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BASIC ELEMENTS OF EDUCATION

BA (EDUCATION)

1ST SEMESTER

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BASIC ELEMENTS OF EDUCATION

BA [Education]

First Semester

RAJIV GANDHI UNIVERSITY
Arunachal Pradesh, INDIA - 791 112

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About the University

Rajiv Gandhi University (formerly Arunachal University) is a premier institution for higher education in the state of Arunachal Pradesh and has completed twenty-five years of its existence. Late Smt. Indira Gandhi, the then Prime Minister of India, laid the foundation stone of the university on 4th February, 1984 at Rono Hills, where the present campus is located.

Ever since its inception, the university has been trying to achieve excellence and fulfill the objectives as envisaged in the University Act. The university received academic recognition under Section 2(f) from the University Grants Commission on 28th March, 1985 and started functioning from 1st April, 1985. It got financial recognition under section 12-B of the UGC on 25th March, 1994. Since then Rajiv Gandhi University, (then Arunachal University) has carved a niche for itself in the educational scenario of the country following its selection as a University with potential for excellence by a high-level expert committee of the University Grants Commission from among universities in India.

The University was converted into a Central University with effect from 9th April, 2007 as per notification of the Ministry of Human Resource Development, Government of India.

The University is located atop Rono Hills on a picturesque tableland of 302 acres overlooking the river Dikrong. It is 6.5 km from the National Highway 52-A and 25 km from Itanagar, the State capital. The campus is linked with the National Highway by the Dikrong bridge.

The teaching and research programmes of the University are designed with a view to play a positive role in the socio-economic and cultural development of the State. The University offers Undergraduate, Post-graduate, M.Phil and Ph.D. programmes. The Department of Education also offers the B.Ed. programme.

There are fifteen colleges affiliated to the University. The University has been extending educational facilities to students from the neighbouring states, particularly Assam. The strength of students in different departments of the University and in affiliated colleges has been steadily increasing.

The faculty members have been actively engaged in research activities with financial support from UGC and other funding agencies. Since inception, a number of proposals on research projects have been sanctioned by various funding agencies to the University. Various departments have organized numerous seminars, workshops and conferences. Many faculty members have participated in national and international conferences and seminars held within the country and abroad. Eminent scholars and distinguished personalities have visited the University and delivered lectures on various disciplines.

The academic year 2000-2001 was a year of consolidation for the University. The switch over from the annual to the semester system took off smoothly and the performance of the students registered a marked improvement. Various syllabi designed by Boards of Post-graduate Studies (BPGS) have been implemented. VSAT facility installed by the ERNET India, New Delhi under the UGC-Infonet program, provides Internet access.

In spite of infrastructural constraints, the University has been maintaining its academic excellence. The University has strictly adhered to the academic calendar, conducted the examinations and declared the results on time. The students from the University have found placements not only in State and Central Government Services, but also in various institutions, industries and organizations. Many students have emerged successful in the National Eligibility Test (NET).

Since inception, the University has made significant progress in teaching, research, innovations in curriculum development and developing infrastructure.

SYLLABI-BOOK MAPPING TABLE

Elements of Education

Syllabi	Mapping in Book
Unit-I Concept of Education Meaning, Nature and Scope of Education; Types of Education: Formal and Non-formal; Informal and Inclusive Education	**Unit 1:** Concept of Education **(Pages 3-21)**
Unit-II Aims of Education Individual and Social Aims; Democratic Aims; Vocational Aims; Moral and Cultural Aims	**Unit 2:** Aims of Education **(Pages 23-34)**
Unit-III Educational Structure Educational Ladder; Secondary Education Commission, Kothari Commission and New Education, Policy on the Structure; New Pattern of Education (10+2+3)	**Unit 3:** Educational Structure **(Pages 35-70)**
Unit-IV Educational Psychology Meaning, Nature and Scope of Educational Psychology	**Unit 4:** Educational Psychology **(Pages 71-112)**

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UNIT 4 EDUCATIONAL PSYCHOLOGY **71-112**

INTRODUCTION

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Education is an effort of the senior people to transfer their knowledge to the younger members of the society. Emile Durkheim defines education as 'the influence exercised by the adult generation upon those who are not yet ready for adult life.' He further maintains that 'society can survive only if there exists among its members a sufficient degree of homogeneity. The homogeneity is perpetuated and reinforced by education. A child through education learns basic rules, regulations, norms and values of society.'

Education is an essential prerequisite of modernization. It enables people to know the world beyond their own surroundings and transforms them to become rationalist and humanist in outlook and world view. However, it has to be kept in mind that education has got modernized and in turn is contributing to the process of modernization of the Indian society.

Modern education is open and liberal. The course contents are rational and in tune with the needs of the present-day society. The modern education lays emphasis on subjects like freedom, nationality, law, human rights, democracy and scientific world view. The other parts of education are the co-curricular and extra-curricular activities, which are often organized for total personality development of a student.

This book, *Elements of Education*, has nine units. The book deals with the concept and aims of education. It also deals with the Indian educational structure and policy. The book covers the importance of instincts and emotions in the field of education. It also has a unit on the educational and social change in India.

This book, *Elements of Education*, has been designed keeping in mind the self-instruction mode (SIM) format and follows a simple pattern, wherein each unit of the book begins with an *Introduction* followed by the *Unit Objectives* for the topic. The content is then presented in a simple and easy-to-understand manner, and is interspersed with *Check Your Progress* questions to reinforce the student's understanding of the topic. A list of *Questions and Exercises* is also provided at the end of each unit. The *Summary* and *Key Terms* further act as useful tools for students and are meant for effective recapitulation of the text.

UNIT 1 CONCEPT OF EDUCATION

Structure

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INTRODUCTION

The word 'education' has a very wide connotation and is difficult to define. There is no single objective which can cover the entire life with its various manifestations. Philosophers and thinkers have defined education in accordance with their own philosophy of life due to which there are divergent concepts and definitions of education. The concept of education is like a diamond that appears to be of a different colour when seen from different angles.

In this unit, you will learn the meaning, definitions, types and scope of education. You will also study the meaning and importance of inclusive education.

UNIT OBJECTIVES

After going through this unit, you will be able to:

- State the meaning and the need of education
- Explain the nature and scope of education
- State the different forms of education
- Discuss the importance of inclusive education

MEANING, NATURE AND SCOPE OF EDUCATION

There are various schools of psychology which have influenced the interpretation of the educative process. Some psychologists think that a child's mind is a clean slate and a teacher could write anything on it. Others are of the view that a child is a clay and a

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teacher is a potter who could make anything out of it. All these different opinions have led to different interpretations and definitions of education.

Traditional education focuses on teaching, not learning. It assumes that for every ounce of teaching there is an ounce of learning by those who are taught. However, most of what we learn before, during and after attending schools is learned without it being taught to us. Children learn to walk, talk, eat and dress without being taught formally. Adults learn most of what they use at work or at leisure. Classroom learning is generally forgotten and what is remembered is mostly not so relevant.

Definitions Laying Stress on Inner Potentialities

Aurobindo, Gandhiji, Shankaracharya, Tagore and Vivekananda of India, and Aristotle, Nunn, Pestalozzi and Plato in the West come under this category.

Aurobindo defines education as 'helping the growing soul to draw out that is in itself.'

Gandhiji speaks of education as, 'By education, I mean an all-round drawing out of the best in the child and man—body, mind and spirit.'

Shankaracharya says, 'Education is realization of the self.'

Tagore thinks, 'Education means enabling the mind to find out that ultimate truth which emancipates us from the bondage of the dust and gives us the wealth, not of things but of inner light, not of power but of love, making the truth its own and giving expression to it.'

According to Vivekananda, 'Education is the manifestation of divine perfection already existing in man—Education means the exposition of man's complete individuality.'

Aristotle speaks of education as 'the creation of a sound mind in a sound body.' Education, according to him, should develop the body, i.e., the physical capacities of the child and the mind which means his intellectual, emotional, moral and spiritual capacities.

According to Percy Nunn, 'Education is the complete development of the individuality so that he can make an original contribution to human life to his best capacity.' The individual is a sum total of various constituents and all of these must be developed. Every individual is unique and as such the task of education is to cater to the individual needs. The development should take place to the maximum possible extent.

J. H. Pestalozzi defines education as 'the natural, harmonious and progressive development of man's innate powers.' Man is endowed with certain inborn powers and capacities and the task of education is to bring about the development of these. Due regard should be paid in the process of education to the child's nature and needs. Undue stress should not be laid on the development of some powers of the child at the cost of others. A proper balance should be struck in the development of the various innate powers of the child.

Plato said, 'Education develops in the body and in the soul (of the pupil) all the beauty and all the perfection which he is capable of.'

Definitions Stressing the Social and Environmental Aspects

In the words of John Dewey, 'Education is the development of all those capacities in the individual which will enable him to control his environment and fulfil his responsibilities.'

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According to Redden, 'Education is the deliberate and systematic influence extended by the mature person upon the immature through instruction, discipline and harmonious development of physical, intellectual, aesthetic, social and spiritual powers of the human being according to their essential hierarchy by and for the individual and social uses and directed towards the union of the educand with the creator as the final end.' The ultimate goal of life is the union of the individual with God. This union can take place only when the various capacities of the child are developed for the good of the individual as well as that of society.

G. Thomson says, 'By education I mean the influence of the environment upon the individual to produce a permanent change in his habits of behaviour, of thought and of his attitude. Environment has various aspects—physical, social and cultural. Education should facilitate the task of adaptation of the child to his environment.'

A perusal of these definitions reveals that the definition given by Gandhiji is the best. Gandhiji had a scientific temper of mind. He observed facts, sorted them before accepting them and after weighing them well, he drew his conclusions. Gandhiji felt that while physical and intellectual development was necessary, the training of a child's heart and spirit was more important. He remarked: 'Literacy is not the end of education nor even the beginning. It is one of the means whereby man and woman can be educated. Literacy in itself is no education.' This aim is in conformity with the one accepted by the Board of Education in England: 'The aim of education should be to develop to the full potentialities of every child at school, in accord always with the general good of the community of which he is a member.'

Drawing out and not 'pouring in' has been stressed by Gandhiji. Gandhiji wrote, 'We have up to now concentrated on stuffing a child's mind with all kinds of information without even stimulating or developing it.'

Gandhiji fully realized that nature has endowed children and youth with tremendous vitality. They have within them the springs of youth, joy and vigour. They have the God-given curiosity to wish to know things for themselves. The task of education is to use these powers. It would be wrong to suppress them. This energy should be utilized and harnessed properly.

'True education,' says Gandhiji, 'is that which draws out and stimulates the spiritual, intellectual and physical faculties of the children.' Any programme of education that puts exclusive emphasis on one of these three aspects of the human personality is against the basic principle of education.

