4.1 INTRODUCTION

Think of one factor that has made a great difference in the evolution of mankind. Perhaps it is the human capacity to store and transmit knowledge—something they have done through conversation, songs, and elaborate lectures. However, humans soon realised that to do things efficiently, one needs a good deal of training and skill.

We know that the labour skill of an educated person is higher than that of an uneducated person. As a result, the former is able to generate more income and contribute more significantly to economic growth.

Education is valued not only because it increases earning capacity, but also because it offers several other important benefits. It enhances one's social standing and self-respect, enables better decision-making in life, and provides the knowledge needed to understand societal changes. Furthermore, education stimulates innovation and facilitates the adaptation of new technologies by making an educated labour force available.

Economists have consistently highlighted the importance of expanding educational opportunities in a nation, as this accelerates the overall development process.

"The wisdom of expending public and private funds on education is not to be measured by its direct fruits alone. It will be profitable as a mere investment, to give the masses of people much greater opportunities than they can generally avail themselves of. For by this means many, who would have died unknown, are enabled to get the start needed for bringing out their latent abilities."— Alfred Marshall

4.2 WHAT IS HUMAN CAPITAL?

Just as a country can turn physical resources like land into physical capital such as factories, similarly, it can also turn human resources like nurses, farmers, teachers, and students into **human capital** like engineers and doctors.

Societies need sufficient human capital in the first place—in the form of competent people who have themselves been educated and trained as professors and other professionals. In other words, **we need good human capital to produce more human capital** (say, nurses, farmers, teachers, doctors, engineers, etc.).

This means that we need **investment in human capital** to transform human resources into productive and skilled human capital.

Let us understand a little more about what human capital means by posing the following questions:

1. **What are the sources of human capital?**

2. **Is there any relation between human capital and the economic growth of a country?**
3. **Is the formation of human capital linked to people's all-round development or, as it is now called, human development?**
4. **What role can the government play in human capital formation in India?**

4.3 SOURCES OF HUMAN CAPITAL

Investment in education is considered one of the main sources of human capital. However, there are several other important sources as well, including **investment in health**, **on-the-job training**, **migration**, and **acquisition of information**.

1. Education

Why do your parents spend money on education? Spending on education by individuals is similar to companies investing in capital goods—with the aim of increasing future returns. Individuals invest in education to enhance their future income. Therefore, **education is a key source of human capital formation**.

2. Health

Like education, **health** is also a crucial input for national development and individual productivity.

Who can work better—a sick person or a healthy person? A sick labourer without access to medical care is often forced to stop working, leading to a loss in productivity. Therefore, **expenditure on health**—such as:

- Preventive medicine (e.g., vaccination)
- Curative medicine (e.g., treatment during illness)
- Social medicine (e.g., spreading health awareness)
- Clean drinking water and proper sanitation

—all directly improve the health of the labour force and contribute to human capital formation.

3. On-the-Job Training

Firms often invest in **on-the-job training** for their workers. This may take two main forms:

- Training within the firm under the supervision of a skilled worker

- Off-campus training at specialized institutions

Firms incur costs for such training and usually require workers to remain with the company for a certain period afterward to recover the productivity gains. This **training improves skills and productivity**, making it an important source of human capital formation.

4. Migration

People migrate in search of **better employment opportunities** and **higher incomes**:

- Within India, rural-urban migration often occurs due to unemployment.
- Technically qualified professionals (like engineers and doctors) migrate abroad for better-paying jobs.

Migration involves costs—such as transportation, higher living expenses, and the psychological burden of adjusting to a new culture. However, the **benefits of higher income** generally outweigh these costs, making **migration another source of human capital formation**.

5. Information

People also **invest in acquiring information** related to:

- Job opportunities and salary levels
- Quality and cost of education
- Availability of health services

Access to such information helps individuals make informed decisions regarding **investments in education and health**, and ensures **efficient use of human capital**. Thus, **expenditure on information acquisition** is also a source of human capital formation.

