infrastructures refer to better student-teacher ratio, availability of competent and adequately qualified teachers, good class-room facilities with good building and adequate accommodation, improved and adequate provision of educational apparatus and technology, good library facilities, good laboratory facilities etc.

Ans to Q No 3: "Wealth of Nations" is the book written by Adam Smith in 1776 in which he compared an educated and skilled man with an expensive machine.

Ans to Q No 4: The rate of return of education is measured in terms of costs and benefits of education.

Ans to Q No 5: The costs of education is measured in terms of total resources spent by the government or / and by individuals.



2.8 MODEL QUESTIONS

A) Short Questions (Answer each question in about 150 words)

Q1: What do you mean by economic development?

Q2: How can the outcome of improvement of educational development be measured?

Q3: What do you mean by general literacy rate?

Q4: What do you mean by human capital formation?

Q5: Explain the meaning of manpower planning?

Q6: What do you mean by costs of education?

Q7: What do you mean by benefits of education?

B) Long Questions (Answer each question in about 300-500 words)

Q1: How would you like to explain the relationship between educational development and economic development? Elaborate with appropriate examples.

Q2: Discuss the role of education in terms of human capital formation.

Q3: What do you mean by manpower planning? Discuss the role of education in manpower planning.

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- The benefits of education are the extra lifetime earnings enjoyed by the manpower due to enhancement of knowledge as a result of education and training.
- Manpower planning is an integral part of the planning system of any country. Manpower planning is needed for rationale allocation of manpower to do away with the problem of unemployment and under-employment or at least to reduce its impact. If the manpower planning is to be effective, it should be integrated with the educational planning.



2.6 FURTHER READING

1. Saumen, Chattopadhyay. (2012): *Education and Economics, Disciplinary Evolution and Policy Discourse*. Oxford Publication.
2. Ahlwalia, M.S. (2000). *"Economic Performance of States in Post-Reform Period", Economic and Political Weekly*, Vol. 35 (19), May 6, pp. 1637-1648.
3. N. Kumar and R. Mittal. (2002): *Economic Development and Planning.* Anmol Publications
4. M.L.Narasaiah. (2007): *Education and Economic Development.* Discovery Publishing House



2.7 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q No 1: Economic development means developments of human capital, increase in the literacy ratio, improving important infrastructure, improvement of health and safety and others areas that aims at increasing the general welfare of the citizens. It can also be seen in terms of a government policy to increase the economic and social welfare and ensuring a stable political environment.

Ans to Q No 2: Educational development means improvement in educational facilities and infrastructures. These educational facilities and

level. Secondly, a number of countries have expanded schooling opportunities without seeing any catch-up with the developed countries in terms of economic well-being. Thirdly, countries that do not function well in general might not be more able to mount effective education programmes.

- Economic development refers to economic wellbeing of the people and society. So, economic development comprises individual wellbeing as well as social wellbeing.
- Social wellbeing refers to improvement in common facilities and infrastructures like transportation and communication, housing and sanitation, healthcare facilities, improved educational facilities , provision of safe drinking water, common facilities for recreation of the people, provision of high standard social welfare facilities, increase in employment and income etc.
- Educational development is reflected in terms of improvement in educational facilities and infrastructures.
- The improvement in the quality of labour forces is normally attained through education and training along with technological progress.
- There always exists a strong and high positive correlation between educational development and economic development of a country. If we consider the per capita income and the adult literacy rate as the two broad indicators of economic development and educational development respectively, it will be seen that there is a close connection between educational development and economic development.
- Education enhances knowledge and technology which will lead to higher productivity and income. Education thereby leads to economic development.
- The costs of education is measured in terms of total resources spent by the government or / and by individuals. The costs incurred by the government includes salaries of teaching and non-teaching staff, their retirement benefits, costs of free books, library books and journals, land and buildings, furniture and fixtures, stationeries and printing etc.

to lack of employment opportunity. This ultimately, directly and indirectly, encourages the export the brain from the state (i.e. called brain-drain), creates the problems like youth unrest and ultimately drives the youths to indulge in various anti-social activities.