Meaning of the term 'best in child and man'. The best in child and man has three fields, i.e. body, mind and spirit. Education, therefore, must cater to the physical, mental and spiritual needs. No field should remain neglected. The best in man will include the harmonious development of the various faculties of man and child.

How can we draw out the best? The best can be drawn out by touching the hearts of the students. Gandhiji: 'If I was to be their real teacher and guardian I must touch their hearts. I must share their joys and sorrows, I must help them to solve the problems faced by them, and I must take along the right channel and surging aspirations of their youth.'

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Education as Continuous Reorganization and Integration of Activities and Experiences

Education takes place when new ideas combine with the old. Something new is constructed by the synthesis of the two and this process goes on constantly through life. Education is growth and growth never stops. We learn in terms of the old. An intelligent order, sequence and continuity is to be maintained as the new thing can best be learnt in the context of the old one. Herbart's principle of 'apperception' points out the same fact.

Child is active by nature. He plays and does so many things but these undifferentiated experiences do not lead to education unless they are guided and property directed. So the experiences of the child should be given coherence, unity and organization and education is to be consciously and deliberately planned by providing rich and creative activities and experiences to children. The experiences of the child should be well knit to give them meaning. Education entails bringing about the growth of the educand through experience and activity. Every experience and activity leads to some sort of learning and enrichment of the mind of the learner. These in turn enter into combinations and thus increase the ability of the new learner to direct further noble activities and experiences.

An activity passes through three stages. An example will make the three stages clear. A child sees a flame. He does not know what a flame is. In an impulsive reaction he tries to catch it.

In the second stage, he grasps the meaning of a flame. He gains the knowledge of heat and pain. His experience becomes purposeful.

In the third stage, the child begins to perceive new bearings and new connections. The mind at this stage combines old activities and experiences into new patterns to meet novel situations. Different experiences help us to meet new situations. It is generally observed that education must lead to experimentation, the discovery of new truths and the use of new truths to further education for the fuller intellectual growth and development of man. After all, education has to, and should go beyond tradition, dogma and static conditions, in a dynamic society.

Education is both retrospective and prospective. It is both conservative and progressive. Education transmits the culture of one generation to another. The rising generation has not only to be conveyed the activities and experiences of the past generation and asked to carry on those activities but it also has to be asked to make necessary changes in these activities and experiences to meet the new situations which it will encounter. An integration of the old must take place with the new ones. It must be remembered that communities live in the present on the past and for the future. This means that activities and experiences in the present will guide the activities of the future. Thus, education is continuous reorganization and integration of activities and experiences. Education is a constructive agency for improving our society. Brown has stated, 'Education brings changes in behaviour, and if its main functions are to remain mere transmission or enrichment of culture, it will fall short of its role in a dynamic society. Education must also provide situations at all age levels but within the maturity and ability of the individual to stimulate a creativeness of mind which can explore new horizons and bring the vision of the future into a living reality.'

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Education: A Process of Self-realization

Education curbs the animal instincts in man and shows him the way to realize his latent powers. It thus makes the potential actual and makes explicit what is implicit in us. It is, therefore, development from within and not an accretion from without. It modifies the behaviour of the educand. Ross points out, 'Education thus consists in a modification of natural development which, as a result of education, is other than it would have been without it.' Education emancipates us from our oddities and infirmities. It is thus a process of sublimation of instincts. Education, therefore, may be visualized as a process of self-realization and emancipation.

The self-realization aspect of education is well emphasized by Gandhiji. To him, education is 'an all-round drawing of the best in the child and man—body, mind and spirit', education is a 'pouring out' and not a 'pouring in' process. The word *e* means 'out of' and *duco* means 'I lead'. In other words, education means leading out the inborn powers and potentialities and enabling the child to become what he is capable of becoming. The word 'self-realization' implies development of individuality in the child. We do not want our educands to be dumb driven, credulous creatures. Nunn points this out by saying that 'the complete development of individuality is the essence of education'. It is through this that 'he (educand) can make an original contribution to human life according to his best capacity.'The emancipation aspect of education has also been put forth by Tagore. According to him, education aims at 'enabling the mind to find out that ultimate truth which emancipates us from the bondage of dust and gives the wealth not of things but of inner light, not of power, but of love, making thus its own and giving expression to it'.

Education—A Lifelong Process

Education is a continuous and lifelong process. It is the process of development from infancy to maturity. It includes the effect of everything which influences human personality.

Education—A Bipolar Process

Both the educator and the educand influence each other. The personality of the educator modifies the behaviour of the educand and in turn is affected by the personality of the educand.

Education—A Tripolar Process

Education is also regarded as a tripolar process involving the influence of the personality of the educator on that of the educand in a social setting which affects the modification of the behaviour of the latter . The knowledge of the nature of the educand is at once very useful and essential. Similarly, the educator also must thoroughly understand himself—his assets and limitations and act accordingly in educating the educand. The social setting has to be presented by the educator to the educand in a simplified and purified manner. It must be remembered that the unconscious influence of the environment is subtle and pervasive.

Education—A Deliberate Process

The process of education is not only conscious but also deliberate. The educator is fully aware of the fact that his aim is to develop the personality of the child along definite lines through the modification of his behaviour.

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Education—A Psychological and Sociological Process

According to the psychological aspect of the process, the educator must understand the nature, interests, capacities and limitations of the child. The sociologial aspect implies that the educator must also interpret the endowments of the child in a social setting.

Etymological Meaning of Education

Etymologically, the word 'education' is derived from the following Latin words which are briefly explained here:

(i) 'Educare': This means 'to raise', 'to nourish', 'to bring up'.

(ii) 'Educere': This implies 'to draw out', 'to lead out'.

(iii) 'Educatum': This denotes 'to train'.

(iv) 'Educo': 'e' meaning 'out of', and 'duco' meaning 'to lead', 'to lead out'.

Thus education means:

(i) to bring up

(ii) to draw out

(iii) to lead out

(iv) to nourish

(v) to raise

(vi) to train

A synthesis of the meaning of these terms implies that education is drawing out and leading out something from within the individual by bringing up, nourishing, raising and training.

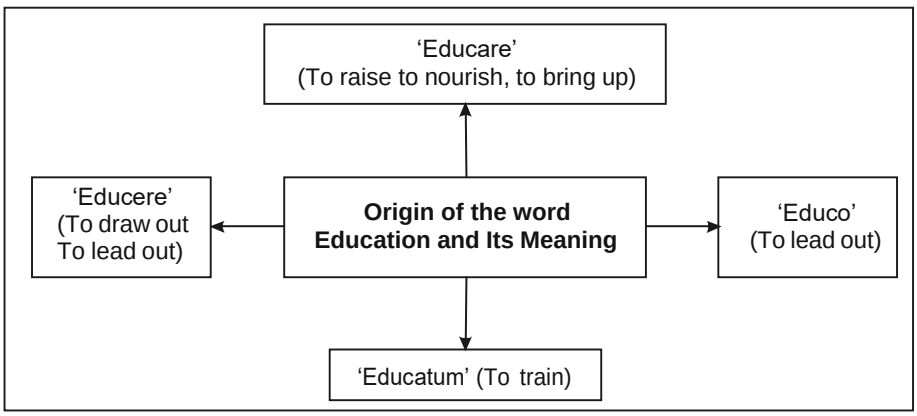

Fig. 1.1 *Origin of the Term Education (Derivation or Etymology of Education)*

Brief Analysis of Some Definitions of Education

- One of the oldest treatises on education titled *The Great Learning*, written around 2,500 years ago and attributed to Confucious, a great Chinese scholar and thinker, sets out the meaning, the aim and the process of education in these words:

  'The great learning consists in manifesting the clear character, loving the people and abiding in the highest grid. Those who wish to make their wills sincere would first extend their knowledge. The extension of knowledge consists in the investigation of things; when things are investigated, knowledge is extended;

when knowledge is extended, the will becomes sincere; when the will is sincere, the mind is rectified; when the mind is rectified, the personal life is cultivated; when the personal life is cultivated, the family will be regulated; when the family is regulated, the state will be in order; and when the state is in order, there will be peace in the universe'.

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Although this definition does not make clear the meaning of terms like 'will', 'knowledge' and 'cultivated', yet it seems to be an operational one.

- According to Nunn, 'Education is the complete development of the individuality so that he can make an original contriution to human life to his best capacity'. The individual is a sum total of various constituents and all these must be developed. Every individual is a unique one and as such the task of education is to cater to the individual needs. The development should take place to the maximum possible extent. This definition takes note of the needs of other human beings also.
- Thomson says: 'By education I mean the influence of the environment upon the individual to produce a permanent change in his habits of behaviour, of thought and of his attitude. Environment has various aspects—physical, social and cultural. Education should facilitate the task of adaptation of the child to his environment'. The definition highlights the need for providing a suitable environment.
- According to Redden, 'Education is the deliberate and systematic influence extended by the mature person upon the immature through instruction, discipline and harmonious development of the physical, intellectual, aesthetic, social and spiritual powers of the human being according to their essential hierarchy by and for the individual and social uses, and directed towards the union of the educand with the creator as the final end'. The ultimate goal of life is the union of the individual with God. This union can take place only when the various capacities of the child are developed for the good of the individual as well as that of society.

  This definition points out the three-fold function of the educator. One, for the development of powers of the individual. Two, for enabling the individual to become a useful member of the society. Three, for assisting the individual to be one with the Creator. In other words, education should liberate the individual. The objective of life as attainment of '*Moksha*' as advocated by ancient Indian seers is emphasized in this definition.
- Aristotle's definition neglects the spirit and explains education only in terms of creation of 'a sound mind in a sound body'.
- Gandhiji's definition of education has already been analysed.

Functional and Operational Definitions and Meanings of Education

By education we mean the natural, harmonious and progressive development of man's innate powers by drawing out the best in his body, mind and spirit so as to produce an individual who is culturally refined, emotionally stable, ethically sound, mentally alert, morally upright, physically strong, socially efficient, spiritually enlightened, vocationally self-sufficient and internationally liberal. This should be the end product of education. Any programme of education which puts exclusive emphasis on one of these aspects of the human personality will be considered as lop-sided and narrow. Broadly speaking, this functional and operational definition and meaning should guide us in planning and implementing our educational programmes.

