CHAPTER - I

INTRODUCTION
CHAPTER - 1

INTRODUCTION

1.1 Concept and Significance of Human Capital.

The process of economic development involves a number of factors such as physical, financial and human resources. Conventional economic analysis on capital and investment theory usually concentrated on investment in physical capital assets such as machines, tools, factories and buildings as strategic inputs for economic growth and development. It was contented that the dynamics of economic growth and fluctuation in output and income could largely be explained and analysed in terms of change and movement in the level of investment in physical capital assets. However, since the middle of 1950s, studies on economic growth in advanced countries revealed the important role played by non-material investment especially human resource. It was found that the growth of capital stock was of relatively minor importance in accounting for the growth of total output (Abromovitz, 1956; Solow, 1957). It was further realised that investment in human capital was a critical factor in the development process of a nation and that investment in human beings had been the major source of economic growth in the advanced countries. (Shultz, 1960, 1961; Becker, 1960, 1975; Dennison, 1962).
Human Capital implies the skill, capacities and abilities possessed by an individual which enable him to earn an income (Bannock, et al., 1981). It is now universally accepted that human capital is the most fundamental of all economic resources. Prof. Frederic Harbison (1973) observed: "Human resources, not capital, nor income, nor material resources, constitute the ultimate basis for wealth of nations. Capital and natural resources are passive factors of production; human beings are the active agents who accumulate capital, exploit natural resources, build social, economic and political organisation; and carry forward national development. Clearly a country which is unable to develop the skills and knowledge of its people and to utilize them effectively in the national economy will be unable to develop anything else".

T.W. Shultz (1981), a pioneer in studying economic process leading to human capital formation and its impact on economic growth, stated that a decisive factor in the development process of a nation and securing human welfare is investment in people and knowledge. The most important economic resource in the world, according to Shultz, consists of the acquired abilities of people - their education, experiences, skills and health. It is human capital, not space, energy, cropland or other physical properties of the earth which is decisive in improving the welfare of poor people throughout the world. Investments in population quality through schooling, work experience, and improvement in health enhance human capital and contribute significantly to productivity and to personal satisfaction. Moreover, increases in
the acquired abilities of people and advances in useful knowledge hold the key to future economic productivity and to its contribution to human well-being.

Human capitals are developed in many ways. The principal activities for developing human skills, knowledge and capabilities, as Shultz (1961) suggests, may be identified as follows:

(1) "Health facilities and services, broadly conceived to include all expenditures that affect the life expectancy, strength and stamina, and the vigour and vitality of people;"

(2) "on-the-job training, including old-style apprenticeship organised by firms;"

(3) "formally organised education at the elementary, secondary and higher levels;"

(4) "study programmes for adults that are not organised by firms, including extension programmes notably in agriculture;" and

(5) "migration of individuals and families to adjust changing opportunities."

These activities increase and enhance the knowledge, abilities and skills of workers. They bring about improvement in the quality of the population and raise the productivity of the labour force and therefore future income level. Thus, expenditure
on education and training, health, nutrition and migration could be regarded as investment in human resources. Because these expenditures are not merely consumer outlays to satisfy current needs; they have long-run favourable effects on efficiency of human being as productive agents in manner similar to investment in material resources.

Human capital is basically formed by education and training. The formation of human capital by education has numerous peculiar characteristics quite distinct from those of physical capital formation such as factories, buildings, machineries and other financial assets. Shultz (1987) identified the following distinct attributes of human capital formation by education:

(a) "An individual’s stock of human capital cannot be sold, nor can it be given to someone else. It goes with the individual wherever he or she may go. If an individual were to migrate to another country, the government cannot confiscate that person’s human capital. Jews and other ethnic groups facing discrimination and the danger of being expelled have known this fact for ages."

(b) "To take advantage of human capital, an individual must do it in person."

(c) "The duration of the value of an individual’s human capital cannot exceed his or her life span."
(d) "In acquiring human capital the individual must invest some of his or her own time along with other resources, for example, in acquiring an education and the services of instructors."

(e) "It is efficient to invest in human capital during the period of youth because the value of time is less than it is when the individual grows older and because there will be a greater number of years in which to benefit from the acquired human capital."

(f) "Human capital depreciates over time as does physical capital. Some forms become obsolete in a short time because of changing circumstances. Other forms have along life even as circumstances change. It is exceedingly important to distinguish between short and long life investments, especially so in the case of education."

(g) "Women, for good reasons, invest in somewhat different forms of human capital than men."

1.2 Education and Economic Development:

The economic significance of education had long been recognised since the time of classical economists. Several of the classical economists like Adam Smith (1723-1790), Alfred Marshal (1842-1924) and John Stuart Mill (1808-1873) drew attention to the importance of education as a form of national investment, and considered the question how education should be financed. Adam Smith (1776) stressed the importance of education at various
points in the *Wealth of Nation* and pointed out that "a man educated at the expense of much labour and time..... may be compared to expensive machines". Other classical economists also observed that expenditure on education could be regarded as a form of investment that promised future benefits. Alfred Marshal (1890), emphasised the importance of education "as national investment" and in his view, "the most valuable of all capital is that invested in human beings". Russian economists, Strumilin (1924) had already examined the economic significance of education in the Soviet Union in the early parts of the twentieth century.

Recently, there was a revival of interest in the concept of investment in human capital in the advanced countries especially in U.S.A. and U.K. which stimulated new interest in the question between education and the economy. There has been tremendous growth of research works in the area of human capital formation especially through education and training. Bowman (1966) rightly described it as, "the human investment revolution in economic thought". The pioneering works in the field of investment in human capital were contributed by T.W.Shultz (1960, 1961), Walsh (1935), Jacob Mincer (1958), Gary S.Becker (1962, 1975), E.F.Denison (1962), and Kuznets and Friedman (1946). These economists and many others developed and analysed the concept of human capital treating education and training as a form of investment producing future benefits in the form of higher income for both educated individuals and for society as a whole and highlighted the catalytic role of education in the process of
technical transformation, socio-economic development and industrialisation in the advanced countries. Based upon these works, education has now been firmly established and asserted as an important factor contributing to economic development. According to Denison (1962), education contributes to growth of output and income at least in two distinct ways. First, it raises the quality and correspondingly the productivity of the labour force; and secondly, education accelerates the rate at which society's stock of knowledge itself advances. In fact, investment in education contributes to economic development by promoting the knowledge and application of science and technology to production process and developing innovation and research.

