of educational development on the basis of which different states were ranked and compared. While Reddy used the taxonomic method and Manocha and Sharma used cost-proportions for the same purpose.

The variables considered also differed form study to study in their definitions and numbers. Rudolph and Rudolph (1972) considered enrolment ratios at primary, middle, high/higher secondary, secondary (technical/vocational) and higher levels. Their rank order referred to state enrolment performance. Panchamukhi took into account eleven indicators of education and educational expenditure as percent of state income, percentage of trained teachers to total number of teachers at school levels, enrolment ratios and total teachers. Pandit (1977) used the enrolment ratios at primary and middle levels, percentage of girls in all the three school levels, teacher-pupils ratio and percentage of state budget expenditure on education, besides enrolment rates, percentage of girls and percentage of untrained teachers, as indicators of educational development. He concentrated only on school level
education. Heyneman (1979) also used the same method but his conclusion was different. His ranking referred to ten indicators of formal and informal education. Reddy (1977) used the taxonomic method to find out the inequality in educational development. He considered the literacy rate as a stock variable along with flow variables namely enrolment ratios, percentage of girls and percentage of untrained teachers for educational development. He analyzed that the taxonomic method was useful in ranking, classifying and comparing the educational development of various states. Manocha and Sharma (1979) constructed an index of stock of human resources considering the stock of population with different levels of education and weighting them by cost-proportions. Chaudhry and Nair (1981) evaluated the role of education in regional development in India. They constructed an index of educational development and measured the regional disparities in educational development. They found out that there was a positive relationship between education and economic development and concluded that as a social indicator, education could play an important role in reducing regional disparities.

In a study pertaining to educational development in different states, Nair (1978) examined the influence of various socioeconomic factors on the process of educational development and the direction of their relationship. He evaluated the historical factors underlying the process of educational development in Kerala and compared the structural aspects of the educational system of Kerala with that of other states. A methodology for calculating effective cost of education at the primary stage was developed and used for comparison. The main findings of the study included among other things that economic backwardness by itself need not hinder the progress of education. He
also concluded that educational development by itself played only a limited role as a catalyst for promoting economic equality, as educational expansion did not result in increasing employment opportunities or decrease in the differences in educational attainment among various socio-economic groups.

Raja (1984) presented the regional patterns in higher educational growth in India. Apart from surveying higher educational growth in India in quantitative terms such as in terms of enrolment, the study observed spatial spread of higher education also. The study took National Sample Survey region viz., agro climatically homogeneous region as a unit for analysis with an assumption that a balanced regional development would be facilitated with a regional resource base. Inequality in spatial spread has been discussed by suing location coefficient, and coefficient of inequality.

Reddy and Reddy (1992) focused their attention on inequality in utilization of and participation in education in rural areas of Andhra Pradesh. More specifically, differences in gross enrolment ratios between different socio-economic groups and sex were examined. It was found that though sex discrimination existed irrespective of economic positions, was more prevalent in poor families. The results also showed more disparities in higher education as compared to primary and secondary education. The study finally, concluded that inequality in education was not an educational problem alone. It is prevalent across the entire social, economic and political fabric of a nation.

Bhatty (1998) emphasized the fact that although free and compulsory education was included in the Indian constitution yet educational backwardness of India was quite glaring even after 50 years of independence. This study based on a survey of field-level investigations, addressed the issues
of economic constraints, schooling quality and parental motivation as a set of possible influences determining the educational decisions with a household and contributing to the overall picture of educational deprivation at the national level. She found an exaggerated emphasis being placed on child labour and inadequate motivation among poor parents as the major obstacles to universalization of primary education. She further pointed out that it was the direct cost of schooling, which imposed substantial burden on families and the low quality of schooling facilities, which reduced child’s interest in education that primarily account for educational deprivation. She examined that poverty was the main cause of educational deprivation. In the end, the conclusion was drawn out that in both these aspects i.e. reducing private costs of schooling and in improving schooling quality-the state has a crucial role to play.