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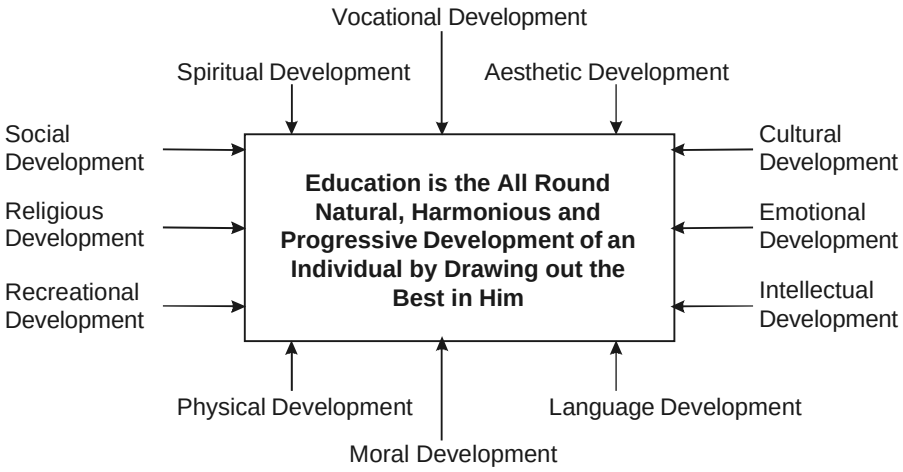

Fig. 1.2 *Meaning of Education*

Chief Characteristics of the Nature of Education

Following are the chief characteristics of the nature of education:

- *Education is purposive*, i.e., there is a definite purpose underlying all educational activities.
- *Education is deliberate*, i.e., education involves care and guidance.
- *Education is planned*, i.e., education is not haphazard. It is systematic.
- *Education is life-long*, i.e., education starts from the time of conception and goes on till death—education from cradle to grave as is sometimes said.
- *Education is influence exerted*, i.e., the mature persons (parents, elders and teachers) influence the learners.
- *Education is balanced development*, i.e., education is concerned with the development of all faculties of the child.
- *Education is bi-polar*, i.e., both the teacher and the pupil influence each other. Of course, the influence of the teacher is more prominent.
- *Education is tri-polar*, i.e., education involves the teacher, the taught and the environment or the subject-matter.
- *Education is psychological as well as social*, i.e., the endowments or the capacities of the child—his needs, interests, etc. must be interpreted and developed in a social setting.
- *Education is growth*, i.e., education modifies the behaviour of the child.

TYPES OF EDUCATION: FORMAL, INFORMAL AND NON-FORMAL

Education, in its widest sense, indicates ways in which people learn skills and gain knowledge, information and understanding. It can be divided into various ways of learning, namely formal, informal and non-formal or quasi formal.

Check Your Progress

1. What is education according to Dewey?
2. State any three characteristics of education.

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Formal Education

Formal education is imparted in an educational institution—a school or college. In ancient times in India, it was mostly imparted at the residence of the teacher. It is consciously and deliberately planned to bring about specific changes in the educand or the learner. As such it is synonymous with educational institutions. School is the most important agency of formal education.

Important characteristics of formal education are as follows:

- Planned education keeping in view some definite aim
- Education imparted through well planned means or formal lessons
- Education having a definite course to be covered during a definite period
- A teaching–learning process with which the teacher and the learner are acquainted
- Education organized by some agency, say the government or a private enterprise
- Education imparted in an institution having building/premises
- Education starting and ending at a particular age
- Education associated with a degree or certificate
- Education usually associated with some sort of mental strain on the teacher and the taught

Informal Education

Informal education takes into its orbit all indirect influences of the home and the society. The press, the libraries, the films and other such agencies are included as agencies of informal education. Their influence is subtle and imperceptible but at the same time very important and significant.

Important characteristics of informal education are as follows:

- Unconscious learning
- No fixed aim
- No fixed curriculum, methods of teaching, etc.
- No organized body or institution behind this process
- Lifelong learning
- Natural outcome

Non-formal Education

This is an arrangement wherein flexibility is the key word. The system is an open one with regards to various aspects of education, i.e., admissions, curriculum, place of instruction, mode of instruction and the time and duration of instruction. Open university, open learning, correspondence courses and distant education are the various examples of such a system.

Some of the important definitions of non-formal education are:

- **Bremwork:** 'Non-formal education differs from formal education from the point of proximity to immediate action, work and the opportunity to put learning to use.'
- **Coombs:** 'Non-formal education is one which is imparted through organizations and institutions outside the formal education institutions.'

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- **Harbison:** 'Non-formal education is the only means of filling the gap between the "Schooled" and "Unschooled population".'
- **Henderson:** 'Non-formal education is far wider and more inclusive than schooling which imparts wider experience out of school.'
- **Mc-Call:** 'Non-formal education is the entire range of learning experience outside the regular graded school system.'
- **Paulson:** 'Non-formal education includes any structured, systematic, non-school educational and training activities of relatively short duration in which sponsoring agencies seek concrete behavioural changes in fairly distinct target population.'

Main characteristics of non-formal education are as follows:

- *Learner-centred education*: It is based on the needs of the learners.
- *Lifelong process*: It continues throughout life.
- *Self education*: There is more emphasis on self-education.
- *Boom for drop-outs*: It provides suitable opportunities to those who on account of one or the other reason are unable to continue their formal education.
- *Motivational*: It is motivated by individual growth.
- *Community need based*: It takes note of the needs of the community and accordingly includes a variety of learning programmes.
- *No formal qualifications needed*: A large number of non-formal educational courses do not need minimum qualifications for entry.
- *Multi-dimensional*: It provides a variety of opportunities to update one's knowledge and skills.
- *Supplementary to formal education*: It supplements the system of formal education which is rather expensive.
- *Multi-agencies*: It is provided by part-time schools, open schools, adult education centres and voluntary agencies.
- *Flexible system*: It is flexible in terms of hours of study, courses, examinations, duration, etc.

A comparative study of three types of education has been done in Table 1.1

Table 1.1 *Formal, Informal and Non-formal Education: A Comparison*

	Area	*Formal Education*	*Informal Education*	*Non-formal Education*
1.	*Aim*	It has definite aims.	It has no definite aim.	It has by and large clearcut aims.
2.	*Scope*	Its scope is definite.	Its scope is not definite.	Its scope is generally definite.
3.	*Duration*	It begins from school and goes up to university.	It is lifelong.	It can be lifelong.
4.	*Entry Points*	It has fixed entry points.	It has no entry point.	Entry points are flexible.
5.	*Agencies*	It is provided usually in full time educational institutions.	It has no definite agencies.	It is normally available through part time institutions.
6.	*Organization*	It is an organized and planned effort. There is usually a recognized organization. which is more or less permanent.	There is no organization for it.	Organization may not be a permanent one. Ad-hoc organizations usually take up this work.

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7. *Time Schedule*	Its schedule is fixed.	It has no fixed schedule.	Schedule fixed as well as not fixed.
8. *Level of Consciousness*	The teacher and the learners are aware of the process.	Unconscious process.	It is party conscious.
9. *Methodology*	Formal, fixed and a variety of methods	There is no set methodology.	Flexible approach is followed.
10. *Teachers*	Trained teachers impart education.	It can be obtained from any source.	Trained teachers/ instructors impart non-formal education.
11. *Place*	It is confined to the four walls of educational institutions.	It can be acquired at any place.	It mostly takes place outside the four walls of educational institutes.
12. *Environment*	Environment is more or less artificial.	Environment is natural.	Environment is artificial as well as natural.
13. *Curriculum*	Curriculum is fixed.	There is no curriculum.	Curriculum is very flexible.
14. *Discipline*	Discipline is normally strict.	Issue of discipline does not exist.	Discipline is rather flexible.
15. *Resources Required*	Relatively higher resources are needed.	Resources are not needed.	Comparatively less resources are required.
16. *Evaluation and Examination*	Examinations are regularly held.	There is no examination.	Examinations are not frequent.
17. *Award of Certificates and Degrees*	Certificate and degrees form an integral part.	Certificate/degree is not given or received.	Certificate or degree may or may not be awarded.
18. *Mental Stress*	It involves a lot of mental stress.	No mental strain is involved.	Usually no mental strain is involved.
19. *Motivation*	The teachers and learners are motivated.	Motivation is not involved.	Normally motivation on the part of the learners is quite high.
20. *Interaction*	There is face to face interaction which is quite visible.	Interaction is incidental.	Interaction depends upon the situation.
21. *Pass/Failure*	Students are labelled as having 'passed' or 'failed'.	Pass/Failure does not exist.	Normally it does not work on the principle of weeding out failures.
22. *Planning*	It is a planned system.	No planning is required.	Planning is flexible.

Examples of different types of education are given in Table 1.2

Table 1.2 *Examples of Different Types of Education*

	Types of Education	*Examples*
1.	Formal Education	School, College
2.	Non-formal	Radio, TV, Press etc.
3.	Informal	Social gatherings, Entire environment. Unconscious learning. Through imitation. Sitting on the table within a group. Street and marketplace.

Narrowing the Gap between Different Types of Education

The revolution in information and communication technology (ICT) and its use in the teaching–learning process has narrowed down the difference. The use of computers, radio and TV has introduced several elements of formal education into informal and non-formal education and vice versa. At one time radio and TV were used only for the

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purpose of non-formal education. Now they are being used in a planned way for formal education. In fact, there is a special TV channel for this purpose. It is estimated that at the higher education level, nearly 10 per cent enrolment is through Distance Education/ Open Education. New slogans like 'Open Learning', 'University Without Walls' and 'Virtual University' are taking the place of formal education which at one time was confined to the 'four walls' of the school/college. Use of Internet for educational purposes has become very popular. Content on different subjects is now available in CDs. Students have the opportunities of pursuing their studies in their bedrooms. They can get university degrees without attending any institution.

Agencies of Education

It is rightly observed by Counts that 'The school is but one among many educational agencies.' The common belief that education is confined to schools and colleges is not entirely true. No doubt schools and colleges do occupy the most predominant place in the society as educational institutions. But when we use the word 'education' to denote the idea of the all-round development of the personality of an individual, we must recognize the role of other agencies of the society besides the schools and the colleges. Schools function for a short time daily. They function for only seven months during the year. The rest of the time the students spend outside the school premises—in the family, in the neighbourhood and with the peer groups. They are influenced by mass communication, media and other agencies like social education centres and libraries.

According to some educators, of all the education we receive, we learn one-fourth from our teachers, one-fourth from books, one-fourth from our colleagues and one-fourth from the overall environment. This indicates the type of education and the multitude of agencies of education.

Education in a wider sense takes place from the womb to the tomb, i.e., from conception to cremation. Education is a lifelong process. Education goes on whether we are aware of it or unaware of it. Thus there are several types of social institutions that impart education. There are active as well as passive agencies of education. Likewise there are formal, non-formal and informal agencies of education run and managed by government and private agencies.

Education imparted in formal agencies is called formal education. Education given in non-formal agencies is called non-formal education. Education received in informal ways is called informal education.

While discussing different types of agencies, it may be borne in mind that teachers are not the only educators. As observed by T. Ramount, 'Let us agree to recognize explicitly that in a real sense teachers are not the only educators. In other words, it is life that educates, the school provides a part of life's experience'.

By the agencies of education we mean various sources, i.e., the institutions and organizations that play their role in varying degrees in the process of education.

Agencies of education have been classified in various ways, as shown in Tables 1.3–1.5.