ACTIVITY 2.2

Suggest some techniques for developing man-power planning in India.

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2.5 LET US SUM UP

- Economic development indicates the development of economic prosperity and upward mobility of the people in society and the country as a whole.
- It plays a crucial role in the development of per capita income of the individual and eventually plays the dominant role in enhancement of Gross Domestic Product of the country.
- But, whenever we talk about economic development of a country or the people living in the society we can not deny the role of education in paving the way for economic development.
- In fact, economic development of any country is possible only through better education system which is a mirror that reflects the adequate, up-to-date and advanced educational facilities, infrastructures and academic environment.
- Economic development refers to economic wellbeing of the people and the society. Economic development of any country is possible only through better education system which is reflected by improved educational facilities and infrastructures.
- There are certain problems that exist with the development strategy to raise the schooling levels of the population. Firstly, the developed and developing countries differ in many ways other than the schooling

The demand for the various categories of manpower such as teachers, engineers, doctors, scientists, administrative officers, management cadres, agricultural scientists, junior technical persons, clerical staff, peons, chowkidars etc. depends on the need of the economy or the pattern of development of the economy. It is very difficult but not impossible to estimate the manpower requirement or manpower demand in the economy for a particular year. Since the various sectors of the economy such as industry, agriculture, transportation, power, trade and commerce etc. are interdependent, a change or development in any one of the sectors leads to the change in production and employment in other related sectors. Because of such sectoral interdependence, the estimation of demand for manpower is very difficult. However, Nobel Laureate Professor Leontief's famous Input-Output model can be used to estimate the demand for manpower with great precision.

Once the manpower demand is estimated for a future date or a year or a period, the educational planning can be made for providing various types and levels of education for the relevant period.

But unfortunately, there is a huge mismatch between the demand for manpower and the suppliers of manpower in the education system. This mismatch in turn increases the unemployed and underemployed youths in the country and hence, it becomes a tough challenge for a country like ours. In the education system, particularly in higher education, there seems to be the problem of the mismatch. The mismatch indicates basically two things –the supposition that those who have acquired professional, technical and higher education, have greater possibilities of getting absorbed in the job market compared to those who have acquired low level of education and skills. However, even this section of skilled and educated persons fail to get absorbed in the employment market due to problems of employability of these skills in the market. Thus, this amply points at the mismatch in the supply of the educated (degree) which are produced by the institution which often fails to take note of the nature of the demand of skill and education in the contemporary situation. From this, one can further infer and also conclude, as substantiated by facts that where there is more supply of graduates from general education there occurs heavy un-employment due

Q4: How is the rate of return of education measured ?

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Q5: How is the cost of education measured?

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ACTIVITY 2.1

As an educated person, what will be your contribution to the cause of education? Discuss in your own words.

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2.4 EDUCATION AND MANPOWER PLANNING

Manpower planning is an integral part of the planning system of any country. Manpower planning is needed for rationale allocation of manpower to do away with the problem of unemployment and under-employment or at least to reduce its impact. If the manpower planning is to be effective, it should be integrated with the educational planning. In fact, one can consider manpower planning and educational planning as the two sides of the same coin.

In manpower planning, one has to take into account the demand for manpower and the supply of manpower. The ideal situation is the equality of demand for manpower and the supply of manpower, which rarely happens. So, the main aim of manpower planning is to minimise the gap between the demand for and supply of manpower. The supply of manpower is the total number of persons passing out various examinations conducted by the Boards or Institutes or Universities during a year. Hence, it is not difficult to estimate the manpower supply as the statistics are readily available with the educational organisations and institutions.

$$C = \frac{B_1}{(1+r)} + \frac{B_2}{(1+r)^2} + \frac{B_3}{(1+r)^3} + \ldots\ldots\ldots\ldots + \frac{B_t}{(1+r)^t}$$

Where, **C** is the total costs of Education, $\mathbf{B_i}$ is the annual monetary benefits and **r** is the rate of return

R. Psacharopolous in a global study found that the rate of return of investment in human capital (in education and training) is more than the rate of return in physical capital.