Education performs a variety of roles in the economy and discharges numerous functions in the process of growth (Prakash, 1996): (i) "Education acts as the catalyst of socio-economic change by generating appropriate attitudes and growth environment. It furnishes information and knowledge base, rational thought, attitude and values to change the irrelevant and obsolete and to pave the way for the establishment of new order"; (ii) "Education leads to greater degree of equalisation in the distribution of income and wealth through equalisation of opportunities. Investment in education tends to facilitate the vertical and upward movement of people belonging to lower income-occupation and social groups"; (iii) "Education supplies qualified manpower to meet human capital requirements of the economy"; (iv) "Education generates intermediate and final demand for the output of other sectors which it uses as flow and stock
input directly and indirectly"; (v) "Education generates employment directly and indirectly"; (vi) "Education leads to improvements in individual hygiene and public sanitation, family planning, nutrition, health and shelter."

Expenditure on education is thus an investment that produces economic returns comparable to investment in physical capital activities. There are numerous empirical studies which show that investment in education contributes to increased labour productivity, higher individual earnings and higher level of national economic development. Equally strong evidence is also available to show that investment in education helps to a reduction in poverty and inequality in income distribution, in addition to social demographic and political development.

Since the mid-1950s, economists have attempted different approaches to examine and quantify the contribution of investment in education on the growth of output and income in the economy. According to W.C.Bowen (1963), four main approaches have been distinguished : (i) the simple correlation approach; (ii) the residual approach; (iii) the returns to education approach; and (iv) the manpower planning approach. In the following pages, an attempt has been made to give a brief account of the major findings and conclusions of these approaches.

(i) The Correlation Approach

This approach consists of correlating some overall index of educational activity with the index of the level of economic activity. Based on this correlation, several attempts have been
made to determine quantitatively the relationships between indicators of educational development and economic growth for a country. Svenilson, et al., (1962) found a positive relationship between enrolment ratios and GNP per capita in a cross-section analysis of 22 European countries. Anderson and Bowmen (1963) found that primary schooling and literacy were more highly correlated with level of economic development than the provision of secondary or tertiary education.

One of the most valuable works in this approach was done by Harbison and Myers (1964). They examined the pattern of relationship between human resource development and stage of economic growth. Harbison and Myers found a close association between enrolment ratios at all levels of education and GNP per capita. Mc Clelland (1966) also tested the hypothesis that high educational attainment accelerates economic growth taking electricity consumption as an index of development. He found that countries with relatively higher levels of education embodied in the population developed at a higher rate.

Lockheed (1987) examined the effects of education on farmers efficiency in developing countries and found that education had a positive effect on farmers' efficiency. He observed education has a higher payoff for farmers in a changing modernizing environment than in a static traditional ones. In a cross-country study, Hicks (1987) found that the rapidly growing developing countries were those that had above average performance in both literacy and life expectancy. He examined the growth of a sample of 75 developing countries for the period
between 1960 and 1977. He found that literacy levels and growth are related. In addition, Hicks pointed out the strong correlation between literacy levels and life expectancy.

In the Indian context, mention may be made about the important works undertaken by Mukherji and Rao (1967), Choudhari (1969) and Ansari (1987, 1993). Mukherji and Rao examined the relationship between investment in education and economic growth in India. They concluded that only higher technical education could be considered as economic investment while other forms of expenditure might better be considered as consumption expenditure. Choudhari (1969) examined the relationship between education and productivity in Indian agriculture and obtained a positive relationship between literacy and yield per worker, literacy and yield per acre, primary education and yield per worker and primary education and yield per acre. Thus he found an associative relationship between education of farm workers and level of agriculture productivity. Ansari (1987, 1993) observed that neglect of education as judged in term of resource allocation has impeded economic growth in the country and due to low level of educational development, as measured by the level of literacy, the growth of Gross National Product (GNP) over the past decades of planning has been tardy and has increased at the rate of 3.5 per cent per annum. The coefficient of correlation between literacy and per capita income across the Indian states was positive and highly significant. The coefficient also indicated that in the states where there were more illiterates, the intensity of poverty was accordingly high.
(ii) The Residual Approach

This approach considers the increase in total national income of an economy over a given period of time and identifies as much of the total increases as possible with measurable inputs such as capital and labour and concludes that the residual is attributable to the unspecified inputs. Among the unspecified inputs, education and advances in knowledge are the most important. The names associated with this approach are Kendrick (1961), Solow (1957) Denison (1962) and Shultz (1961).

Kendrick found that for the US economy, over the period between 1889 and 1957, the combined input index increased at an average rate of 1.9 per cent per annum and the output index increased at about 3.5 per cent per annum, leaving a 'residual' increase of about 1.6 per cent. Thus 46 per cent of the increase in total output could be ascribed to the residual. Under the assumption of linear homogenous production and neutral technical change, Solow computed a 'residual' equal to 90 per cent of the increase in output per man hour in the US between 1919 and 1957. Denison estimated that 23 per cent of the growth of national and 42 per cent of growth of per capita income in the US economy from 1929 to 1957 has been accounted by education which constituted a part of the residual. Shultz estimated 60 per cent as a measure of 'unexplained' growth in the US economy between 1929 and 1956 and concluded that between 30 and 50 per cent of this residual could be taken as representing a return to the increased education of the labour force.
Dholakia (1974) attempted to quantify the contribution of education to economic growth in India. His study leads to the conclusion that the quality index of the labour force in India during 1948-49 to 1968-69 increased by only 7.5 per cent. This was because of the small base for which the educational development started, so that even a very rapid growth in it after the inception of planning in India had a very small overall effect. Prakash and Buragohain (1993) estimated that education accounted for 3 per cent of national income of India in 1961 and has grown to approximately 4 per cent in 1979.

(iii) The Returns to Education Approach

The education sector uses a vast amount of resources and it is therefore natural to ask the question relating to the returns from education, the allocative efficiency, and the efficiency of private decisions. The returns to education may be monetary or non-monetary and private as well as social. Generally, direct monetary benefits are taken into account in the calculation of rates of return to education.

Becker (1975) found that average money rates of return to education decreased as the level of education increased and college graduate earns more than high school graduates mainly because of their additional education. Becker, in his examination of the economics of on-the-job training, found that under perfect competition it was the workers rather than the employers that paid the cost of certain kinds of training. Miller (1960) calculated the lifetime income values by level of schooling.
Houthakker (1959) estimated, on the basis of alternative discount rates, the present value income streams associated with different levels of schooling. Hansen (1968) provided the estimate of the rates of return to investment in schooling in the United States. Psacharopoulos (1981) summarized the rates of return to education calculated for the developed and developing countries as follows:

(a) returns to primary school are higher than those of other levels of education;

(b) private returns exceed social returns, particularly at the university level;

(c) all rates of return are above 10 per cent;

(d) returns to education were higher in the poorer countries, reflecting the greater scarcities of trained manpower in these countries.