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Table 1.3 *Classification of Agencies into Formal, Informal and Non-formal Types*

Formal Agencies of Education	*Informal Agencies of Education*	*Non-formal Agencies of Education*
1. School	1. Art Gallery	1. Adult and Social Education Centres
2. College	2. Cinema	2. Playground (when regular physical education is organized)
3. Home or Family (in the Past)	3. Home/Family	3. Radio (Educational Programmes)
4. Church (in the past)	4. Library	4. T.V. (Educational Programmes)
5. Adult school (on regular bases)	5. Museum	5. Professional Organizations like Teachers' Association when they organize seminars, workshops, etc.
6. Open school (when contact classes are also arranged)	6. Peer group	6. Clubs when educational talks etc. are organized.
7. T.V. (When used as an integral part of the curriculum and pre-telecast and post-telecast lessons are organized)	7. Playground (when not supervised by the teacher)	7. Cinema (When educational pictures are organized)
8. Radio (When used as an integral part of the curriculum and pre-broadcast and post-broadcast lessons are organized)	8. Press	8. Internet (When some educational course is organized)
	9. Reading Room	9. Correspondence Institutions
	10. Radio (Normal Programme)	10. Open Learning Institutions
	11. Television (Normal)	11. Distance Learning Institutions
	12. Voluntary Organizations like Bharat Sewak Samaj, Boy Scouts	
	13. Internet	
	14. State	

Table 1.4 *Classification of Agencies into Active and Passive Types*

Active Agencies of Education	*Passive Agencies of Education*
1. The Family	1. Cinema
2. The School	2. Radio
3. The Community	3. T.V.
4. The Religion	4. Internet
5. The State	5. Library
6. Social Clubs	6. Magazines
7. Peers	7. Newspapers
8. Neighbourhood	8. Marketplaces
	9. Reading Room

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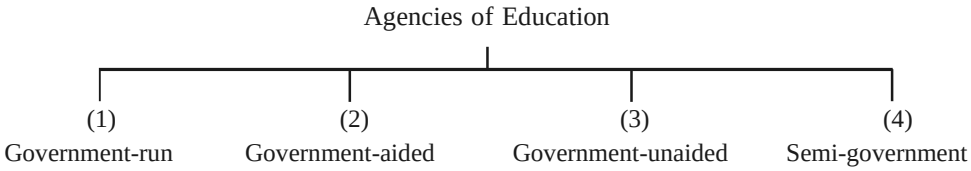
Table 1.5 *Classification of Agencies into Formal, Informal, Commercial and Non-commercial Types*

Formal	*Informal*	*Commercial*	*Non-commercial*
1. School	1. The Family	1. Cinema	1. Dramatic Clubs
2. Religious Institution	2. General Games	2. Radio	2. Social Welfare Centre
3. Library	3. The State	3. T.V.	3. Sports Club
4. Art Galleries	4. The Peer Group	4. Clubs	4. Scouting and Guiding
5. Museum	5. The Community	5. Newspapers	5. Youth Welfare Clubs
6. Zoo	6. The Society	6. The Press	6. Adult Education Centres
7. Organised Games			

Besides the above three broad categories, agencies of education are also classified into government-run, government-aided, government-unaided and semi-government types, as shown in the following chart.



Formal Agencies of Education for Formal Education

Formal agencies of education like schools and colleges impart formal education. These agencies are consciously and deliberately planned to bring about specific influences on the educand. They have regular working hours. They prepare students for taking public examinations on a regular basis. Usually they employ full time staff. They follow prescribed curriculum and textbooks. They have to conform to rigid departmental rules and regulations.

Informal Agencies of Education for Informal Education

The informal agencies do not follow any set pattern of instruction or education. In fact they impart education incidentally. Education is not organized deliberately in these institutions. These are informal groups. Education is indirect. One may learn without being conscious of it. Nevertheless influence of informal agencies of education is quite significant.

Non-formal Agencies of Education

'Flexibility' is the key-word in the case of non-formal agencies of education. The system is an 'open one' with regard to: (i) Admission, (ii) Curricular work, (iii) Place of instruction, (iv) Mode of instruction, (v) Time and duration of instruction, and (vi) Regular/temporary/part time staff. Open School, Open University, Open Learning Institutions and agencies imparting correspondence education come under non-formal agencies of education. Adult education agencies are usually placed under this category.

INCLUSIVE EDUCATION

Inclusion in education was once described as an approach wherein students with special educational needs spend most or all their time with non-disabled students. Research

suggests that inclusivity is no longer defined by physical and cognitive disabilities but also includes a full range of human diversity with respect to ability, language, culture, gender, age and of other forms of human differences.

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Inclusive education 'is a process of strengthening the capacity of the education system to reach out to all learners'. It involves restructuring the culture, policies and practices in schools so that they can respond to the diversity of students in their locality.

For a school to be inclusive, the attitudes of everyone in the school, including administrators, teachers, and other students should be positive towards students with disabilities.

Inclusive education means that all children, regardless of their ability level, are included in a mainstream classroom, or in the most appropriate or least restrictive environment (LRE), that students of all ability levels are taught as equals, and that teachers must adjust their curriculum and teaching methodologies so that all students benefit. This also avoids wasting resources, and 'shattered hopes,' which often occurs in classrooms that are 'one size fits all.'

Studies have shown that systems that are truly inclusive reduce drop-out rates and repetition of grades, and have higher average levels of achievement, compared to systems that are not inclusive. People who believe in inclusive education believe that the education system is the impediment to learning for a child, and that every child is capable of learning!

As a system, inclusive education should be flexible. Its principle should be education in the regular classroom whenever possible. This need for flexibility must be reflected in the methods and materials used to give these children the widest possible access to the regular curriculum. When discussing the kind of service needed, the starting point should always be what is best for the particular child. Emphasising inclusive education does not rule out special schools or centres. They would still be required to cater to children with profound and complex difficulties in need of more specialized and extensive help, including e.g. many deaf children. This alternative should, however, not be considered, unless classroom placement cannot meet their needs.

In line with the new policy of inclusive education, special schools begin to function more and more as resource centres. They involve in outreach programmes, where they draw on their vast experience and knowledge. They link their activities with those of the regular schools, the families, and the communities.

Inclusive education services allow children with disabilities to stay with their family and to go to the nearest school, just like all other children. This circumstance is of vital importance to their personal development. Interrupting a disabled child's normal development may have far more severe consequences than the disability itself.

In this context, it is important to stress the role parents have. They have a right to be involved in all decision-making concerning their child. Parents should be seen as partners in the education process. Where there is such cooperation, parents have been found to be very important resources for the teachers and the schools.

As a rule, there are a number of practical problems that have to be solved before a child with special educational needs can go to school or take part in school activities. The arrangements it takes are fairly simple, provided coordinated local and unconventional initiatives are stimulated. One should also remember that the child's schoolmates represent a valuable potential partner who is ready and able to help in overcoming some of these problems.

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Benefits of Inclusive Education

All children benefit from inclusive education. It helps them in the following ways:

- Develops individual strengths and gifts
- Works on individual goals while participating in the classroom activities along with the other children
- Involves the parents in the education and activities of the local schools
- Helps to adopt a school culture of respect and belonging.
- Provides opportunities to learn about and accept individual differences which helps to lessen the impact of harassment and bullying
- Develops friendships with other children, each with their own individual needs and abilities
- Helps to develop a positive attitude amongst the school and the community at large in favour of inclusive education

The curriculum for inclusive education should be based on the following parameters:

- **Child-centred:** Children with disabilities need child-centred curriculum, which takes into account the individual needs of the children. The curriculum needs to set specific, observable, measurable and achievable learning outcomes.
- **Flexible:** Aflexible, locally relevant curriculum, teaching and learning strategies are intrinsically important for children with special needs to participate in the educational process.
- **Participatory:** Children with special needs require a learning environment in which they can actively participate in learning within small groups.
- **Partnership with parents:** Partnership with parents is a key factor as children learn not only in the classrooms but also at home.

Inclusive education must respond to all students as individuals, recognizing individuality as something to be appreciated and respected. Inclusive education responding to special needs will thus have positive returns for all students. All children and young people of the world, with their individual strengths and weaknesses, with their hopes and expectations, have the right to education. It is not our education systems that have a right to a certain type of children. Therefore, it is the school system of a country that must be adjusted to meet the needs of all its children.

Check Your Progress

3. What are the three types of education?
4. State any two characteristics of formal education.
5. What is informal education?
6. What is inclusive education?
7. The curriculum for inclusive education should be based on what parameters?

SUMMARY

- Aurobindo defines education as 'helping the growing soul to draw out that is in itself.'
- Gandhiji speaks of education as, 'By education, I mean an all-round drawing out of the best in the child and man—body, mind and spirit.'
- According to Vivekananda, 'Education is the manifestation of divine perfection already existing in man—Education means the exposition of man's complete individuality.'
- Pestalozzi defines education as 'the natural, harmonious and progressive development of man's innate powers.'Man is endowed with certain inborn powers

and capacities and the task of education is to bring about the development of these. Due regard should be paid in the process of education to the child's nature and needs.

- Education takes place when new ideas combine with the old ones. Something new is constructed by the synthesis of the two and this process goes on constantly through life. Education is growth and growth never stops.
- Education is both retrospective and prospective. It is both conservative and progressive. Education transmits the culture of one generation to another. The rising generation has not only to be conveyed the activities and experiences of the past generation and asked to carry on those activities but it also has to be asked to make necessary changes in these activities and experiences to meet the new situations which it will encounter.
- Education curbs the animal instincts in man and shows him the way to realize his latent powers. It thus makes the potential actual. It makes explicit what is implicit in us. It is, therefore, development from within and not an accretion from without. It modifies the behaviour of the educand.
- By education we mean the natural, harmonious and progressive development of man's innate powers by drawing out the best in his body, mind and spirit so as to produce an individual who is culturally refined, emotionally stable, ethically sound, mentally alert, morally upright, physically strong, socially efficient, spiritually enlightened, vocationally self-sufficient and internationally liberal. This should be the end product of education.
- Formal education is imparted in an educational institution—a school or college. It is consciously and deliberately planned to bring about specific changes in the educand or the learner.
- Informal education takes into its orbit all indirect influences of the home and the society. The press, the libraries, the films and other such agencies are included as agencies of informal education. Their influence is subtle and imperceptible but at the same time very important and significant.
- Non-formal education is an arrangement wherein flexibility is the key word. The system is an open one with regards to various aspects of education, i.e., admissions, curriculum, place of instruction, mode of instruction and the time and duration of instruction. Open university, open learning, correspondence courses and distant education are the various examples of such a system.
- Inclusion in education was once described as an approach wherein students with special educational needs spend most or all their time with non-disabled students.For a school to be inclusive, the attitudes of everyone in the school, including administrators, teachers and other students should be positive towards students with disabilities.
- Inclusive education means that all children, regardless of their ability level, are included in a mainstream classroom, or in the most appropriate or least restrictive environment (LRE), that students of all ability levels are taught as equals, and that teachers must adjust their curriculum and teaching methodologies so that all students benefit.