Physical and Human Capital

Both physical and human capital formation are outcomes of **conscious investment decisions**. However, they differ significantly in terms of nature, formation, ownership, mobility, depreciation, and benefits.

1. Investment Decisions

Physical Capital:Investment decisions are made based on knowledge and expected returns. Entrepreneurs analyze different investment options and rationally choose the most profitable one. Physical capital formation is primarily an **economic and technical process**.

Human Capital:A large part of human capital formation occurs during early life when the individual is not in a position to make such decisions.

- Children receive education and healthcare due to decisions made by **parents and society**.
- Decisions at higher education levels are influenced by **peers, educators, and social factors**.
- Human capital formation depends on previously built human capital (e.g., school-level learning affects college-level success).
  Thus, **human capital formation is partly a social process and partly a conscious individual choice**.

2. Ownership and Usage

- **Physical Capital** (e.g., a bus):Can be **used without the owner's presence**. The owner can rent it or sell it.
  It is **tangible and separable** from its owner, and can be easily traded in the market.
- **Human Capital** (e.g., a bus driver):The owner **must be present** to provide services. It is **intangible and inseparable** from the individual. **Only the services** of human capital (not the capital itself) can be sold.

3. Mobility

- **Physical Capital**: Is **fully mobile** across borders, except when restricted by trade policies. It can be imported easily.
- **Human Capital**: Is **not perfectly mobile** due to **restrictions based on nationality, visa laws, and cultural factors**. Therefore, human capital formation must rely on **internal policy planning and investment by the state and individuals**.

4. Depreciation

Physical Capital:Depreciates with **continuous use** and can become **obsolete** due to technological change.

Human Capital:Depreciates with **age**, but this can be reduced by **continued investment in education and health**.
Human capital is also more adaptable to technological changes through retraining, unlike physical capital.

5. Nature of Benefits

Physical Capital: Creates **private benefits**—only those who pay for the product or service benefit from it.

Human Capital: Creates **both private and social (external) benefits**.

- An educated person contributes to **democracy and social development.**
- A healthy person helps prevent **disease spread**, benefiting the whole society.

In summary, while both types of capital are crucial for economic development, **human capital provides broader societal benefits** and requires deeper **social and policy support** for its formation and maintenance.

Here is the **arranged and clearly structured version** of the passage titled **"Human Capital and Economic Growth"**:

Human Capital and Economic Growth

Who contributes more to national income—a factory worker or a software professional? Clearly, a **skilled and educated worker** contributes more to economic growth than an unskilled one. This is because the **labour skill of an educated person is higher**, resulting in greater income generation.

1. Education and Health as Key Drivers of Growth

- **Economic growth** is defined as the **increase in real national income** of a country.
- An **educated person** contributes more to economic growth than an illiterate person.
- A **healthy person** can provide **uninterrupted and efficient labour** over a longer period. Therefore, **health** also plays a crucial role in economic growth.
- Factors such as **on-the-job training**, **access to job market information**, and **migration** also enhance an individual's **income-generating capacity**.

2. Human Capital Enhances Productivity and Innovation

- Human capital increases **labour productivity** and also:
  - **Stimulates innovations**
  - **Enables absorption of new technologies**
- **Education** equips individuals with knowledge to:
  - Understand societal changes
  - Grasp scientific advancements

- Facilitate **inventions and innovations**

- A well-educated workforce can **quickly adapt to new technologies**, enhancing national productivity.

3. Measuring Human Capital and Economic Growth

- Empirical evidence linking human capital and economic growth is **not always clear** due to **measurement issues**:
  - Education indicators like **years of schooling**, **enrolment rates**, or **teacher-pupil ratios** may not reflect the **quality** of education.
  - Health indicators like **life expectancy**, **mortality rates**, or **health expenditure** may not fully indicate **actual health status**.