There are a number of studies relating to Indian data undertaken by different economists such as Nalla Gounden (1965), Mark Blaug, et al., (1969), Kothari (1967), Pandit (1972), Hussain (1967), Panchamukhi and Panchamukhi (1969), Chaudhari and Rao (1970), Chaudhari (1979) and Tilak (1987). From these studies, a few general conclusions may be drawn as follows:

(a) The returns to primary education are very high;

(b) The returns to high school education are fairly good;

(c) The returns to college education are low compared to school education;
(d) Professional education carries with it higher rates of returns than general education;

(e) Investment in education in India is not as profitable as investment in physical capital.

(iv) Manpower Planning Approach to Education:

This approach tries to give a rough estimate of the future requirements of educated and skilled manpower of an economy for different productive sectors. Modern economies require a wide range of human skills and knowledge possessed by manpower to generate the dynamics of development. In fact, it is impossible to utilize efficiently many of the complex forms of modern physical capital in the absence of a relatively high level of human skills. A country must plan in advance to have a group of scientists, technicians, administrative and managerial personnel in order to benefit fully from the new productive techniques that emerge from the advance in science and technology. The development of qualified human capital is the basic objective of manpower planning approach to education. Some of the techniques and methods adopted for projecting manpower requirements include:

(i) estimation on the basis of the employer's opinion about their future manpower requirements;
(ii) extrapolation of the past employment trends into the future (Harbison and Myers, 1974);
(iii) inter-country comparisons (OECD, 1962);
(iv) on the basis of Development Plan and Projects, and
(v) on the basis of Productivity of labour and future output (Parnes, 1964).
Educational planning is a comprehensive planning. A number of studies, based on the manpower approach, adopt an input-output econometric model of educational system. This method is based on the assumption of the existence of a homogeneous production function in the economy and also the operation of both constant returns to scale and diminishing returns. The pioneering works in this field are: Correa-Tinbergen-Bos (1964), Layard and Saigal (1966), Stone (1966) and the model for India including Burgess, Layard and Pant (1968), Ramanujan (1969), Shri Prakash (1971, 1977) Prakash and Radhakrishnan (1973) and Lawma (1990).

Correa-Tinbergen-Bos (1964) examined the balanced growth path of education. This model determines the equilibrium growth of manpower at different levels of education such as primary, secondary and university levels. This model views educational planning from the point of view of demand and recognises at the same time the self-contained nature of the education sector. Layard and Saigal (1966), in a study of international manpower comparisons, attempted to depict the single manpower growth path for all countries. The conclusion of the study is that there is a tendency for the educational levels of occupations to rise with output per worker. Stone (1965) developed an inter-temporal, multi-sectoral input-output model of education. He defined educational system as a chain of inter-dependent processes and his model is analogous to open dynamic input-output model where the number of students enrolled in a given year are shown as functions of future vectors of graduate leavers. He designed an
input-output accounting matrix with the number of students as inputs and graduates leaving the education system as output. He also made allowances for wastages, drop-outs and technological changes.

Burgess, Layard and Pant (1968) defined the structure of employment in India by levels of education and industry on the basis of 1961 Census. They also estimated the manpower requirements of various categories of higher level by making several important assumptions about the sectoral growth rates. Ramanujan (1969) estimated the occupation-educated manpower requirements of India for 1970-71, 1975-76 and 1980-81 using the input-output data for the Indian Economy. Shri Prakash (1977) developed an input-output model for educational planning in India. He dealt with the methods of estimating the manpower requirements based on a given rate and a pattern of future economic growth and thus determining the supply of manpower with different levels and types of education. In another study, Prakash (1971) projected the occupation-educational structure of manpower for two public sector industries in India.

Again, Prakash and Radhakrishnan (1973) attempted to estimate the private demand for education and the study found that the demand for education is a function of a number of factors such as, socio-economic, cultural, demographic and educational factors. The influence of parents' income and occupation in demand for education is much higher at the higher level and type of education. Lawma (1990) analysed the problem of upgrading and downgrading of educational qualifications
systematically at the conceptual, methodological and empirical levels. The study attempts to measure the nature, degree and direction of divergencies between the desired and the actual levels and patterns of educational qualifications in the different sectors of the economy and the occupations within them. The study also established that the labour market even in an underdeveloped and isolated region like North East India is neither local nor segmented in nature, as a substantial proportion of manpower is imported from the rest of the country in order to meet shortages in local supply. He has also succeeded in establishing the patterns of inter and intra-regional migration by the levels and types of education, occupation and various sectors of the economy which highlight the role of migration as a balancing factor in the regional labour markets. Other important findings of the study are: (a) Formal qualifications are more important for job entry in the general education based jobs; (b) Practical training and work experience are more important for job entry in the general education based jobs; (c) In professional/technical based jobs, experience is more important for vertical mobility; (d) The possibilities of upgradation of qualifications are more in general education based jobs.

1.3 The Problem: Nature, Scope and Coverage:

Recognition of economic functions of education and its role in development has led to the allocation of a large proportion of public fund to the development of education, especially in developing countries. In India, like many other
Developing countries, national commitment was made in the field of education after Independence. The educational system from primary to university education was greatly expanded because of consistent effort made under Five Year Plans. Access to educational facilities is now opened to a vast majority of the people. Presently, India had the second largest elementary education system in the world with 149.9 million children in the age group of 6-14 years enrolled which is about 82% in terms of coverage. Also, an estimated 94% of the rural population now has access to primary schooling facilities within a walking distance of 1 km.; and 84% of the population is served by middle or upper primary schools within a distance of 3 kms. The growth of recognised educational institutions since 1950-1951 is shown in Table 1.1.
Table 1.1 Growth of Recognised Educational Institutions Since 1950-1951

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary '000</td>
<td>210</td>
<td>330</td>
<td>408</td>
<td>495</td>
<td>561</td>
<td>565</td>
<td>572</td>
</tr>
<tr>
<td>Middle '000</td>
<td>13.6</td>
<td>49.7</td>
<td>90.6</td>
<td>119</td>
<td>151</td>
<td>152</td>
<td>156</td>
</tr>
<tr>
<td>High/Higher Sec. '000</td>
<td>7.3</td>
<td>17.3</td>
<td>37.1</td>
<td>51.6</td>
<td>79.8</td>
<td>81.2</td>
<td>84.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Colleges</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education nos.</td>
<td>370</td>
<td>967</td>
<td>2,285</td>
<td>3,421</td>
<td>4,862</td>
<td>5,058</td>
<td>5,334</td>
</tr>
<tr>
<td>Engineering nos.</td>
<td>208</td>
<td>852</td>
<td>992</td>
<td>1317</td>
<td>886</td>
<td>N.A.</td>
<td>989</td>
</tr>
<tr>
<td>Medical (Including Dental)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Universities nos.</td>
<td>27</td>
<td>45</td>
<td>82</td>
<td>110</td>
<td>184@</td>
<td>196@</td>
<td>207@</td>
</tr>
</tbody>
</table>

Note: * Colleges for Professional Education, @ includes deemed Universities and Institutions of national importance.