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KEY TERMS

- **Non-formal education**: This is any organized educational activity that takes place outside the formal educational system.
- **Informal education:** This type of education takes into its orbit all indirect influences of the home and the society.
- **Education**: It helps in the natural, harmonious and progressive development of man's innate powers by drawing out the best in his body, mind and spirit.
- **Inclusive education**: It means that all children, regardless of their ability level, are included in a mainstream classroom, or in the most appropriate or least restrictive environment.

ANSWERS TO 'CHECK YOUR PROGRESS'

1. In the words of Dewey, 'Education is the development of all those capacities in the individual which will enable him to control his environment and fulfil his responsibilities.'
2. The three characteristics of education, among others, are:
   - It is purposive.
   - It is deliberate.
   - It is lifelong.
3. Formal, informal and non-formal are the three types of education.
4. Two characteristics of formal education, among others, are:
   - Planned education keeping in view some definite aim
   - Education imparted through well planned means or formal lessons
5. Informal education takes into its orbit all indirect influences of the home and the society. The press, the libraries, the films and other such agencies are included as agencies of informal education. Their influence is subtle and imperceptible but at the same time very important and significant.
6. Inclusive education 'is a process of strengthening the capacity of the education system to reach out to all learners'. It involves restructuring the culture, policies and practices in schools so that they can respond to the diversity of students in their locality.
7. The curriculum for inclusive education should be based on the following parameters:
   - Child centred
   - Flexible
   - Participatory
   - Partnership with parents

QUESTIONS AND EXERCISES

Short-Answer Questions

1. Write any two definitions of education.
2. How can you say that education is a process of self-realization?
3. What are the different agencies of education?
4. Differentiate between formal and informal education.

Long-Answer Questions

1. Discuss the chief characteristics of the nature of education.
2. What are the various ways in which agencies of education have been classified? Discuss.
3. Discuss the benefits of inclusive education. What should the curriculum of inclusive education be based on?

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FURTHER READING

Aggarwal, J. C. 2010. *Theory and Principles of Education*, thirteenth edition. New Delhi: Vikas Publishing House.

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UNIT 2 AIMS OF EDUCATION

Structure

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INTRODUCTION

The importance of aims and objectives of education is recognized by all educational, professional, political, non-political and religious associations. It is believed that education without clear aims is like a rudderless ship. For example, it is important for all countries to have a constitution or set of principles and traditions to help in good governance. Similarly, there should be properly defined and declared principles, aims and objectives of education on which policies and programmes of education could be formulated to achieve the set goals. In this unit, you will learn about some of the important aims of education.

UNIT OBJECTIVES

After going through this unit, you will be able to:

- Discuss the importance of individual and democratic aims of education
- Explain the social and cultural aims of education
- State why vocational aim of education is important

INDIVIDUAL AND SOCIAL AIMS

The quest for aims in education has been made since times immemorial. History bears out the truth that the quest acquired momentum with the birth of a great philosopher, or that of an educator or a great thinker. Similarly, the trial of a new educational experiment gave momentum to this quest. The quest for aims has also received a spurt with the sudden emergence of a political or social revolution or with the onslaught of religious upheaval. Emphasis on the nature of aims of education reflects the needs of the times.

Clark has expressed, 'No writer on education, however much he may strive after universality of thought, can wholly shape himself free from the influence of time and place.'

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Education Related to Time and Space

Worthy aims are related to situations of life. Any organized system of education must meet the real situations of a community. It must be in accordance with the physical and social needs of the community. The intrinsic needs and activities of the child are closely related to the needs of the community. A child cannot be educated in a vacuum. Children are members of the community in which they live and education must help them to become useful members of the society. Of course, in the process of making a child useful member of the society, he or she should not be overburdened with the 'do's' and 'dont's'.

Since physical, social and economic needs differ from place to place, from time to time and from country to country, the educational system, its curriculum, syllabi, methods and techniques must also be more or less different in different countries at different places. Changes in the ideals and values accepted by a society will call for corresponding changes in the system of education. Nothing is held as true and valuable for all times.

In ancient times men needed training in the use of bows and arrows for their safety. Their needs were simple and few. The processes of production, consumption, distribution and exchange were quite simple. Thus, the educative needs were also simple and could be met by a process of education which was also very simple.

Individual Aims of Education

Educational aims are correlative to the ideals of life. Educational aims in any country have varied with its political, social and economic conditions. The educational system of Greece and Rome raised an issue that is still very important in education today. Should education train good individuals or good citizens? Are the social needs of education more important than the needs of the individual? An individual is born with certain potentialities and natural endowments. It is the task of the educator to develop students into distinct individuals. But personality development does not take place in a vacuum. Thus, we have to decide whether the individual or the society should occupy the first place in education.

Educators who Emphasise Individual Aims of Education

- To enable men to release, to mature, to discipline the human mind and sprit,..... this most influential of all the varieties of energy has always been the task of education. (Johan H. Fischer[1])
- Schools exist to help children succeed.(Gordon Closkey[2])
- Therefore, we would ask education to give us men with taste, respect for intelligence, and independence of judgement that will give them confidence to approach the public for what it is a group of distinct individuals, not a lump of reflexes waiting to be conditioned.(Monroe E. Spaght[3])
- The object of education assumed here is development of the individual.(American Association of School Administrators[4])
- In *Rigveda*, education has been defined as something, which makes a man self-reliant and selfless.
- According to Sir Percy Nunn, 'Nothing good enters into the human world except in and through the free activities of individual men and women, and that educational practice must be shaped to accord with that truth.'

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- Mahatma Gandhi, the father of Basic Education, considers education as a means to develop man. He said 'By education I mean an all-round drawing out of the best in child and man—body, mind and spirit.'
- The University Education Commission (1948) speaks about education in these words: 'Education according to Indian tradition is initiation into the life of spirit, a training of human soul in the pursuit of truth and the practice of virtue.'
- Aristotle thinks that 'education is the creation of a sound mind in a sound body.'
- In the words of Kant, 'Education is the development in the individual of all the perfection of which he is capable.'
- According to Pestalozzi, 'Education is the natural, harmonious and progressive development of man's innate powers.'
- Froebel regards education 'as the process through which the child makes internal external.'

Why Stress on Individual Aims

- **The biologist's support to individual aims of education:** According to Prof. G. Thompson, 'Education is for the individual: its function being to enable the individual to survive and live out its complete life. Education is given for the sake of the individual to save him from destruction. Community exists for the individual, not the individual for the community. Community being the means and individual being the end, education should not set means over the end. Individual and not society, therefore, should be the centre of all educational efforts and activities.'
- **The naturalists' support to the individual aims of education:** The naturalists like Nunn and Rousseau are of the view that the central aim of education is the autonomous development of the individual. According to Rousseau, 'Everything is good as it comes from the hands of Author of Nature, but everything degenrates in the hand of man. God makes all things good. Man meddles with them and they become evil.' Therefore, education should be in accordance with the nature of the individual.
- **The psychologists' support to individual aims of education:** The psychologists regard each individual as a unique one. According to them, no two children are identical. The function of education should be to develop the innate powers of the individual so that his maximum development may take place.
- **The spiritualists' support to individual aims of education:** The spiritualists are of the view that every individual is a separate entity and is responsible for his own actions. Therefore, the main function of education should be to lead the individual to self-realization. Swami Vivekananda stated, 'Man is potentially divine. The goal is to manifest this potentiality from within, by controlling nature—external and internal through education.'
- **The progressivists' support to the individual aims of education:** The progressivists hold the view that the progress and advancement of the world is due to great individuals born in different periods of history. They thus believe that the education process should secure conditions for the complete development of individuality so that each individual may make his original contribution to human life.

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Criticism of Individual Aims of Education

- According to Raymont, an individual is only a figment of imagination. An individual cannot be conceived in isolation from society.
- The critics of individual aims believe that the individual left to himself is an animal, selfish and indisciplined. The animal instinct of man, if given a free reign, is sure to lead him to the state of primitive barbarism where the law of jungle prevailed.
- Absolute freedom to the individual should not be given. The individual may begin to assert that 'I must have what I want'.
- The exaggerated claim of the individual may have an adverse effect on the politics and economy of a country. The policy of 'laissez faire' is not conductive to national interests in the modern times.

Social Aims of Education

The individual is regarded as endowed with a social nature; he is social by instinct. An individual seems always to be caught up in an intricate web of social relations. Without them the newborn baby would almost perish. The social process and the educational process are essentially one and the same.

Curriculum is the social stuff out of which the individual realizes itself.

Narrow Interpretation of Social Aims of Education

The protagonists of this view think that state is an 'idealised metaphysical entity over and above the individual citizen, superior in every way'. Hence the individual exists for the society. It is, therefore, the State that should decide the aim, mode and type of education or training which an individual should receive for its welfare. The Spartan system of education in ancient times and the Nazi system of the recent past reflect this tendency. Undoubtedly such notions played a major role in world conflicts which led to the two World Wars in 1914 and 1939.

Broader Interpretation of the Social Aims of Education

The social aims of education finds expression in such concepts as 'education for social service', 'education for citizenship', 'education for social efficiency'.

Social aims of education have been stressed upon by the following:

- The primary purpose of the public schools is development of effective citizens—citizens who uphold American ideals and who act in accordance with the social and moral standards that characterise democracy.[5]
- The basic purpose of school is to develop in all people the skill, understanding, beliefs, and commitments necessary for government of and by the people. [6]
- The large function of education is to realise the ideals of manhood and the kinds of relationship between man that it cherishes.[7]
- The distinctive function of education must inevitably involve the giving of direction to the social reconstruction that we so desperately need if we are going to solve our social problems and realise our ideals.[8]
- Education means the culture which every generation purposely gives to its successors in order to qualify, to keep and to improve the level attained (Brown, F.J.).

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- The teacher's aim is not to educate his pupils in the abstract, but for life in any existing society (Bruebacker, J. S.).
- Education is the process of reconstruction or reconstitution of experience, giving it a more socialised value through the medium of increased social efficiency (Dewey).
- Education cannot be considered in isolation or planned in a vacuum. It has to be used as a powerful instrument of social, economic and political change and will, therefore, have to be related to the long-term national aspirations, the programmes of national development in which the country is engaged and the difficult short-term problem it is called upon to face (Education Commission, 1964-66).
- Education is an attempt on the part of the adult members of the human society to shape the development of the coming generation in accordance with its own ideals of life (James Welton).
- An adequate educational programme will thus be concerned to help each individual child grow up from his state of initial dependence into full participation in the richest available group life including in a democratic country a full share in the active management of group affairs. Such an adequate programme will besides go on further to an active effort to improve the group culture (William Kilpatrick).
- True education involves three things: a sincere appreciation of the social and cultural achievements of one's country, a readiness to recognise its weaknesses frankly and to wish for their eradication and an earnest resolve to serve it to the best of one's ability, harmonising and subordinating individual interest to broader national interests. The school must address itself to building up this rich, three-fold concept of patriotism.