- Studies show that:
  - **Human capital growth** in developing countries is fast.
  - However, **per capita real income growth** is **not keeping pace**.
  - This indicates **no clear convergence** in income levels despite improvements in human capital.

4. Bidirectional Causality

There is reason to believe that the **relationship between human capital and economic growth is bidirectional**:

- Higher income levels enable **better investment in education and health**, thus building human capital.
- Conversely, a **higher level of human capital** leads to **faster income growth**.

5. India's Recognition of Human Capital

India recognized the importance of human capital early on. The **Seventh Five Year Plan** stated:

"Human resources development (read human capital) has necessarily to be assigned a key role in any development strategy, particularly in a country with a large population. Trained and educated on sound lines, a large population can itself become an asset in accelerating economic growth and in ensuring social change in desired directions."

Human Capital and Sectoral Growth

It is often **difficult to establish a direct cause-and-effect relationship** between the growth of human capital—through **education and health**—and overall **economic growth**. However, evidence suggests that these sectors have grown **simultaneously**, and the growth in each of them has likely **reinforced the development of the others**.

For example, improvements in health and education can lead to better labour productivity, which in turn contributes to higher income and greater investment in health and education again. This **mutual reinforcement** helps sustain economic progress.

Scientific and Technical Manpower: A Core of Human Capital

[Fig. 4.3: Scientific and technical manpower – a rich ingredient of human capital]

Scientific and technical manpower form a vital part of human capital. As the economy becomes more technology-driven, the demand for such skilled professionals continues to grow.

National Education Policy (NEP) 2020: Preparing for a Changing World

The **National Education Policy (2020)** recognises that the **knowledge landscape** is rapidly evolving due to major scientific and technological advancements. Some key insights include:

- Technologies like **big data**, **machine learning**, and **artificial intelligence** are transforming the job market. Many **unskilled jobs** may disappear, while there will be a growing demand for a **skilled workforce** in:
    - **Mathematics**
    - **Computer Science**
    - **Data Science**
- There will also be increased demand for people with **multidisciplinary abilities** across:
    - **Sciences**
    - **Social Sciences**
    - **Humanities**
- **Global challenges** such as **climate change**, **pollution**, and **resource depletion** will require new skill sets in:
    - **Biology**

  - **Chemistry**
  - **Physics**
  - **Agriculture**
  - **Climate Science**

- The rising frequency of **epidemics and pandemics** demands:
  - Collaborative research in **infectious disease management**
  - **Vaccine development**
  - Addressing associated **social challenges**

- Additionally, as India aims to become a **developed country** and one of the **top three global economies**, the demand for **humanities and arts** will also increase—emphasizing the need for **holistic, multidisciplinary learning**.

Table 4.1: Select Indicators of Development in Education and Health Sectors

Particulars	1951	1981	1991	2001	2016–17
Real Per Capita Income (₹)	7,651	12,174	15,748	23,095	77,659
Crude Death Rate (per 1,000)	25.1	12.5	9.8	8.1	6.3
Infant Mortality Rate	146	110	80	63	33
Life Expectancy at Birth (Years)					
- Male	36.2	54.7	60.9	66.9	70
- Female	37.2	54.1	59.7	63.9	67
Literacy Rate (%)	16.67	43.57	52.21	65.20	76

Source: *Economic Survey (various years), Ministry of Finance; National Statistical Office, MoSPI, Government of India.*

This data shows **steady progress in health, education, and income**, which supports the idea that **human capital development is integral** to long-term economic growth.

Here is the **arranged and clearly structured version** of the passage, combining the ending of the previous section and introducing the next titled **"4.4 Human Capital and Human Development"**:

As India moves toward becoming **one of the three largest economies in the world**, the **vision laid out in the National Education Policy (2020)** suggests how **human capital formation** will help the country transition to a **higher growth trajectory** built upon a **knowledge-based economy**.