Jean and Sen (2002) observed that during 1960s Himachal Pradesh was in the list of educationally backward states, but after some years, in case of education, it reached with Kerala in front of all other states. There were certain reasons for the sudden progress in Himachal Pradesh. The schooling revolution in Himachal Pradesh had done a great deal to make it a better place to live. In the wake of this transition to near universal elementary education, the region had witnessed a dramatic reduction of poverty, mortality, illness, under-nutrition and related deprivation.

De (2002) analyzed that at the time of independence Himachal Pradesh had the lowest literacy level but recently Himachal Pradesh had shown remarkable progress in literacy over time. Himachal Pradesh ranked second in literacy among 16 major states. The Total Literacy Campaign (TLC) in the 1990s has made some contribution as well. Statistics indicated that Himachal
Pradesh had been attacking and closing the gap between regions and people less well served by the education system. The study found that the disadvantaged section of the community had shown a remarkable rise in literacy rates. The DPEP conducted a baseline assessment survey of the four difficult districts in Himachal Pradesh in 1996. Achievements in these areas were fairly respectable; so was the quality of infrastructure as compared to the BIMARU states (Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh). The study bestowed the credit for the success of people of Himachal Pradesh upon the character and nature of the hill society.

Ramachandran (2003) in her study observed that creation of backward and forward linkages were essential to create an environment where every child not only went to school but benefited from it. In her study she found out that the literacy rates had improved everywhere and that improvement had been particularly rapid in Rajasthan, Orissa, Madhya Pradesh whereas Uttar Pradesh and Bihar lagged behind. She further concluded that while the national all-age sex-ratios had increased in most areas, the situation had worsened in Himachal, Gujarat, Haryana, Punjab and New Delhi. It was alarming to note that in Himachal Pradesh, while the literacy level had gone up and almost 98 per cent of children in the school going age were enrolled and attending school, the sex ratio had declined from 976 in 1991 to 970 in 2001.

Rana (2003) in their study observed that government had played a positive role in the expansion of primary education in West Bengal but certain problems still prevailed. Poor attendance, perceived class differences, power and gender discrimination prevented socially under-privileged groups from accessing education opportunities. They suggested that the success of the
government’s experiments in providing cost-effective primary education, particularly to the most under-privileged sections of society must be recognized.

Kaushik and Karol (2003) depicted the remarkable progress that Himachal Pradesh had made in literacy rates from 21.36 percent in 1961 to 77.13 percent in 2001 and was found to be far ahead of many other states of India. Himachal Pradesh was observed to be ahead of all her neighbouring states by margin of 7 to 12 percentage points. They concluded that the real development of education in Himachal Pradesh began in the second half of the nineteenth century when an integrated and well thought of educational policy was articulated and implemented. This education policy consisted of (1) high level of per capita expenditure on education (2) expansion of government educational institutions and (3) provision of financial incentives to students from the deprived sections of the society. The researchers also pointed out towards the mismatch of the demand and supply of educated labour power in the state. Over the time from 1980 to 2000 the strength of the unemployed was found to have increased from 1,41,920 persons to 8,86,433 persons that is more than 6.25 time increase. The share of uneducated unemployment in the total unemployment had increased from 90.14 percent in 1980 to 98.69 percent in 2000, which was observed to be indicative of the low and declining employability of the uneducated labour power in the state.

The main aim of the study conducted by Vaid (2004), was to empirically test the factors that were responsible for the inequality of educational opportunities for both boys and girls from socially deprived origins. Using data set of National Election Study (1996) the study identified several
factors such as caste, class, religion, and parental characteristics as important determinants of educational inequality.