Why Social Aims of Education?

- The supporters of these aims believe that an individual cannot live and develop in isolation from society. Raymont says that the isolated individual is 'a figment of the imagination.' The individual being a social animal, will develop through social contacts.
- According to John Dewey, social aims are stressed as education should make each individual socially efficient and this social efficiency must be achieved by the positive use of individual power and capacities in social occupations. A socially efficient individual is not a drag or parasite on society or any individual. A socially efficient individual is able to earn his livelihood. He also conforms to moral and social standards of conduct.
- Gandhiji formulated the basic scheme with the objective of making people realize that education was not merely for the benefit of the individual but for the needs of a predominantly rural and agrarian population.

Limitations of Social Aims of Education

- Social aims of education envisage the individual as a non-entity and leave little scope for his personality and unique characteristics to flourish.
- Aggression and violence against neighbouring countries have resulted in educational aims of this variety. Militant nationalism 'my country, right or wrong', are attitudes which may develop in tender minds.

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- In recent years there has been a tendency in western countries among the young people to rebel against the cult of 'social efficiency'. Many students prefer the development and growth of individuality and want to give up the struggle for social efficiency.

Definitions Stressing Individual and Social Objectives of Education

- Education is that which increases our ability to enjoy things more, to live more richly, more creatively, and in greater harmony with ourselves, our environment and our fellowmen.[9]
- The main objectives of general education should be two-fold: first to help the student develop those qualities and abilities that will serve him and the community well, no matter what his calling or status in life, and second to foster in him those interests or abilities that enable him to continue to grow—to learn by himself and in whatever joint activity he may be engaged.[10]
- The goals are to enable each child to play a constructive, respected role in society and to lead to life which to him will be satisfying.[11]

Social and Individual Purposes of Education not Incompatible

'Social purpose' of education and 'individual purpose' of education are not incompatible terms. The Education Commission 1964-66 has explained the position as: 'One of the important principles to be emphasized in the socialistic pattern of society which the nation desires to create is that individual fulfilment will come, not through selfish and narrow loyalties but through wider loyalties of national development in all its parameters.'

According to Ross, 'Individuality is of no value and personality is a meaningless term apart from the social environment in which they are developed and made manifest. Self-realization can be achieved only through social service and social ideas of real value can come into being only through free individuals who have developed valuable individuality. The circle cannot be broken.'

Both the individual and the society should be regarded as realities, neither of the two being absolutely independent of the other. Instead of being regarded as isolated entities, the individual and the society should be considered as functionally related to each other, the individual acting on the society, and the society reacting on the individual. The individual is the product of society and the society in its own turn finds its advancement in the development of its individual members. In the words of John Adam, 'Individuality requires a social medium to grow. Without social contacts we are not human.'

DEMOCRATIC AIMS

The degree of state control over education has varied from state to state at different times. Prof. John S. Brubacher outlines the position as: 'At one time all education was under private supervision, lately, more and more of it has come under the government. In some places, the government merely provides the school building and teachers. In others it goes further and offers free textbooks and supplies. In still others, it furnishes such services as medical care, transporation to and from school and mid-day lunch. Probably no one today would like to see the government abandon any of these services.'

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Education aims in any country have varied with its social, economic and geographical conditions. In recent past, political system has been the dominating factor in determining the aims and ideals of education. The two systems which are considered here in relation to aims of education will be democratic and totalitarian.

Common Aims of Education in Totalitarian and Democratic States

- Both use education systems as a direct means of economic development.
- Both use educational systems as a conscious means of transforming their society.
- Both make all out attempts to provide schooling for all. An attack on mass illiteracy is a must.
- Both lay great stress on vocational skills to bring about economic efficiency.

State Control of Education in a Totalitarian State

The child in a totalitarian state is educated not only exclusively by the state but ultimately exclusively for the state as well. Thus, the state comes to assume ethical as well as political sovereignty in the education of its wards. The state organizes and maintains schools of its own. The teachers in a totalitarian state must propagate and indoctrinate the decisions made by higher ups. As in the army, the schools of a totalitarian state will emphasize drill and obedience at the expense of initiative and criticism.

The merits and demerits of such an educational philosophy are the same as those of the political theory after which it is patterned. Thus, the aims and ideals of education depend upon the philosophy that prevails in a society. In the mid-twentieth century, Japanese and Nazi regimes stressed that education should produce patriotic citizens who would fight to expand the territories of their nation's superiority. The cultural revolution in China in the 1960s was directed towards the ideals set by the totalitarian state.

In a totalitarian state, students are not encouraged to look critically at the problems and evils existing in society. They are encouraged to be content with status quo. Passive acceptance of the country's political economic and other policies is sought to be implanted in the minds of the students. Militant nationalism, 'My country, right or wrong' are attitudes which may develop in tender minds. Aggression and violence against neighbouring countries have resulted in educational aims of this type.

Aims of education in a totalitarian state may be enumerated as under:

- Each individual must be trained to subordinate his interests to the interests of the state.
- Every child must follow a rigorous code of discipline.
- Thinking along the lines approved by the authorities is stressed. Very little independent thinking is allowed.
- Physical education and military training are given great importance.
- The student is made to realise the value and importance of obedience and conformity.

Education in a Democracy

Since every individual counts in a democracy, it enjoins that each person be always treated as an end. A man is to be educated as man because of his humane nature—no matter whether he is high born or low, and no matter what the economic condition of his

Check Your Progress

1. How has the Rigveda defined education?
2. What according to Aristotle is education?

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parents is. Nothing less than universal education will suffice. Education is conditioned by deep regard for civic responsibilities; emphasis is on hard work, dignity of labour, initiative, enterprise and reliance. Since all men in a democracy are free, education must be free, that is there must be no economic barriers to its acquisition. Since in a democracy all men are politically free, all should have a liberal education.

Following are the aims of education in a democratic set up:

- It should develop a wide range of wholesome interests in each pupil by providing for learning through cooperative work.
- It should develop social outlook.
- It should develop ability of constructive and independent thinking.
- It should develop the capacity of the pupil to sift truth from falsehood, fact from propaganda and to reject the dangerous appeal of fanaticism and prejudice.
- It should provide for training in dignity of labour.
- It should provide equal opportunities for all.
- It should develop a passion for social justice based upon sensitivity to social evils and exploitation of the weak.
- It should develop love and respect for others. It should develop human relations.
- It should cater to the individual differences among children and teach them accordingly. No attempt should be made towards uniformity.
- It should encourage originality and inventiveness.
- Vocational choices should be broad-based.

VOCATIONAL AIMS

Moral or character formation aim of education is also one-sided. An individual must be prepared to earn his livelihood otherwise he will not be a happy man. Of course, values of life must not be sacrificed for 'bread and butter'.

Gandhiji has also supported the vocational aim, 'True education ought to be for them (boys and girls) a kind of insurance against unemployment.' The vocational aim is also called the 'bread and butter aim'. It can train individuals to become socially efficient. They will, therefore, neither be drags nor parasites on the society. They will contribute to increase production and national wealth. The advocates of the vocational aim argue that all the knowledge a pupil gains in the school, all the culture the pupil acquires in the school will be of no use, if he cannot make both ends meet.

Synthesis of Character Formation and Vocational Aim of Education

Check Your Progress

3. State any two common aims of education in totalitarian and democratic states.
4. State any three aims of education in a democracy.

Vocational aim in education has its own importance but man does not live by bread alone. Education must take into consideration the entire personality of the pupil and not one segment of it. Man has to develop himself aesthetically, intellectually, morally, physically, socially and vocationally. The University Education Commission (1948–49) has very rightly observed: 'If we wish to bring about a savage upheaval in our society, a *Rakshas Raj*, all that we need to do is to give vocational and technical education to starve the spirit. We will have number of scientists without conscience, technicians without taste, who find a void within themselves, a moral vacuum and a desperate need

to substitute something, anything for their lost endeavour and purpose.' This underlines that vocational aspect should not be at the cost of character aspect. This statement does not reject the vocational aim. It emphasises that character aim should not be ignored.

Jawaharlal Nehru has stated: 'Education has mainly two aspects, the cultural aspect which makes a person grow, and the productive aspect which makes a person do things. Both are essential. Everybody should be a producer as well as a good citizen and not a sponge on another person even though the other person may be one's own husband or wife.' Gandhiji, it is true, stressed the vocational aspect but at the same time he was very emphatic. He was convinced that without character, vocational efficiency had no meaning. All the same, he emphasized the vocational aspect in the system of Basic Education.

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MORAL AND CULTURAL AIMS

Money is not needful; power is not needful; cleverness is not needful; even health is not needful but character alone is the most needful and education must develop it. Gandhiji has observed: 'All our learning or recitation of the Vedas, correct knowledge of Sanskrit, Latin, Greek and what not will avail us nothing if they do not enable us to cultivate absolute purity of heart. The end of all knowledge must be building up of character.' Raymont states: 'The teacher's ultimate concern is to cultivate, not wealth of muscle, nor fulness of knowledge, nor refinement of feeling, but strength and purity of character.' According to Vivekananda, 'The end of all education, all training, should be man making.' John Dewey has said: 'All education forms character—mental and moral'. The Secondary Education Commission has observed, 'Education is the training of character to fit the students to participate creatively as citizens.'

Character has two facets: the one which is personal, and the other which manifests itself in our relationship with society. Both these aspects should be pure and unsullied. Right from the ancient seers down to the great personalities of our modern time, all those whom we consider as standard bearers of our philosophy and culture have been pure—their thought, word and deed all in tune with the highest truths.

Character is the product of daily, hourly actions and words and thoughts; daily forgiveness, unselfishness, kindness, sympathies, charities, sacrifices for the good of others, struggles against temptations. What is character without elementary personal purity?

Character is the product of innate endowment, influence of environment and constant introspection. Good acts and habits are the basis of good character and therefore character formation is a continuous process from life to death. Gandhiji has observed, 'Character-building... must come within yourself.'

SUMMARY

- The quest for aims has received a spurt with the sudden emergence of a political or social revolution or with the onslaught of religious upheaval. Emphasis on the nature of aims of education reflects the needs of the times.
- Since physical, social and economic needs differ from place to place, from time to time and from country to country, the educational system, its curriculum, syllabi,

Check Your Progress

5. Why did Gandhiji support vocational education?
6. Why is moral education important?

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methods and techniques must also be more or less different in different countries at different places. Changes in the ideals and values accepted by a society will call for corresponding changes in the system of education. Nothing is held as true and valuable for all times.