The Higher Education sector, vital for the national economy, has also witnessed a steady growth since Independence in 1947. As on 1993-94, there were 213 central and state universities including Deemed universities and Institution of national importance. The number of colleges for general education increased from 370 in 1950-51 to 5,639 in 1993-94. Table 1.1 indicates that in the post-Independence period, both elementary and Higher education have increased tremendously although the latter increased much more rapidly than the former. Whereas school education have risen 2.36 times during the period between 1950-51 and 1993-94, the number of higher educational institutions have grown by 14.23 times during the same period. Enrolment in higher education increased from 2 lakh to 48 lakh students i.e. 24 times over the same period (PIB, Government of India, 1996).

The spectacular growth of education in the country absorbs a large amount of the national investible resources resulting in a serious resource crunch due to its limited share in public budget and a competition for resources with other sectors of the economy. In India, the national educational expenditure has been increasing rapidly and steadily since Independence. It increased from Rs.114 crores in 1950-51 to Rs.25,502 crores in 1992-93, measured in current prices. In terms of proportion of Gross Domestic Product, it increased from 1.27 per cent to 4.06 per cent between 1950 and 1992. This trend is shown in Table 1.2. While expenditure on education increased considerably, the share
of educational expenditure to total budget has been declining gradually over the years. Table 1.3 shows that the Indian states and union territories taken together devoted 19.8 per cent of total budget to education in 1967-68. This proportion decreased to 17.1 per cent in 1992-93. The percentage of educational expenditure to total budget at the Centre decreased from 1.6 to 1.3 per cent during the same period.

On the basis of budgetary trends observed in India, one can predict that resources available for education in future may be further limited in amount. In fact, public authority will find it difficult to earmark more of its revenue resources for the development of education, particularly higher education. On the other hand, factors like increase in population, urbanisation, improvement in economic standard, social and cultural consciousness has further increased the demand for education. In order to meet this increasing demand for education with the available limited resources, planners and policy makers will have to plan from now onwards. For this purpose, they have to evolve methods for lowering the costs of education for a given level of output or increase the productivity of given inputs. Unit cost analysis is the first step in achieving these objectives.


<table>
<thead>
<tr>
<th>Year</th>
<th>GDP (Rs. Crores)</th>
<th>Total Educational Expenditure (Rs. Crores)</th>
<th>Educational Expenditure as Percentage of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950-51</td>
<td>8,979</td>
<td>114</td>
<td>1.27</td>
</tr>
<tr>
<td>1960-61</td>
<td>15,254</td>
<td>344</td>
<td>2.26</td>
</tr>
<tr>
<td>1970-71</td>
<td>39,708</td>
<td>1,118</td>
<td>2.82</td>
</tr>
<tr>
<td>1975-76</td>
<td>71,201</td>
<td>2,105</td>
<td>2.96</td>
</tr>
<tr>
<td>1980-81</td>
<td>122,427</td>
<td>3,641</td>
<td>2.97</td>
</tr>
<tr>
<td>1985-86</td>
<td>233,799</td>
<td>7,457</td>
<td>3.19</td>
</tr>
<tr>
<td>1986-87</td>
<td>260,030</td>
<td>8,450</td>
<td>3.25</td>
</tr>
<tr>
<td>1987-88</td>
<td>294,851</td>
<td>10,430</td>
<td>3.54</td>
</tr>
<tr>
<td>1988-89</td>
<td>352,703</td>
<td>12,409</td>
<td>3.52</td>
</tr>
<tr>
<td>1989-90</td>
<td>408,661</td>
<td>15,292</td>
<td>3.74</td>
</tr>
<tr>
<td>1990-91</td>
<td>475,604</td>
<td>20,761</td>
<td>4.37</td>
</tr>
<tr>
<td>1991-92</td>
<td>551,552</td>
<td>23,248(RE)</td>
<td>4.21</td>
</tr>
<tr>
<td>1992-93</td>
<td>627,913</td>
<td>25,502(BE)</td>
<td>4.06</td>
</tr>
</tbody>
</table>

RE: Revised Estimate  BE: Budget Estimate  GDP: Gross Domestic Product

Sources: (i) Central Statistical Organisation, National Accounts Statistics - 1994
(ii) Ministry of Human Resource Development.
### TABLE 1.3 Percentage of Educational Expenditure on Education Department to Total Budget

<table>
<thead>
<tr>
<th>Year</th>
<th>State/Union Territory</th>
<th>Centre</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1967-68</td>
<td>19.8</td>
<td>1.6</td>
<td>11.9</td>
</tr>
<tr>
<td>1970-71</td>
<td>21.4</td>
<td>2.6</td>
<td>13.9</td>
</tr>
<tr>
<td>1975-76</td>
<td>22.7</td>
<td>2.1</td>
<td>13.6</td>
</tr>
<tr>
<td>1980-81</td>
<td>20.6</td>
<td>1.6</td>
<td>11.6</td>
</tr>
<tr>
<td>1981-82</td>
<td>20.0</td>
<td>1.5</td>
<td>11.3</td>
</tr>
<tr>
<td>1982-83</td>
<td>21.3</td>
<td>1.3</td>
<td>10.8</td>
</tr>
<tr>
<td>1983-84</td>
<td>20.8</td>
<td>1.5</td>
<td>11.4</td>
</tr>
<tr>
<td>1984-85</td>
<td>20.5</td>
<td>1.6</td>
<td>11.2</td>
</tr>
<tr>
<td>1990-91</td>
<td>17.9</td>
<td>1.5</td>
<td>8.9</td>
</tr>
<tr>
<td>1991-92(RE)</td>
<td>17.0</td>
<td>1.5</td>
<td>8.8</td>
</tr>
<tr>
<td>1992-93(BE)</td>
<td>17.1</td>
<td>1.3</td>
<td>8.7</td>
</tr>
</tbody>
</table>

RE : Revised Estimate BE: Budget Estimate

Sources: Ministry of Human Resource Development:

(i) A Handbook of Educational and Allied Statistics

(ii) Analysis of Budgeted Expenditure on Education.
The estimates of unit cost of education have attracted the attention of researchers and policy makers in India and abroad. Quite a few studies on cost of education at the national, state and micro-level have been done in India by individual researchers and commissions/committees. To the best of our knowledge, no systematic study has ever been done on this topic in the North Eastern Region of India. The present study is a modest attempt to analyse and estimate unit cost of higher education in Mizoram.