Manabi Majumdar (2005) focused her views on variations in secondary schooling across the states of Andhra Pradesh, Kerala, Maharashtra and Tamil Nadu. The study emphasized on the need to deal with the challenges of universal elementary education and the expansion of secondary schooling simultaneously, rather than in a gradual sequence. Except in a few educationally forward regions of the country, secondary participation was found to be highly restrictive because, a majority of young people, in particular from deprived communities, did not have access to secondary education. The study pointed out that the decisions regarding virtually all school related activities were concentrated at the state level. Vocational secondary education and skilling of adolescents had always been receiving step-motherly policy attention. It was further observed that there was a case for strengthening aided schools, as a potentially effective means of narrowing the gaps between the privileged youth and their disadvantaged peers.

2.5 Public Expenditure on Education

The concept of education as a form of investment in human capital dates back to eighteenth and nineteenth centuries. If educational expenditure is treated as investment, it leads to issues related to returns of education to the individual and to the nation; and the type of education in which investment should be made. Many studies have been undertaken on the financing of education in India. Education Commission (1964-66) made a fairly exhaustive study of the problem of financing education, presenting a detailed analysis of different aspects of educational finances. The report of the Study Group on Resource
Mobilization for Education of the Government of India, published by the Asian Institute of Educational Planning and Administration (1970) after examining the educational expenditures by sources, recommended the levy of betterment fee and education cess in all states as resources for education. Panchamukhi (1970), Azad (1975), are examples of other studies in educational finance. The Indian Council of Social Science Research (ICSSR), and the University Grants Commission (UGC) jointly sponsored a number of studies on University finance with reference to selected universities.

One of the earlier studies of the expenditure on education was that of Edding (1958), He had prepared estimates of expenditure on education that over the years, education appeared to have a rising share of the national income in most countries. He also found several inter-connected reasons for the increase in expenditure on education. Lewis and Martin (1956) had made an international comparison of expenditure on education as a proportion of public expenditure. They had drawn attention to the difference in percentage of national income devoted to public expenditure and the difference within the public expenditure sector, of the proportion devoted to education.

Schultz (1961) has also attempted to study the relationship between expenditures on education and consumer's income on the one hand, and between expenditure on education and gross formation of physical capital on the other in the United States during the period 1900 to 1956. The study reveals that ‘resources’ allocated to education rose about three and half time (a) relative to consumer income, and (b) relative to the gross formation of physical capital. He concludes that the ‘income elasticity’ of the demand for education was about 3.5 over the period, and alternatively, education considered as
‘investment’ might be considered as 3.5 times more attractive than investment in physical capital. Schultz has also tried to measure the total stock of ‘educational capital’ at different points of time for the United States and Japan respectively. Both the studies show that ‘educational’ capital has grown many times faster that the ‘non-human’ capital.

In another study Vaizey (1966) employed various criteria to find out the impact of public expenditure on education namely, expenditure on education as a percentage of total public expenditure, expenditure on education in relation to other outlays and expenditures, percentage of gross national product provided by different countries to education and expenditure among various levels. In another study Tolley and Olson (1971) studied the inter-dependence of public expenditure and per capita income among the states of the United States. They were concerned with sorting out the reciprocal effects of two variables when the two are mutually supportive, higher income leading to higher educational expenditure and so in turn, to higher income, and so on. Building on human investment theory, they began by setting up behavioral equations to estimate relationships of presumed causation in each directions separately, going on from these structural equation to a reduced form of simultaneous systems. They found responsiveness of expenditure on education to income to be substantially greater for income from private, non-human wealth than for income from human wealth, with only small equation bias. Looking at the other directions, they found that the number of years of schooling in the adult population was a strong predictor of per capita income. The main finding in their study was that adult education attainment has a stronger effect on current income.
Psacharopoulos (1973) made the first attempt to compare the rate of return to investment in education in thirty-two developed and developing countries. In this study, he compared the private and social rates of return to education. However, in 1981 he modified and updated the earlier study by including forty-four countries and concluded that the returns to primary education (whether social or private) were highest among all educational levels. He also found that the returns to education in developing countries are higher than the corresponding returns in more advanced countries. These conclusions have some important policy implications for the choice of investment in developing countries. There is now considerable evidence that the investment in education in developing countries have gone up. This may be due to the belief of the government that education would promote economic growth and provide the skilled manpower needed for development. According to World Bank estimates, the proportion of GNP devoted to education in developing countries rose on an average from 2.3 percent in 1960 to 4.5 percent in 1984 and the proportion of the national government budget rose from 11.7 percent in 1960 to 16.1 percent in 1984.