- Educational aims in any country have varied with its political, social and economic conditions.
- According to Prof. G. Thompson, 'Education is for the individual: its function being to enable the individual to survive and live out its complete life. Education is given for the sake of the individual to save him from destruction. Community exists for the individual, not the individual for the community. Community being the means and individual being the end, education should not set means over the end. Individual and not society, therefore, should be the centre of all educational efforts and activities.'
- Education is that which increases our ability to enjoy things more, to live more richly, more creatively, and in greater harmony with ourselves, our environment and our fellowmen.
- Education aims in any country have varied with its social, economic and geographical conditions. In recent past, political system has been the dominating factor in determining the aims and ideals of education. The two systems which are considered here in relation to aims of education will be democratic and totalitarian.
- The child in a totalitarian state is educated not only exclusively by the state but ultimately exclusively for the state as well. Thus the state comes to assume ethical as well as political sovereignty in the education of its wards. The state organizes and maintains schools of its own. The teachers in a totalitarian state must propagate and indoctrinate the decisions made by higher ups. As in the army, the schools of a totalitarian state will emphasize drill and obedience at the expense of initiative and criticism.
- Education is conditioned by deep regard for civic responsibilities; emphasis is on hard work, dignity of labour, initiative, enterprise and reliance. Since all men in a democracy are free, education must be free, that is there must be no economic barriers to its acquisition. Since in a democracy all men are politically free, all should have a liberal education.
- Moral or character formation aim of education is one-sided. An individual must be prepared to earn his livelihood, otherwise he will not be a happy man. Of course, values of life must not be sacrificed for 'bread and butter'.
- Vocational aim in education has its own importance but man does not live by bread alone. Education must take into consideration the entire personality of the pupil and not one segment of it. Man has to develop himself aesthetically, intellectually, morally, physically, socially and vocationally.
- According to Gandhiji, 'All our learning or recitation of the Vedas, correct knowledge of Sanskrit, Latin, Greek and what not will avail us nothing if they do not enable us to cultivate absolute purity of heart. The end of all knowledge must be building up of character.'

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KEY TERMS

- **Education:** It is the process of facilitating learning. Knowledge, skills, values, beliefs, and habits of a group of people are transferred to other people, through storytelling, discussion, teaching, training, or research.
- **Vocational education:** Schools that prepares students for a specific trade. It directly develops expertise in techniques related to technology, skill and scientific technique to span all aspects of the trade.

ANSWERS TO 'CHECK YOUR PROGRESS'

1. In the *Rigveda*, education has been defined as something, which makes a man self-reliant and selfless.
2. According to Aristotle: 'Education is the creation of a sound mind in a sound body.'
3. The common aims of education in the totalitarian and democratic states are:
   - Both use education systems as a direct means of economic development.
   - Both use educational systems as a conscious means of transforming their society.
4. Three aims of education in a democracy are:
   - It should develop a wide range of wholesome interests in each pupil by providing for learning through cooperative work.
   - It should develop social outlook.
   - It should develop ability of constructive and independent thinking.
5. According to Gandhiji, true education ought to be for like an insurance against unemployment. He believed that vocational skills can empower youth.
6. Moral education is important as development of character is required for all individuals. This helps an individual to become an asset to the society and the country at large.

QUESTIONS AND EXERCISES

Short-Answer Questions

1. What are Rousseau's views on education?
2. What are individual aims of education?
3. What are the limitations of individual aims of education?

Long-Answer Questions

1. What are the limitations of the social aims of education? How are social and individual purposes of education compatible?
2. Discuss why stress on individual aims of education is important.
3. Why are vocational aims in education important?

NOTES

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UNIT 3 EDUCATIONAL STRUCTURE

Structure

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INTRODUCTION

After Independence, the education system in India underwent major alterations. There was an increase in demand for every kind of higher education—literary and scientific, technical and professional, as universities were given the task to empower the country by educating its people to attain freedom from want, disease and ignorance. To raise the living standards, a radical change of spirit was essentially required. Keeping in view all of the above, the Education Commission was set up.

The first Education Commission of Independent India (1948) was known as University Education Commission. Education Commission of 1964–66 is popularly known as Kothari Commission after the name of its Chairman, D. S. Kothari. It was the third Commission on Education since Independence. It was the only Commission that went into all aspects of education at all stages and made detailed recommendations on the reconstruction of education in India. The composition of the Commission was of international level. As education remains the common quest of mankind, it was found profitable to draw upon the experience and thinking of educationists and scientists from other countries, and to take advantage of the latest developments in the educationally advanced countries.

As such, the Commission included seven Indian members and five others; one each from Japan, France, the UK, the USA and the USSR as well as twenty consultants from different countries of the world.

In this unit, you will study the educational structure of India and the recommendations of various commissions to form the educational structure of India.

UNIT OBJECTIVES

After going through this unit, you will be able to:

- Explain the educational ladder of India
- Discuss the recommendations made by the Secondary Education Commission

- Discuss the report of the Kothari Commission
- State the structure of the new pattern of education

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EDUCATIONAL LADDER

Several articles of the Indian Constitution lay down provisions for free and compulsory education of Indian children from six to fourteen years as a fundamental right. In the Republic of India, education is provided by both the private sector and the public sector. The control and the funding come from three levels: local, state and centre.

Tremendous progress has been made in India as far as attendance rate in the area of primary education is concerned. By 2011, India had managed to raise its number of literates to three-quarters of the total population in the age group of 7–10 year olds. The improved and better developed education system that currently exists in India is said to be not only a huge contributor but the main one to the economic development of India. A lot of the progress made in education in India, and more specifically in the area of scientific research and in higher education, is the outcome of the many public institutions.

In both secondary level and primary level, there is a large system of private schools in India. The private school system complements the system of schools that are run by the government. There are as many as 29 per cent of students in the age group of six and fourteen years who are in the private school system. There are also several private post-secondary technical schools in India. In 2008, India's private education market grossed revenue of US$450 million, while the projected revenue earning capability of this system is as high as US$40 billion.

According to the Annual Status of Education Report (ASER) 2012, as high as 96.5 per cent of all children in the age group of six to fourteen years from rural India had been enrolled in schools. Of all such surveys, this is the fourth one to have shown a figure of enrollment of rural children to be over 96 per cent. Another report from 2013 stated that there were 229 million students enrolled in different accredited urban and rural schools of India, from Class I to XII, representing an increase of 2.3 million students over 2002 total enrollment, and a 19 per cent rise in the enrollment of girls. Even though India is quantitatively slowly and steadily moving nearer to attaining universal education, the actual quality of the education that is imparted is under question, especially in the schools that are part of the school system under the administration of the government. One reason why the quality of education in the government run schools is so poor is that on any day nearly 25 per cent of the teachers are missing from duty. Across India, education assessment systems and tests have been put in place so that problems in schools can be identified and the education system can be improved.

The private school sector in India is extremely regulated in the sense that it is clearly defined what it is that they can teach, what is that form in which they are allowed to operate (educational institutions must be run as non-profit ventures if they are accredited), and each and every facet of their operation. So, the differentiation between private schools and the government one is one that is rather misguiding.

In 1977, just before the government instituted the 10+2+3 system, India had four patterns of school leaving exams in operation in India: 10+2+3, 10+2+2+2, 11+3 and 11–12+1+3. A national system was required, one which brought uniformity into the school system, ensured mobility across states, comparability with the rest of the world,

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and insisted on eight years of elementary school. The idea was born in the Education Commission of 1964–66, headed by former physics professor D. S. Kothari, who became the chairperson of the University Grants Commission (UGC), and was assisted by J. P. Naik, the scholar who set up the Indian Council of Social Science Research.

Though almost all states have introduced the +2 system, in some cases, it is administered by colleges, not school boards such as the CBSE (Central Board of Secondary Education). Vocational education after Class X is still a distant dream, though a subsequent committee headed by Ishwarbhai Patel recommended that 50 per cent of Class X students be sent to the vocational stream. There is still little clarity on the three-language formula. However, the one lasting legacy is that children receive general education till Class X, making science compulsory.

The Central Board for Education in India and the majority of the state boards follow a uniform pattern of education which is referred to as the '10+2+3' (ten plus two plus three) pattern of education. This pattern requires that the first twelve years of education should be completed in school, possibly with the last two in junior college. The following three years of education for the bachelor's degree are done in a college to complete graduation. The initial ten years of study in a school fall into three distinct groups: the first five years are primary education, next three years are middle and the last two years are high school. The Education Commission of 1964–66 had proposed such a pattern and it is being followed in Indian schools even today.

Given below is a little more detail of the education ladder of the Indian education system:

- **Pre-school**: At this stage, education has not been made compulsory. At the pre-school level, it is the Montessori system which is extremely popular.
- **Private playschools**: Such schools are geared towards catering to children starting from age eighteen months and right up to three-year olds.
- **Kindergarten**: This stage is split into two— lower kindergarten (for 3–4 year olds) and upper kindergarten (for 4–5 year olds)
- **Primary school**: This step of the ladder comprises classes from 1st to Vth and is for children aged 6 years to 10 years.
- **Middle school**: This stage comprises classes from VIth to VIIIth and is for children aged 11 years to 14 years.
- **Secondary school**: This stage comprises classes from IXth and Xth and is for children aged 14 years to 16 years.
- **Higher secondary or pre-university**: This stage comprises the XI th and XII th standard and is for children in the age group of 16 to 17 years. It is at this stage that students select their academic focus area or choose the academic stream that they would like to pursue.
- **Undergraduate**: This is a bachelor's degree. If it is a BA (Bachelor of Arts), it will be a three-year course. In case if bachelor's is being done in some specialized courses like engineering or medicine, then the duration will be longer and will vary.
- **Postgraduate**: This is a master's course, the duration of which is two years.

The age of admission to class I should not be less than 6+. The first public external examination should come at the end of the first 10 years of schooling.

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Secondary schools should be of two types— higher schools providing a 10 years' course and higher secondary schools providing a course of 11 or 12 years. A new higher secondary course consisting of classes XI and XII should be introduced. The pre-university courses should be transferred from universities and added to the secondary schools. The Commission has suggested the reorganization of the university stage. At this stage, the three-year degree has been favoured by the Commission.