The scope and coverage of the study may be as follows:

(i) The study is confined to the cost analysis of college education which includes Pre-University courses and Degree courses. The study does not deal with post-graduate education at the university and other post-matric education of technical and professional education like Polytechnic and Teachers’ training institutes;

(ii) The estimates of institutional cost excludes the expenditure on Direction and Administration incurred at the Secretariat and Directorate level;

(iii) Expenditures on scholarship, stipends and other financial assistance received by students from various sources are treated as transfer payments and hence excluded from the calculation of unit cost of higher education;

(iv) Opportunity costs are not estimated. The total cost of college education, therefore consists of direct private costs and direct institutional costs of education, net of transfer payments.
1.4 Objectives of the Study:

Mizoram has been making rapid progress in the field of general education since Independence. The Government as well as individual household devote a good deal of resource towards the development of education in the State. However, the experience of Mizoram shows that rational calculations have not played at any stage a decisive role in the allocation of public funds for education and the public authority has not so far looked into the problem as to whether resources invested in education sector are efficiently utilized. Presently, the state government is facing serious resource crunch and the government finds it difficult to divert more resources for the education sector. Therefore, the development and further qualitative improvements of the existing system have become almost impossible. A study of unit cost of higher education would be of immense help in assessing the efficiency of resource utilisation. In this study, attempts have been made to estimate the institutional cost, both recurring and non-recurring, and private costs of education at the college level. More specifically, the study has the following objectives:

1. To analyse the pattern and growth trend of public expenditure on education in Mizoram between 1972-73 and 1993-94;

2. To analyse the various sources of educational finance with special reference to college education — their organisation, control and administration;

3. To estimate unit cost of college education and to analyse the pattern and trend of institutional unit cost;
4. To study the relationship between unit cost and enrolment size; and

5. To estimate direct private costs of college education and to assess the impact of socio-economic status of the parents on the educational expenditure pattern of children.

1.5 Importance of the Study:

Estimation of unit cost has many practical significance in the field of educational planning. It is an important technique by which education planners and policy-makers can evaluate the internal and external efficiency of an educational institution in terms of productivity and allocation of resources. The International Institute for Educational Planning, in their research project in 1968 examined the various ways of using cost analysis in both developed and developing countries and the study concluded that cost analysis serves a variety of purposes in educational planning (IIEP, 1972).

Fielden and Pearson also emphasised the value of cost analysis in the following words: "In the current economic climate, resources for education and training are becoming scarcer. There will be increasing pressure from policy-makers for cost reduction and increased "efficiency" and there is likely to be more resistance to providing extra resources for educational projects. Educational staff will therefore need even more than before, to make the best use of the resources available, to examine carefully the full resource implications of any proposed
new schemes, and to support their arguments with quantitative data wherever possible. Cost analysis can be a powerful aid to achieve these aims." (Fielden and Pearson, 1978,) Unit cost analysis serves the following purposes:

(i) Estimating and working out resources required for educational sector and for various sub-sectors of education;

(ii) To improve the efficiency of resources invested in education;

(iii) To evaluate if resources allocated to education are optimally used and within educational sector whether resources are optimally allocated between different sub-system of education;

(iv) To assess the cost-effectiveness and cost-benefit ratio of the educational system as a whole and of the different levels of the system.

1.6 Conceptual Framework:

Educational institutions may be considered as the firms of education industry. Schools, colleges and universities, therefore, constitute the firms that undertake the production of good or service called 'education'. The education industry as a whole consists of educational institutions, physical equipments, students, teachers and management. As in other industrial process, it is interesting to study the structure of inputs and
outputs of the educational system in order to make rational decisions with respect to resource allocation in the field of education.

Educational institutions, like other producing units, transform inputs into outputs, incurring costs in the process. The identification of the unit of output in education is a typical problem. Enrolments are generally taken as the output of education in order to estimate unit costs of education. Students enter into educational institutions as the raw-material to be processed, and are transmitted from lower to higher stages as goods in process. The output of education may be said to be the "knowledge added" or "educational value added" which consist of the knowledge absorbed and capabilities developed by the students at each stage of their education. Total enrolment is taken as gross output and the number of passed-out or graduates can be regarded as Net Output (Prakash, 1996).

The inputs of the educational plant consist of both the human and physical resources. These factor inputs comprise of the services of teachers and other non-teaching staff as human inputs, inputs of students' time and services as raw materials, services of the means of transportation and communications and services of such material goods as books, stationery, uniforms, buildings, laboratory and other equipment as physical inputs of the educational production.
Evaluation of the cost of factor services is the basis of educational cost analysis. The factor cost of education is the sum total of expenditure paid for different factor inputs used in the educational production function such as teachers, auxiliary staff, building, equipments, furniture, books and stationery. The services of these factor inputs are purchased from different market. The size of the markets of individual input may be spread from purely local to international and their structures may be approximated from pure competition to near perfect monopoly. However, most of the markets are highly specialised oligopolistic markets with highly differentiated products. The education institutions which buy the factor services has to pay fixed prices set by the public authority in case of academic and non-academic staff while the services of other physical inputs at the prices prevailing in the market. In centrally planned economies, prices are fixed by government while prices are the result of the interplay of the forces of demand and supply in market economies (Prakash, 1996). Analysis and estimation of factor cost of education involves the classification of these inputs into different components and assess their level of utilisation. This type of analysis is useful for rationalizing investment strategies in the education sector. In the next section, the various components of factor cost of education are analysed.
1.7 Taxonomy of Cost of Education:

The cost of education consists of three major components: These are (i) institutional cost, (ii) private or student cost, and (iii) opportunity cost. Institutional cost represents the cost incurred by the government or educational institution or both in operating and maintaining the institution to provide facilities of education. Private cost of education may be defined as that part of investment in education which is made either by the student or his/her parents or both. Opportunity cost is the earning forgone by a student on account of pursuing a given level of education or the benefits forgone that would have been available to the society in the absence of educational programme (Woodhall, 1987). However, the estimation of opportunity cost is outside the scope of the present study. Thus, the present study is confined to the analysis of direct institutional and private cost of higher education in Mizoram.

Institutional cost is usually classified into recurring and non-recurring cost or current and capital cost. Sometimes, it may also be classified into variable and fixed cost of education. It should however be noted that except for the terminology, the three classification represent more or less the same meaning. Thus, the fixed cost or capital cost or non-recurring cost means the purchase of durable assets which are expected to yield benefits over a longer period while recurring or current or variable cost includes all expenditure on consumable goods and services which bring immediate or short term benefits and have to be regularly renewed (Woodhall, 1987).
The major items of recurring cost are:

(i) **Teaching Costs**: Teachers are the basic input of the educational system. The teaching cost means the cost incurred on the salary and allowances of teachers employed in the college. Although the Principals of the college do not take regular classes, they have been considered as members of the teaching staff.