Padmanabhan (1986) studied regional disparities in educational financing, by analyzing educational expenditure incurred by different states of India. He argued that disparities in educational financing would deprive opportunities for the disadvantaged sections of population and thereby hamper the well-known social objectives of the state.

Upendranath (1992) examined the growth of educational expenditure in Andhra Pradesh in India. He observed that the pattern of educational expenditure in the state had been similar to those followed in many states and
all India patterns, with higher education taking precedence over primary education. Andhra Pradesh stood below all India average in terms of budget allocations and sectoral distribution of funds on different sectors within education. Further, he observed that the expenditure on different sectors within education had not seen any perceptible shift. The share of primary education in total had improved slightly from 43.94 percent in 1977-78 to 47.19 percent in 1987-88. Andhra Pradesh spent comparatively less amount on education among the southern states and also the share of higher education in total educational expenditure was lower in the state than the other states.

With the objective of assessing the importance of education as an investment for national survival, Tilak (1997) observed in his study the pattern of financing education in India during the 50 years of independence. The results of the study showed that the expenditure on education in India had increased remarkably and its relative share in the total government expenditure on education had also increased from less than 40 percent at the time of transfer of power from colonial rulers to independent government in India to more than 85 percent in the recent years. Consequently, the shares of all other non-governmental sources had declined steeply. The significant growth of public expenditure on education and the consequent relative decline in the share of fees and other non-governmental sources was deliberately chosen policy of India after independence. The study further concluded that the policy had improved access to education at all levels, even higher education was transformed from an elitist system of the 1950s to mass based higher education by the 1990s. But these achievements were not found to be adequate for India to survive as a great nation, to take the nation to the 21st century and
to make India a strong nation in the increasingly globalized world economy with stiff international competition, as India accounted at the same time for the largest number of illiterates in the world.

In another study Roy, Kamaiah and Rao (2000), utilizing the pooled data for 15 large Indian states over the period 1992-93 to 1997-98, employed panel data models to estimate the normative (average) levels of expenditure on primary, secondary and higher education. The findings of that study were consistent with generally maintained hypothesis that rich states spent more and poor states spent less as far as social sectors were concerned. Gujarat and Maharashtra emerged as champions of the cause of primary education, whereas Andhra Pradesh and Punjab spent substantially more on secondary and higher education. Poor states like Uttar Pradesh and Bihar were found to be lagging far behind the normative levels for all the three expenditure heads considered in this study. The findings also suggested existence of unutilised capacity in both primary and higher education. This, to a great extent, could be attributed to the shift in preference from government education to private education.

Reddy and Rao (2003) looked at various aspects of education in an effort to pinpoint the reasons for the poor performance of the primary education sector. Though Andhra Pradesh was found to be faring better with regard to school density, size and distribution of habitations, student-teacher ratio, etc., declining allocation for education in successive budgets could have undermined these gains. They further highlighted that budgeted allocations were better indicators of the priority given to education but Andhra Pradesh provided a lesser share of its budgetary allocations to education compared to the national
budget. Allocation was even observed to be lower when compared to southern states. According to the researchers, the non-formal system had proved to be ineffective and for the state to achieve genuine literacy, it was the formal sector that needed enhanced investment.