4.4 HUMAN CAPITAL AND HUMAN DEVELOPMENT

At first glance, **human capital** and **human development** may seem like similar concepts, but there is a **clear distinction** between the two.

Human Capital

- Views **education and health** as **means** to increase **labour productivity**.
- Treats human beings as **means to an end**, with the end being **economic output**.
- According to this view:
    - Investments in education and health are **productive only if** they lead to **higher output of goods and services**.
    - The focus is on **economic return** from such investments.

Human Development

- Views **education and health** as **essential to human well-being**.
- Believes that people can make valuable life choices **only if** they are educated and healthy.
- Treats human beings as **ends in themselves**.
- According to this view:
    - Investments in education and health should be made to **enhance human welfare**, regardless of economic productivity.
    - **Basic education and basic health** are considered important **in themselves**.
    - Every individual has a **right to be literate** and to **lead a healthy life**, even if such investment doesn't directly contribute to productivity.

Key Difference: Means vs. Ends

- **Human Capital Approach**:
    - Focuses on **what education and health can do for the economy**.
    - Productivity and output are prioritized.
- **Human Development Approach**:
    - Focuses on **what education and health do for individuals**.
    - Human rights, dignity, and well-being are prioritized.

4.5 STATE OF HUMAN CAPITAL FORMATION IN INDIA

In this section, we analyse the **current state of human capital formation in India**.

We have already learned that human capital formation results from **investments in**:

- **Education**
- **Health**
- **On-the-job training**
- **Migration**
- **Information**

Among these, **education and health** are the **most significant** components.

Role of Government in Education and Health

India is a **federal country**, with powers divided among:

- The **Union Government**
- **State Governments**
- **Local Governments** (Municipal Corporations, Municipalities, Village Panchayats)

The **Indian Constitution** assigns specific responsibilities to each level of government.As a result, **education and health expenditures** are to be undertaken **simultaneously** by all three tiers of government.

Why is Government Intervention Needed?

Both **education and healthcare services** generate:

- **Private benefits** (to individuals)
- **Social benefits** (to society at large)

This justifies the **presence of both public and private institutions** in these sectors.

However, certain characteristics make **government intervention essential**:

1. **Long-term Impact**:
    - Decisions such as enrolling a child in a school or healthcare centre have **lasting effects**.
    - If the services are substandard, it is often **too late** to reverse the damage once a switch is made.
2. **Lack of Information**:
    - Consumers (students or patients) may **lack knowledge** about the **quality** and **cost** of services.
    - This allows some **private providers** to exploit their **monopoly power**.
3. **Regulation**:
    - The government must **ensure quality standards** and **fair pricing** across private and public institutions.

Key Institutions in Education and Health

- **Education Sector**:
    - Ministries of Education (Union and State)
    - **NCERT** – National Council of Educational Research and Training
    - **UGC** – University Grants Commission
    - **AICTE** – All India Council for Technical Education
- **Health Sector**:
    - Ministries of Health (Union and State)
    - **National Medical Commission**
    - **ICMR** – Indian Council of Medical Research

These bodies help **facilitate**, **regulate**, and **promote** education and health institutions across the country.

Access and Affordability Issues

India is a **developing country**, with a **significant population below the poverty line**. Many citizens:

- Cannot afford **basic education** and **healthcare**
- Cannot access **super-speciality healthcare** or **higher education**

When **basic health and education** are treated as **rights of every citizen**, the **government has a duty** to:

- Provide these services **free of cost** to deserving and socially disadvantaged groups
- Step up **expenditure and efforts** to promote **inclusion and equality**

Government Initiatives

To meet the goal of:

- Achieving **100% literacy**
- Increasing the **average educational attainment** of citizens

...the **Union and State Governments** have been **increasing their spending** on the education sector **year after year**.