(ii) **Non-Teaching Staff Cost**: Non-teaching staff constitutes an auxiliary input of educational production system. Wages and salaries of non-teaching staff are treated as an item of recurring expenditure or cost. Non-teaching staff includes staff engaged in the general administration of the college, finance/account staff, laboratories and library staff.

(iii) **Common Services and Other Recurring Costs**: The cost under these items include expenditure on consumable items for laboratories, current expenditure on maintenance and repairs of buildings, equipments and furniture, rent, telephone bills, electric and water charges, stationery and postal charges.

(iv) **Student Service Cost**: This cost includes the expenditure incurred on games and sports and other socio-cultural activities organised by the students themselves.
Recurring cost may be divided into two parts - divisible and non-divisible. Some of the components of recurring costs are divisible in the sense that these costs are incurred in providing services to a group or part of the student body e.g. salaries and allowances of teachers and current expenditure on consumable stores for laboratory. Non-divisible costs comprise those items of expenditure which are incurred for providing common services to all students in the institutions and cannot be assigned to any category of students or course. These items include salaries of non-teaching staff, common services and other recurring costs excluding current laboratory expenses and costs of student activities.

The items of non-recurring or capital costs include the expenditure on buildings, land, library books, furniture, office and laboratory equipments and other items of permanent nature. The following non-recurring costs are estimated in the analysis.

(i) Building: Generally investment on building happens to be the largest component of non-recurring or capital cost. There are two types of expenditure on building: first, annual expenditure on the routine maintenance and repairs of the existing buildings and this portion is classified as recurring expenditure, and secondly, expenditure on building construction, addition and major alteration are considered as non-recurring cost.
(ii) Library books: Expenditure on books and Journal are treated as investment in capital assets. They are available for use by students and teachers for several years. But expenditure on binding, insecticides and other consumables are regarded as recurring cost.

(iii) Furniture and Equipment: These items are an essential input of educational production. They have their own life span and their services could be utilised during over its lifetime. Therefore, any expenditure on typewriters, duplicating machines, laboratory equipments, benches, tables, desks, and other durable assets are treated as non-recurring cost while annual maintenance and repairs are a part of recurring cost.

Private cost of education is broadly divided into direct cost and indirect cost. Direct private cost is defined as the cost directly incurred by a household for the education of students. Direct cost has two components: academic cost and non-academic cost. Academic cost indicates expenditure directly related with the education of the student, whereas the costs which are related with their supports and maintenance educational instruction are referred to as non-academic cost. The major components of academic cost are fees given to the college, cost of book and stationery and other instructional costs. Non-academic costs include expenditure on food, transport and communication and personal maintenance.
The items under Academic and non-academic cost may be explained as under:

A. Academic Costs:

(i) Fees: Fees consist of tuition fee and other fees directly collected by the colleges.

(ii) Books and Stationery: These items include the expenditure incurred by the students and their families on textbooks, magazines, daily newspapers, exercise books, papers, pen, tools and instruments.

B. Non-Academic Costs:

(iii) Food: The expenditure on food constitutes an important component of private cost of education. In this respect, students may be divided into hostellers and day-scholars. The day scholars are of two types: those who stay with their parents and those who make their own arrangement outside hostel. The expenditure on food and lodging of these two categories will not be same. While the expenditure of the hostellers can easily be estimated, it is not easy for those of day-scholars. The expenditure on food and lodging may vary considerably according to individual tastes and habits and more importantly, the economic status of the students or his parents.
(iv) **Transport and Communication**: These items include the amount of expenditure incurred by the students for their journey to and from the place of study, daily transport for going to the colleges, postages and other related items.

(v) **Personal Maintenance**: Expenditure on personal maintenance incurred by the student includes items on clothing, footwear, medicines and medical check-up and other consumables like soap, toothpastes and toiletries.

Indirect cost or opportunity cost of education is generally assessed in terms of the foregone earnings. It consists of loss of income that a student could have earned, had he gone for employment instead of pursuing education. There is some controversy relating to the inclusions of opportunity cost of student in the total cost of education. Blaug (1970) argued that earnings foregone should be included in any estimate of the true cost of education but Vaizey (1962) rejected this view. However quite a few economists have attempted to measure the opportunity cost in their study on cost-benefit analysis in education and for assessing the total resource cost of education. (Shultz, 1961, Blaug, et al. 1969, Becker, 1975, OECD, 1977, Tilak 1987).
The following chart illustrates the taxonomy of cost of education:

- **Total cost of education**
  - **Institutional Cost**
  - **Private or personal Cost**
    - **Academic cost**
      - 1. Fees
      - 2. Books & Stationery
    - **Non-academic Cost**
      - 1. Food
      - 2. Transport & Communication
      - 3. Personal Maintenance
  - **Opportunity Cost**
    - **Recurring**
      - 1. Teaching cost
      - 2. Non-teaching staff cost
      - 3. Common service & Other recurring cost
      - 4. Student service cost
    - **Non-recurring**
      - 1. Building
      - 2. Library Books
      - 3. Furniture/equipment

Fig. 1.1 Taxonomy of Cost of Education.
1.8 Methodology and Sources of Data:

Higher education in this study implied college education which includes Pre-University and Degree courses in general education. The analysis has been based on the data collected through surveys conducted in the colleges included in the study. The information relating to the institutional costs were obtained from these colleges. Data with regard to the cost of education directly borne by the students and their parents were collected from sample survey among the students. Data and information were also collected from several published and unpublished records of the government departments and other secondary sources.

The growth of institutional cost was examined for the period between 1983-84 and 1993-94. The pattern and structure of institutional unit cost per student has also been estimated separately by type of management and by the number of courses serviced in the college, i.e. course-wise. The estimate of private cost was related to the academic year 1993-94.

The analysis of data has been carried out by using simple statistics like percentage, Means, Standard Deviation (SD), Coefficient of Variation (CV) and regression analysis. The pattern of institutional cost was evaluated by the analysis of the proportionate/percentage shares of expenditure on individual items in the total costs. The various components of private cost were estimated using the Mean, Standard Deviation, Maxima and Minima. For showing the variation and variability of private cost of education the coefficient of variation which is the ratio of Standard Deviation with Mean has been adopted.
The ordinary least squares (OLS) regression technique has been used to estimate the relationship between enrolment size and institutional unit cost per student and for analysing and fitting of the trend curve of the time series data on public expenditure on education and Unit Costs of education. The mathematical model for the regression equation is

\[ Y = a + bX \quad (1.1) \]

where \( Y \) and \( X \) are the dependent and independent variable, \( 'a' \) is \( Y \)-intercept and \( 'b' \) is the regression coefficient which shows the rate of change of dependent variable for unit change in the independent variable. The strength of the relationship between the dependent variable and independent variables have been measured by the coefficient of determination, denoted by \( r^2 \) which shows how well the overall equation explains changes in the dependent variables and the t-statistic which determines the significance of the relationship between the dependent variable and independent variables.