In a comprehensive analysis, Tilak (2003) attempted not only a descriptive and analytical review of major issues relating to public expenditure on education in India, but also highlighted a few important policy implications for the improvement on education system in India. He observed that the constitutional directive of universalisation of elementary education in India, which was to be achieved four decades ago still eluded. Secondary and higher education systems were also found to be associated with several problems, many of which were related to paucity of funds. Though huge amount of investments were made in education in the post independence period, they were not found to be adequate to meet the modest targets of providing quality education to the children. As a result, five decades had been a period of under investment in education. Tilak concluded that the pattern of allocation of resources to education and allocation of resources within education remained far from satisfactory, judged in terms of adequacy, efficiency and equity.

In one of his studies, Tilak (2004) reviewed, the policies of higher education of public sector in India during the 1990’s pertaining to two important aspects of the dominant characteristics of the decade viz., government’s apathy to higher education and public sector disinvestments in higher education. The study observed disappointing trends which indicated a growing public apathy for higher education followed by reduction in public expenditure on higher education. He further argued that the absence of any
policy on development of higher education was helping in erratic and unregulated growth of private higher education which might lead towards laissez-faireism in higher education in India. Tilak attributed this kind of situation to the faulty assumptions that (a) higher education was not important for development and (b) that the state could as well withdraw from its responsibility of providing higher education in favor of the markets. Tilak (2005) emphasized on the fact that the higher education system in many countries today were at the cross-roads. There was a gradual shift from education being a state responsibility to its privatization. He pointed out that many considered the public sector to be inefficient in the field of education and correspondingly the private sector as efficient and therefore desirable. He emphasized that for public provisioning of education remained strong. It was imperative for the state to play a dominant role in the provision of higher education because it was also widely recognized that higher education was an important factor of economic growth and it was education that make the basic difference between the developed and the developing countries.

Mehrotra (2004) investigated the scope for reforms in the pattern of education spending and considered ways to mobilize additional resources for elementary education, including earmarking funds for the same. The study emphasized the inordinately high share of total elementary education spending on teacher salaries, as well as the bias in favor of secondary education with regard to public education spending in many states. All of these were found to have serious consequences for both the efficiency and equity of public education spending. Finally the study also put forward a case for new taxes for
elementary education, and the earmarking of funds from such revenues for elementary education, both at the state and central levels.

Chakrabarti and Joglekar (2006) utilizing state level data, empirically examined government financing of education in India over a span of 1980-81 to 1999-2000 across the 15 major states of the country with the help of macro-level indicators. Their main focus had been on analyzing if there existed a structural break in the pattern of expenditure in pre and post economic reforms. Income with elasticity less than one was found to significantly enhance educational expenditure at aggregate elementary, secondary and higher level. Moreover, contrary to general perception, education expenditure at all levels had been significantly lower after liberalization vis-a-vis pre-economic reform era. This was particularly detrimental for the vulnerable sections of the population i.e. for females and backward social groups. The study concluded that even after controlling for the economic reform process, privatization exerted a negative significant impact on expenditure on higher education.

Prakash (2007) examined the trends in the expansion of higher education and also analyzed variations in participation across states, gender and social groups. He also discussed the trends in the financing of higher education and the required resources to meet the target of allocating 6 percent of the GDP to education. The study came to the conclusion that without appropriate policy interventions in school education, it would be of little use. Quantitative expansion and Qualitative improvement of higher education should command highest priority in the policy discourse.

Reddy (2007) in his study, argued that in the changing global socio-economic context, the secondary education was acquiring the characteristics of
pure public good in line with the elementary education. The study examined the trends in public financing of secondary education with the help of a few selected indicators like growth rate, public expenditure on education and secondary education expenditure as a proportion to Gross National Product and the budget provisions since 1990s. The results of the study clearly established the inadequacy of resources for secondary education, even if its importance grew. It observed that the entire education sector suffered from paucity of resources and the priority given to it in public allocation was also declining. The growth rate of public expenditure on secondary education since 1990s was found to be much lower than the same observed during the 1980s, with the exception of the second half of the 1990s. The per student expenditure on secondary education in real terms was found to have remained constant since 1990s. This suggested that limited expansion had taken place with poor or even deteriorated infrastructural facilities during that time.