Level of economic development	**Rate of return Physical capital**	**Rate of return of human capital**
Countries having per capita income less than $1000 in 1983	15.1 %	19.9 %
Countries having per capita	10.5 %	8.3 %

Interestingly, in relatively poorer countries (less than $1000 per capita income in 1983), the rate of return of human capital is more than that of physical capital. On the other hand, in relatively richer countries (more than $1000 per capita income in 1983), the return on human capital is less than that of the physical capital. This suggests that the relatively poorer countries (say developing countries) should make relatively more investment in education and training compared to the developed countries in order to make the investment more productive.



CHECK YOUR PROGRESS

Q 3: Name the book in which Adam Smith compared an educated and skilled man with an expensive machine

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and journals, land and buildings, furniture and fixtures, stationeries and printing etc.

The private costs of education incurred by individuals include costs of tuition fees, book and stationeries, maintenance costs, uniforms and dresses, private tuition (if any) , costs of transport etc. Sometimes, individuals also bear the opportunity costs of education which is the amount of earning foregone by the students during the period of education. For example, if a graduate school teacher earning Rs. 20,000 per month takes leave for two years to pursue MA programme in History in the University, he will have to forgo the salary for two years amounting to Rs. 2, 40,000. This amount of Rs. 2, 40,000 is the opportunity cost of the school teachers and constitutes the part of the private costs of education.

- **Benefits of Education:**

The benefits of education are the extra lifetime earnings enjoyed by the manpower due to enhancement of knowledge as a result of education and training. For example, let us take the same example of the graduate school teacher earning Rs. 20,000 per month as mentioned in the earlier sub-section. Let us further assume that after passing out MA and qualifying the NET examination, he got a job in a college earning Rs. 40,000 per month. His immediate financial benefit is Rs. 20,000 (= Rs. 40,000 – Rs. 20,000) per month. If he continues to serve as the college teacher say for about 30 years, his gross benefits during his life time will be at least Rs. 72, 00,000 (= Rs.20, 000 x 12 x 30)

The productivity of human capital due to enhancement of knowledge through education and training, or the rate of return to the investment in education is measured by the costs and benefits of education and training. The rate of return is obtained by equalising the total costs and total benefits of investment in education and training during lifetime, and is measured by the following formula–

economic development. The reason behind this consensus view is that education enhances knowledge and technology that will lead to higher productivity and income, and thereby education leads to economic development.

2.3.2 Education and Human Capital Formation

The term human capital formation refers to the "process of acquiring and increasing the number of persons who have the skills, education and experience which are critical for the economic and the political development of a country. Human capital formation is thus associated with investment in man and his development as a creative and productive resource". (Harbisson.F.H 1992). The manner in which physical capital generates income in the form of goods and services, the investment in education and training creates assets in the form of knowledge and skill. The improvement in the knowledge and skill increase the productive capacity of manpower and thereby the productive efficiency of manpower. Adam Smith in 1776 in his famous book "Wealth of Nations" compared an educated and skilled man with an expensive machine. Investment in education and training raises efficiency and productivity of the labour force.

The productivity of any factor of production, say labour force, is measured in terms of the rate of return, and in the same way, the productivity of education. The rate of return in education is measured in terms of costs and benefits of education. The rate of return is obtained by comparing the total costs and total benefits of education. Hence, greater is the surplus of benefits over the costs, higher will be the rate of return and vice versa.