Here is the **arranged and well-structured version** of the passage that smoothly connects all points under the themes of government responsibility, expenditure trends, and challenges in the education sector in India:

Government Responsibility in Ensuring Educational Access

Many people in India, especially those **living below the poverty line**, are **unable to access super-specialty healthcare and higher education** due to affordability issues. In such a scenario, when **basic education and health care are considered fundamental rights**, it becomes essential for the **government** to:

- Provide these services **free of cost** to deserving citizens and **socially disadvantaged groups**.

To meet these responsibilities, **both Union and State governments** have been increasing expenditure in the **education sector**, with the twin goals of:

- Achieving **100% literacy**, and
- **Raising the average educational attainment** of the population.

Education Expenditure Trends in India

From **1952 to 2014**, education expenditure has shown a general upward trend:

- **As a percentage of total government expenditure**, it increased from **7.92% to 15.7%**.
- **As a percentage of GDP**, it rose from **0.64% to 4.13%**.

However, this growth has been **irregular**, with fluctuations over the years.
If we **add private expenditures** (by individuals and philanthropic institutions), the total education expenditure would be **much higher**.

Allocation Across Levels of Education

- **Elementary education** takes up the **largest share** of total public education expenditure.
- **Higher or tertiary education** (colleges, polytechnics, universities) receives the **least share**.
- However, **expenditure per student** in tertiary education is **higher** than in elementary education.

This **does not imply** that funds should be diverted from higher to elementary education. As **school education expands**, there is a growing need for **qualified teachers**, who must be trained in higher education institutions.
Thus, **spending should increase at all levels** of education.

Inter-State Disparities in Education Spending

In **2014–15**, **per capita public expenditure on elementary education** varied widely among states:

- **Himachal Pradesh**: ₹34,651
- **Bihar**: ₹4,088

Such differences lead to **inequities in educational access and achievement** across the country.

4.6 EDUCATION SECTOR IN INDIA

Growth in Government Expenditure on Education

Government expenditure on education is measured in two key ways:

1. **As a percentage of total government expenditure** – reflects the **priority** given to education.

2. **As a percentage of GDP** – shows how much of the nation's **income** is being committed to education.

Despite visible progress, current spending remains **inadequate** compared to **desired levels** recommended by various commissions.

Recommended vs Actual Spending

- The **Education Commission (1964–66)** recommended spending **at least 6% of GDP** on education to achieve meaningful improvements.
- The **Tapas Majumdar Committee (1999)** estimated an investment of **₹1.37 lakh crore over 10 years** (1998–2007) was needed to **universalize school education** for children aged **6–14 years**.
- Currently, India spends **a little over 4% of GDP** on education—**still below the 6% target**.
- This **6% goal has been accepted in principle** and is seen as **essential** for the future.

Government Initiatives to Bridge the Gap

1. **Right of Children to Free and Compulsory Education Act (2009)**
    - Makes **free education a fundamental right** for all children aged **6–14 years**.
2. **Education Cess**
    - A **2% cess** on all Union taxes is now collected.
    - The revenue is **specifically earmarked for elementary education**.
3. **Higher Education Funding**
    - The government also **allocates large funds** for the **promotion and improvement of higher education**.

Educational Achievements in India

Educational achievements in a country are generally measured using key indicators such as:

- **Adult literacy rate**
- **Primary education completion rate**
- **Youth literacy rate**

These indicators help assess the progress made in the education sector over time.

Table: Key Educational Indicators in India (1990–2017-18)

Sl. No.	Particulars	1990	2000	2011	2017–18
1.	**Adult Literacy Rate (% of people aged 15+)**				
1.1	Male	61.9	68.4	79	82
1.2	Female	37.9	45.4	59	66
2.	**Primary Completion Rate (% of relevant age group)**				
2.1	Male	78	85	92	93
2.2	Female	61	69	94	96
3.	**Youth Literacy Rate (% of people aged 15–24)**				
3.1	Male	76.6	79.7	90	93
3.2	Female	54.2	64.8	82	90