So, economic literature abounds with the studies which maintain a nexus between education, employment, skill formation, globalization and its impact on employment. Such studies also stress on the criticality of human capital formation. But there seems to be a research gap in the evidence dealing with specifically the state of Punjab. Our study is a modest attempt to fill this research gap. The present study deals with human capital formation with reference to education and its impact on employment scenario of Punjab over the period 1981-2001. Planners have always keen to formulate policies regarding economic development. Human development has been away from their attention. Though the development of financial, physical and human resources is closely related to and mutually dependent upon the process of
economic development, but manpower appears to be the most fundamental resource. A country rich in natural resources and ample financial resources can’t necessarily achieve steady economic development if it lacks manpower to utilize and develop those physical and financial resources.

Policies of globalization and internal liberalization of economies pursued in most developing countries over the past decade or so have brought into sharp focus an added urgency to need for appropriate skill development programmes. New economic policy has opened the doors for foreign capital and technology. Import restrictions are being gradually removed. This has resulted in displacement of unskilled and semi-skilled labour force by skilled and highly skilled personnel. Development of skill and formation of knowledge are closely related to the way the education sector is expanded. To be more specific, the pattern of education system, among other things, determines the pace and level of skills formation. Educational attainment contributes a lot towards better health, improved skills, quicker adaptability to changes, increased awareness about the world of work, mobility of labour etc. Consequently, it leads to increasing labour force participation rate, more employment opportunities, changing occupational composition of the workforce resulting in increased stock of scientific and technical manpower. There is dearth of quality manpower in India.

Human capital formation via education enhances employability. But with the shrinking of employment opportunities in the government sector in general and the public sector in particular due to ongoing process of disinvestments, the employment situation has become quite grim. On the other hand, rising literacy levels in both rural and urban areas for male as well as
female workers has resulted in higher unemployment rates among the educated persons.

If we take up the case of Punjab, the picture for emerging human capital base of labour force appears to be rather discouraging. Because according to Census 2001, about 32.2 percent of the total main workers are totally illiterate. Census 2001 further records only 69.95 percent literacy in the state which is a matter of concern if one compares Punjab with other advanced states like Kerala. Educational levels of the main workers have been studied in order to bring out a broad picture of human capital base of the main workers in the state.

As far as economic development is concerned, the state has presented an example for other states to follow. But the roots of deprivation still exist here. Human development has been ignored in course of economic progress. Human Development Index (HDI) is measuring rod for human development. It encompasses education, health facilities and per capita income. These variables have been taken into account while determining the scenario of human development in the state. Selected educational indicators have been studied in detail in order to examine the development of education in Punjab. Education has a direct relationship with employment and it also affects employment structure of an economy. Therefore, after analyzing the educational development and quality of workforce, it is imperative to pinpoint the emerging trends in employment structure of the state. Employment structure of Punjab has shown a major shift in favour of secondary and tertiary sector. Agriculture itself is struggling for its existence in current phase of economic reforms. So,
share of agriculture in both state income and workforce of the state continues to fall.

Further, the study aims to point out that human capital formation in Punjab has been suffering from a number of chronic problems and constraints. Poor schooling and health facilities, lower rate of female literacy, poor level of education in rural areas, ignorance of modernization, lack of appropriate science and technology are major hindrances responsible for poor human capital base of Punjab. Policies and programmes relating to the development of human capabilities have to be successfully implemented, especially in rural areas. Expenditure on education, training and skill formation will have to be increased. In the wake of liberalization and globalization, our traditional system of education has become less relevant to the changing needs of labour market. That’s why unemployment is increasing. The possible reason may be the mismatches between the existing qualification of the educated and those desired by the employers. This study has also proved the pivotal role of education in human capital formation by applying correlation test.