Traditional economic theory postulates that average cost curve is U-shaped which implies that average or unit cost declines with an increase in output till the optimum size is reached. The relationship between unit cost of education and enrolments which are generally regarded as the proxy of output of education, has also been assumed to have a typical U-shaped curve indicating that the unit cost falls with an increase in enrolments till the optimum size is reached, and later, it increases as enrolments expand. The U-shaped cost curve may be
approximated mathematically by the quadratic function or second degree polynomial function:

\[ Y = a + bX + cX^2 \]  

(1.2)

where \( Y \) is the unit cost per student, \( X \) is enrolment and \( a, b, c \) are the constant for the function. For unit cost \( Y \) to be minimum, the following conditions will have to be satisfied:

\[ \frac{dY}{dX} = b + 2cX = 0 \]  

(1.3)

and \( \frac{d^2Y}{dX^2} > 0. \)  

(1.4)

Convexity of the curve warrants that \( b<0 \) and \( c>0 \) hold together. Solution of equation (1.3) will furnish an estimate of the optimum enrolment size, say \( X^* \):

\[ X^* = \frac{-b}{2c} \]  

(1.5)

Since \( b \) is negative, the solution value of equation 1.2 at \( X = X^* \) gives the minimum cost that will correspond to the optimum enrolment size (Prakash, 1996(a)).

The quadratic function had been fitted to the cost-enrolment data of different colleges to determine minimum cost and optimum size corresponding to it.

1.8.1 Calculation of Institutional cost:

The institutional cost of education is the sum of the total expenditure on recurring and non-recurring items:

\[ E = RE + NRE \]  

(1.6)
where \( E \) is the total institutional cost or expenditure, \( RE \) is Recurring cost and \( NRE \) is Non-recurring cost. Dividing 1.6 by the number of students enrolled \((N)\) gives the overall institutional unit cost \((UC)\) on the left-hand side of 1.6 and the unit cost on recurring and non-recurring items on the right-hand side:

\[
\frac{E}{N} = UC = \frac{RE}{N} + \frac{NRE}{N} \tag{1.7}
\]

Recurring cost or expenditure can further be classified into the salary and allowances of teaching \((TC)\) and non-teaching staff \((NTS)\), spending on common activities and other recurring items \((CR)\) and student activities on games and sports and socio-cultural functions \((SS)\). The link between overall and the various components of recurring cost may be written with the following identity:

\[
RE = TC + NTS + CR + SS \tag{1.8}
\]

Dividing 1.8 by the number of students enrolled \((N)\) furnishes unit recurring cost \((UCRE)\) on the left-hand side of 1.8 and the unit cost of each contributory factors on the right-hand side:

\[
\frac{RE}{N} = UCRE = \frac{TC}{N} + \frac{NTS}{N} + \frac{CS}{N} + \frac{SS}{N} \tag{1.9}
\]

The sum of teachers' salaries and allowances may be expressed as the product of the number of teachers \((NT)\) and their average salary \((AS)\). Thus, 1.4 can be written as:

\[
UCRE = \frac{(NT \cdot AS)}{N} + nts + cs + ss \tag{1.9'}
\]

where the lower case letters indicate unit rather total cost of factor inputs of recurring nature.
Similarly, non-recurring cost includes the expenditure on buildings construction (BE), library books (LB) and furniture/equipments (Q). The annual unit cost on non-recurring items (UCNRE) is obtained when the various components of Non-recurring cost are divided by number of students enrolled (N):

\[
\frac{NRE}{N} = \frac{UCNRE}{N} = \frac{BE}{N} + \frac{LB}{N} + \frac{Q}{N}
\]  

(1.10)

Educational institution collects tuition fee and other fees (F) from the students. These fees income are deducted to get the actual or net cost borne by the institutions. Therefore, the net institutional cost (NUC) per student is equal to the difference between the total institutional cost (E) and fee income (F) and divided by the number of students enrolled (N)

\[
NUC = \frac{E}{N} - \frac{F}{N}
\]  

(1.11)

1.8.2 Calculation of Direct Private Cost:

The cost of education directly borne by the students and their families has been classified into two components: (i) Academic costs which were directly related with education such as expenditure on fees, books and stationery, and (ii) Non-academic costs which were expenditure related with their support and maintenance such as food, transport and personal maintenance. Students received scholarships, stipends and other grants and these amounts are deducted to arrive at the net private cost of education.
The cost of fees incurred by the students were directly collected from the Cash book of the colleges while the expenditures on other items such as books, stationery, transport and personal maintenance were calculated from the survey data among the students. The cost of food has included the expenditure incurred by the students on their mess bills in the hostel and at home including daily tiffin expenses in the colleges. The rent paid by the students to the hostel and accommodation charges in rented houses were also included in the cost of food. The cost of food for day scholars who live with their parents was imputed on the basis of the size of the family; similarly, the imputed rent was also estimated from the average rent paid by the students who arranged their own accommodation outside hostel.

1.8.3 Selection of the Sample:

The sample design of the study involved two stages: (i) the selection of colleges, and (ii) the selection of the students. At the time of collection of data in 1993-94, there were 29 colleges in Mizoram and 13 of them were general degree colleges affiliated to North Eastern Hill University (NEHU). The remaining 16 colleges were either recognised or affiliated only upto Pre-University level. These degree colleges were selected to represent the sample of the analysis. However, data could be collected only from 10 colleges. Hence, the study of unit cost of higher education covered ten general degree colleges in Mizoram. They are given in Table 1.4.
Table 1.4 indicates that the distribution of the sample colleges consisted of one University college, five State Government colleges and four private colleges which were semi-government institutions and received grants-in-aid for maintenance and development purposes. There were four colleges offering Arts course only. Three colleges were having both Arts and Science programme of studies, while only one college offered Arts and Commerce course. And only two colleges had Arts, Science and Commerce. The total enrolment of all colleges taken together was 16057 students in 1993-94. Thus, the sample in the study covered 53.66 per cent of the total enrolment in colleges in Mizoram.