Observations and Trends

- **Adult Literacy**: From 1990 to 2017–18, adult literacy rates increased significantly:
    - **Males**: From 61.9% to 82%
    - **Females**: From 37.9% to 66%
    - The gender gap, though narrowing, **still persists**.
- **Primary Completion Rate**:
    - Marked **improvement**, especially among females:
        - **Female rate** increased from 61% to 96%
        - **Male rate** rose from 78% to 93%
- **Youth Literacy Rate**:
    - A strong upward trend in literacy among the **15–24 age group**:
        - **Males**: From 76.6% to 93%

- **Females**: From 54.2% to 90%

  - This reflects the **success of educational policies** targeting younger populations.

Recent Supportive Measures

To support **higher education access**, the **government has introduced new loan schemes** for students. These aim to make **higher education more affordable**, especially for those from **economically weaker sections**.

Here is the **arranged and clearly structured version** of the passage titled **"4.7 Future Prospects"**, logically organized into themes and subheadings:

4.7 FUTURE PROSPECTS

Education for All — Still a Distant Dream

While **literacy rates** have improved significantly for both **adults and youth**, India still faces major challenges:

- The **absolute number of illiterates** today is **as high as India's total population** at the time of **Independence**.

When the **Constitution of India** was passed in **1950**, it was stated in the **Directive Principles of State Policy** that:

- The **government should provide free and compulsory education** for all children **up to 14 years of age**, **within 10 years** of the Constitution's commencement.

Had this goal been achieved, India would have likely attained **cent per cent literacy by now**.

Gender Equity — Better but Not Enough

There has been a **positive trend** in gender equity:

- The **gap in literacy rates** between **males and females is narrowing**.

However, more efforts are needed to **promote women's education**, as it contributes to:

- **Economic independence**
- **Higher social status**
- **Lower fertility rates**
- **Better health care** for both women and children

Despite progress, **universal adult literacy** and **gender equality** in education remain **unfulfilled goals**.

Unemployment Among the Educated Youth

One of the most concerning issues is the **high unemployment rate among educated youth**:

NSSO Data (2011–12):

- **Rural male graduates and above**: **19% unemployed**
- **Urban male graduates and above**: **16% unemployed**
- **Rural female graduates**: **nearly 30% unemployed**

In contrast:

- **Only 3–6%** of **primary-level educated youth** in rural and urban areas were unemployed.

Recent Data (Periodic Labour Force Survey 2017–18):

- The situation **remains largely unchanged** and **needs urgent attention**.

Why Are Educated Youth More Unemployed?

Compared to less educated youth, a **larger proportion of educated youth remain unemployed**. This could be due to:

- **Lack of employable skills**
- **Poor quality of higher education**
- **Mismatch between education and job market requirements**

What Needs to Be Done

To address these challenges, the **government must**:

- **Increase budget allocation** for **higher education**
- **Improve the quality and standards** of **higher education institutions**
- Focus on **skill-based learning** to enhance **employability**

Without addressing the disconnect between education and employment, India's growing human capital may not translate into actual economic growth.

Here is the **arranged and polished version** of the passage titled **"4.8 Conclusion"**, structured clearly for better understanding and coherence:

4.8 CONCLUSION

The **economic and social benefits** of both **human capital formation** and **human development** are widely acknowledged.

To harness these benefits:

- The **Union and State governments** in India have been **allocating substantial financial resources** for the development of the **education and health sectors**.

However, to ensure **inclusive growth and equity**, it is essential that:

- The **spread of education and health services** reaches **all sections of society**, not just a privileged few.

India is already home to one of the **largest pools of scientific and technical manpower** in the world.

The **need of the hour** is to:

- **Improve the quality** of this human capital, and
- **Create opportunities and infrastructure** so that this talent is effectively **utilised within the country**.

Only then can India fully realise the **potential of its human capital** in achieving **sustainable economic growth and social progress**.