- **Costs of Education**:

The costs of education is measured in terms of the total resources spent by the government or / and by individuals. The costs incurred by the government includes salaries of teaching and non-teaching staff, their retirement benefits, costs of free books, library books

very close relationship between the two is found to have existed as depicted in Table-2 as below:

Table-2: Index of per capita income and literacy rate in India, 1951 to 2011

Census year	Index of per capita income (at 2004-05 prices)	General literacy rate
1951	100.0	18.3
1961	124.9	28.3
1971	140.8	34.5
1981	150.6	43.6
1991	201.4	52.1
2001	286.2	65.4
2011	510.8	74.1

Sources: Various Census Reports and Economic Surveys of India, 2012-13

It appears from the above table, the per capita income and the literacy rates move in the same direction indicating that higher the per capita income, higher is the literacy rate. Conversely, it also appears that higher the per capita income, higher is the literacy rate during 1951to 2011 .The ***correlation coefficient*** between index of per capita income and the literacy rate is found to be 0.90 indicting a very high relationship between the two.

Of course, it is difficult to say which is the cause and which is the effect. It may be argued that because of higher level of educational development, economic development is high. On the contrary, one may also argue that because of higher level of economic development, the educational development is high. Both the arguments appear to be true. But the consensus view is that educational development is the cause and economic development is the effect implying that improvement in educational level leads to



Per capita income in PPP US $ means per capita income of a country in terms of purchasing power of the currency of that country vis-à-vis in USA. For example, if a 400 gram bread in India costs Rs. 20 and the same bread costs $1 in USA whose exchange value is Rs.60, then PPP in India and USA is 3:1.

There always exists a strong and high positive correlation between educational development and economic development of a country. If we consider the per capita income and the adult literacy rate as the two broad indicators of economic development and educational development respectively, it will be seen that there is a close connection between educational development and economic development. Taking the global picture of the per capita income and adult literacy rate, one can find a close relationship between the two as a proxy of relation between educational development and economic development of three different levels of countries, namely low income, middle income and high income. The United Nations in its annual ***UNDP's HDR Reports***, classifies its member countries into four broad categories based on the level of per capita income - low income nations, middle income nations, high income nations and high income nations.



UNDP's HDR refers to the annual Report of the United Nations Development Programme on human development popularly known as Human Development Report (HDR)

If one takes into account the level of adult literacy rate and per capita income in terms of Purchasing Power Parity (PPP) as reflected in the UNDP reports on HDR, the following statistics in table-1 indicates that the higher is the level of literacy rate, the higher is the level of per capita income.



Correlation Coefficient is a statistical tool to measure the extent of relationship between two variables or two factors, the value of the correlation coefficient ranging between 0 and 1.

Table-1: Per capita income and adult literacy rate by group of nations in 2005-2012

Country type	Per capita income (in PPP US $ in 2005-2012)	Adult literacy rate in 2005- 2012)
Low income nations	1,383	67 %
Middle income nations	7,167	94 %
High income nations	38,509	100 %

Source: Human Development Report, 2014, UNDP

If we look into the Indian scenario of educational development (in terms of general literacy rate) and economic development (in terms of per capita income) during 1951 to 2011, a



CHECK YOUR PROGRESS

Q1. What do you mean by economic development ?

Q2. What do you mean by educational development ?

2.3.1 Relationship between Education and Economic Development

An American economist Edward Denison made a historical study to investigate the relationship between educational development and economic development. In his study, he formulated a production function to determine the contribution of various factors including educational development to increase the national income of USA between 1910 and 1960. In the said empirical study, Denison found that the increase in the amount of capital and the number of labour did not explain the increase in **gross national product (GNP)** of a country. He found that the improvement in the quality of labour force was the most important factor for increase in GNP. The improvement in the quality of labour forces is normally attained through education and training along with technological progress. Denison found that the improvement in the level of education and training of labour force accounted for as much as 23% of the annual growth of gross national product in USA during 1930 and 1960.

General literacy rate refers to percentage of people who can read, write and understand in the age group 6 years and above. ***Adult literacy rate*** refers to percentage of people who can read, write and understand in the age group 15 years and above.