The distribution of enrolment in the sample colleges according to type of management as given in Table 4.1 reveals that 15.71 per cent were enrolled in the University college while the total enrolment in the state Government colleges was 4450 students which was 51.65 per cent of total enrolment in the selected colleges. The sample colleges under private management had enrolled 2812 students, comprising 32.64 per cent of the total enrolment in sample colleges.
<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Name of the College</th>
<th>Year of Establishment</th>
<th>Enrolment 1993</th>
<th>No. of Teachers</th>
<th>Art/Sci/Commers</th>
<th>Arts/Commerce</th>
<th>Arts/Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. University Colleges</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Pachhunga University College</td>
<td>1985</td>
<td>1354</td>
<td>75</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>B. State Government Colleges</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Aizawl College¹</td>
<td>1975</td>
<td>1749</td>
<td>46</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Zirtiri Women's College²</td>
<td>1980</td>
<td>419</td>
<td>21</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Champhai College</td>
<td>1971</td>
<td>714</td>
<td>25</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>Lunglei College</td>
<td>1963</td>
<td>740</td>
<td>32</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Saiha College³</td>
<td>1978</td>
<td>828</td>
<td>28</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>C. Private Colleges (under deficit grant-in-aid system)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Hrangbana College⁴</td>
<td>1980</td>
<td>1355</td>
<td>40</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>Hnahthial College</td>
<td>1979</td>
<td>222</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9</td>
<td>J.B. College</td>
<td>1983</td>
<td>688</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>Lawngtlai College</td>
<td>1980</td>
<td>547</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>8616</td>
<td>304</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

**Note:**
1. Science & Commerce upto Pre-University
2. Home Science only
3. Science upto Pre University level
4. Enrolment included only Day shift students
In the sample survey conducted among the students, stratified random sampling technique was adopted. Students were stratified according to their respective classes and the student sample was drawn randomly from each class. Five per cent of the students from each class were selected to represent the population of the sample and they were administered the questionnaire specifically prepared for them. However, the actual sample turned out to four per cent of the student enrolled in each class after the exclusion of incomplete and no response of the sample.

The total number of students in the sample consisted of 351 students who were drawn from the selected colleges. The distribution of the student sample population according to the classwise is given below in Table 1.5

Table 1.5 Distribution of sample population of the students.

<table>
<thead>
<tr>
<th>Classes</th>
<th>Number of students in the sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pre University (Arts)</td>
<td>155</td>
</tr>
<tr>
<td>2. Pre-University (Science)</td>
<td>37</td>
</tr>
<tr>
<td>3. Pre-University (Commerce)</td>
<td>27</td>
</tr>
<tr>
<td>4. B.A</td>
<td>100</td>
</tr>
<tr>
<td>5. B.Sc</td>
<td>19</td>
</tr>
<tr>
<td>6. B. Com</td>
<td>13</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>351</strong></td>
</tr>
</tbody>
</table>
1.8.4 Collection of Data:

There is no secondary data available to estimate either institutional cost or private cost directly borne by the students except tuition fee and other fees paid to the college. Hence, most of the required information and data on institutional cost as well as private cost of college education were collected from primary sources. For this purpose, questionnaires were developed and administered to the sample population. All the colleges included in the study were visited and the relevant information and data relating to the institutions were collected with the help of the principals and other office staff. Students were randomly selected from each class and they were guided and helped in filling up the questionnaire. The data collected in this way formed the basis of estimation of unit cost of higher education in Mizoram.

Three types of questionnaires were constructed and used for data collection. These are:

(1) **State level questionnaire**: This questionnaire was designed to collect data and information from primary sources like the Directorate of Higher & Technical Education and Directorate of School Education and other concerned offices. State level data on enrolment, financial expenditure on recurring and non-recurring items were collected through this questionnaire. The questionnaire is appended in Appendix-A.
(2) Institutional level questionnaire: This questionnaire was developed to collect information on institutional cost and other related materials needed for the estimation of unit cost. The questionnaire has collected informations like number of teaching and non-teaching staff, enrolments, university examination results and financial expenditure on recurring and non-recurring items like salaries and allowances of teaching and non-teaching staff, games and sports, office expenditure, buildings, library books, other durable goods like furniture and equipment and finally fund received from various sources like government, fees and other donations from individuals. The questionnaire is given in Appendix-B.

(3) Questionaire for Students: This questionaire was used for collecting information about different components of private costs and the socio-economic status of the parents of the students. It has collected data on the following aspects: (1) student background - family size, income and occupation of the parents, (2) monthly-average expenditure on food and rent paid to the hostel and other accommodations, (3) annual average expenditure on transport and communication, (4) expenditure on textbooks and stationery, (5) annual expenditure on clothing and other personal expenditure on toilet items and (6) expenditure on private tuition. Those items given on a monthly basis were adjusted per year at the tabulation level and the overall expenditure is aggregated and expressed as cost per student per year. The questionaire is appended in Appendix-C.
(4) Other Sources of Data:

In addition to the data and information collected with the help of questionaires, data were also collected from published and unpublished sources of government departments like Directorate of Economics and Statistics, Planning and Programme Implementation Department, Budget Documents from the Government of Mizoram, Ministry of Education (Government of India) and North Eastern Council (Shillong).

1.8.5 Cost of Education at Current and Constant Prices:

Cost of education may be expressed at current (market) or constant prices. Cost of education at constant prices take care of increases in prices of goods and services and thus represent the real cost of education. When costs of education are computed over a period of time, it is necessary to convert current prices into constant prices because current prices may at times be deceptive especially when an economy is experiencing price inflation. The best solution to this kind of problem is to construct educational price index, based on the prices of goods and services used in educational process. But unfortunately no price information or index is available in the State. Thus in the absence of any appropriate price index at the state level, the Net National Product deflator is used to convert current prices into constant prices taking 1980-81 as the base year.
1.9 Scheme of Chapters:

The study is divided into seven chapters. Chapter 1 deals with introduction, objectives, methodology and sources of data. Chapter 2 gives a broad outline of the socio-economic profile of the State. Chapter 3 contains a brief review of the relevant literature on the subject. Chapter 4 analyses the profile of educational development and growth of educational expenditure in Mizoram. Chapter 5 gives the analysis of institutional cost of higher education. Chapter 6 deals with the estimation of private cost of higher education in Mizoram; and lastly, Chapter 7 gives the major findings and conclusions.
REFERENCES


Blaug, Mark., An Introduction to the Economics of Education Penquin Books Ltd. 1970


Dholakia, B.H. The Sources of Economic Growth in India, Good Companions, Baroda, 1974.


Harbison, Frederic H., Human Resources as the Wealth of Nations Oxford University Press, New York, 1973


Hussain, I.Z.; "Returns to Education in India: An Estimate" in B. Singh (ed), Education as Investment, Meenakshi Prakashan, Meerut 1967.


Kothari, V.N. : "Returns to Education in India" in B. Singh (ed) Education as Investment, Meenakshi Prakashan, Meerut 1967.


Ramanujam, M.S.; "Planning Models for Optimum Allocations of Resources in Education" in H.N. Pandit (ed) op. cit


Shultz, T.W., Investing in People: (The Economics of Population Quality) Hindustan Publishing Corporation (India) Delhi, 1981.

Shultz, T.W., "Education and Population Quality" in George Psacharopoulos (ed) op. cit


Woodhall, M., "Cost Analysis in Education" in George Psacharopoulos (ed) op. cit.