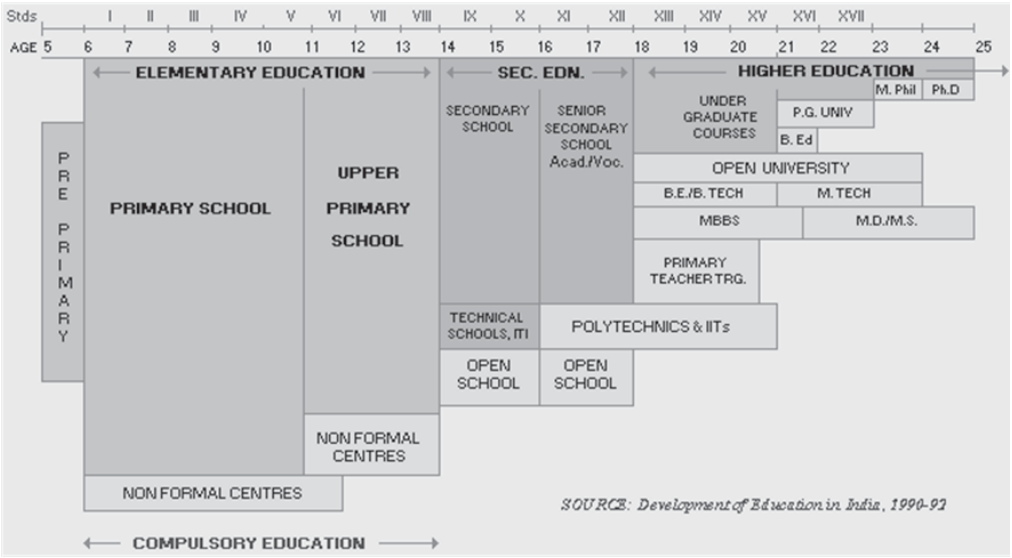
In India, the National Council of Educational Research and Training (NCERT) functions as the apex body as far as all matters related to curriculum for school education in India are concerned. NCERT provides technical assistance and support to many schools, both within India and overseas, with respect to the various aspects for the enforcement of different education policies. Following are some of the other curriculum bodies that are engaged with governing school education system:

- **State Government Boards:** Majority of the states in India have their own education board which would be the State Board of Secondary Education. There are also some states, such as Andhra Pradesh, which have two or more education boards. The union territories of India do not have separate boards for education. Union territories, such as Daman and Diu, Lakshadweep, Chandigarh, Puducherry, and Dadra and Nagar Haveli, avail education board services from a larger state.
- **Central Board of Secondary Education (CBSE):** It is the one to conduct the certification examinations for class X and for class XII.
- **The Council of Indian School Certificate Examination (CISCE):** CISCE conducts three examinations, namely the Indian Certificate of Secondary Education (ICSE - Class/Grade 10); the Indian School Certificate (ISC - Class/Grade 12) and the Certificate in Vocational Education (CVE - Class/Grade 12).
- **The National Institute of Open Schooling (NIOS):** It has the responsibility of conducting two examinations—Secondary Examination and Senior Secondary Examination (All India). It also conducts examination for some specific Vocational Education courses.
- **International schools:** A category of schools that have affiliation with the International Baccalaureate Programme and/or the Cambridge International Examinations.
- **Islamic Madrasa schools**: Boards of these schools are controlled by local state governments, or are autonomous, or are affiliated with Darul Uloom Deoband.
- **Autonomous schools:** Some examples are Woodstock School, The Sri Aurobindo International Centre of Education Puducherry, Patha Bhavan and Ananda Marga Gurukula.
- **International schools:** These schools provide examinations for the Xth and XIIth classes for International Baccalaureate, or Cambridge Senior Secondary Examination.

Both National Council for Teacher Education (NCTE) and National University of Educational Planning and Administration (NUEPA) hold the responsibility for the management of the education system and teacher accreditation across India.

Let us look at, in a little more detail, the types of schools that are present in India.

- **Public/government schools**: Majority of the schools in India are run and funded by the government. Nevertheless, there are serious challenges being faced by the public education system in India, which includes scarce facilities, staff shortage (administrative and educational), low funding and inadequacy of infrastructure.
- **Private schools**: As has been pointed out above, several of the government schools are incapable of providing the students with adequate education. So, private schools have sprung up which provide a good environment for learning and are the choice of most parents.
- **International schools**: All major cities of India have international schools where international curriculum is taught.
- **National open schools**: This category of schools cater to education right till the higher secondary level. It is meant for such persons whose schooling was interrupted and they were not able to finish their education through the formal education system.
- **Special-needs schools**: Such schools focus on children with disabilities and making available non-formal education as well as vocational training for them.



EVOLUTION OF EDUCATIONAL STRUCTUREIN INDIA

Although the number of secondary schools and its enrollment began to significantly increase even before India's Independence, the quality of education imparted was not able to meet the changing socio-economic needs of the country. Thus, the need for reform was strongly felt. The University Education Commission also mentioned that

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Check Your Progress

1. What are the different levels of Indian education system?
2. What are the different types of schools present in India?

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India's secondary education remained the weakest link in its educational machinery and needed urgent reform. The Central Advisory Board of Education recommended the appointment of a Commission to examine the prevailing system of secondary education in the country and to suggest measures for its reorganization and improvement.

Secondary Education Commission

Government of India set up Secondary Education Commission via a Resolution dated 23 September 1952, under the Chairmanship of A. Lakshmanaswami Mudaliar, the Vice-Chancellor of the Madras University. Thus, this Commission is also referred to as 'Mudaliar Commission'. The Commission was inaugurated on 6 October 1952. It submitted its Report in June 1953.

The terms of reference of this Commission were as follows:

(i) To communicate, in detail, the position of Secondary Education in India

(ii) To recommend ways to reorganize and improve this position, with special reference to:

(a) Aims, organization and content of secondary education

(b) Relationship to primary, basic and higher education

(c) Interrelation of secondary schools of different types

(d) Other allied problems

The Report was presented on 29 August 1953 by the Commission. The Report was lengthy with 311 pages and discussed the defects of the then existing system:

- The education given in Indian schools was isolated from real life.
- It failed to train the whole personality of the student.
- Too much importance was given to English.
- The method of teaching generally practised failed to develop in the students their independence of thought and initiative in action.
- Increase in size of the classes considerably reduced the personal contact between the teachers and the students.
- Dead weight of the examination had reduced the teacher's initiative taking ability, and made the curriculum extremely boring and dull, stressing on all the wrong or unimportant aspects of education.

Objectives of Secondary Education Commission

The Commission had the following expectations from Secondary Education:

(i) Development of democratic citizenship

To achieve the aim of secondary education, i.e., to develop ideal democratic citizens in the country, the citizens of India need to be trained to uphold and practice the values of the democratic social order. This can be achieved only by imbibing the qualities of discipline, tolerance, patriotism, cooperation, and through equal opportunities for thought, speech and writing. The essence of the world citizenship should be developed in the students. Thus, all these qualities should be developed in the students to make them good citizens of a democratic India.

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(ii) Improvement of vocational efficiency

To increase the productive efficiency of its people and its national income, India needs to develop its vocational efficiency. For this, the Secondary Education Commission recommended fostering the dignity of manual labour and the promotion of technical skills for the advancement of industry and technology through secondary education. Thus, emphasis was placed on agricultural, technical, commercial and other practical courses.

(iii) Education for leadership

Secondary education is a terminal point for the majority of the students. Therefore, at the end of the school education, each student must be able to enter into various professions independently. A special function of the secondary school is to train persons who will be able to assume the responsibility of leadership—in social, political, industrial or cultural fields—in their own small groups of community or locality.

(iv) Development of personality

Secondary education trains the pupils to appreciate their cultural heritage and acquire constructive and valuable interest. They should also be trained to preserve and their cultural heritage. An all-round development of the personality of the student is an essential aim of secondary education.

(v) Reorganization of secondary education

Regarding the organizational pattern of secondary education, Secondary Education Commission recommended that secondary education should be a complete stage by itself. This stage of education is the most important for students in their preparation for life. To raise the standard of school education, the Commission proposed the following organizational pattern:

- The duration of secondary education should be 7 years. It should cover the age group from 11–17.
- Under the new organizational structure, secondary education should commence after 4 or 5 years of primary or junior basic education.
- The middle or senior basic or lower secondary stage should cover a period of 3 years.
- The higher secondary stage should cover 3 years.
- The Commission suggested the abolition of the present intermediate classes. The 12th class should be attached to the university and the 11th class should be added to the high school. Thus, it pleaded for 1-year pre-university and 3-year degree courses.
- The Commission recommended that technical schools should be started in large number and central technical institutes should also be established in the large cities.
- Multi-purpose schools should be established, which would provide terminal courses in technology, commerce, agriculture, fine arts and home sciences. The object of these institutions was to direct students into different walks of life at the end of the secondary course to reduce the pressure on university entrance.

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Curriculum in schools

The Secondary Education Commission pointed out the defects of the existing curriculum and also discussed the principle of curriculum construction in detail.

Defects of the curriculum

The Commission observed the following defects in the existing curriculum:

(i) The curriculum was narrow.

(ii) It was overcrowded and did not provide rich and significant contents.

(iii) There was no adequate provision for practicals and activities that should be in any curriculum at the secondary stage of education.

(iv) It was bookish and theoretical.

(v) Curriculum was too dominated by the examination.

(vi) It did not cater to the various needs and capacities of adolescents.

(vii) The curriculum did not find room for technical and vocational subjects which are necessary for an all-round education.

The Secondary Education Commission stated the functions of the middle school curriculum. It is the stage for general introduction to the fields of knowledge that can be pursued. The Commission laid down the following different curriculae for these two stages in secondary education.

Curriculum for middle schools

The Commission recommended the inclusion of the following subjects:

- English
- Social Studies
- General Science
- Mathematics
- Art and Music
- Craft
- Physical Education

Curriculum for higher secondary schools

For this stage of education, the Commission suggested that there should be a diversified course.

(a) Compulsory subjects or main subjects

(b) Optional subjects

The compulsory subjects shall include:

- Mother tongue or regional language or a combined course of the mother tongue and a classical language.

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- One other language to be chosen from among the following:
  - o Hindi for those whose mother tongue is not Hindi.
  - o Elementary English (for those who have not studied English in the middle stage).
  - o Advanced English (for those who have studied English at an earlier stage).
  - o A modern Indian language (other than Hindi).
  - o A modern foreign language (other than English).
  - o A classical language.
- Social studies: General course (for the first two years only).
- General science including Mathematics: General course (for the first two years only).
- One Craft to be chosen out of the list below:
  - o Spinning and weaving
  - o Wood work
  - o Metal work
  - o Gardening
  - o Tailoring
  - o Typography
  - o Workshop practice
  - o Sewing, needle work and embroidery
  - o Modelling

For optional subjects, three subjects from one of the following groups:

Group - 1 (Humanities):

(a) A classical language or a third language not already taken; (b) History; (c) Geography; (d) Elements of Economics and Civics; (e) Elements of Psychology and Logic; (f) Mathematics; (g) Music; (h) Domestic Science.

Group - 2 (Science):

(a) Physics; (b) Chemistry; (c) Biology; (d) Geography; (e) Mathematics; (f) Elements of Physiology and Hygiene; (not to be taken with Biology).

Group - 3 (Technical):

(a) Applied Mathematics and Geometrical Engineering; (b) Applied Science; (c) Elements of Mechanical Engineering; (d) Elements of Electrical Engineering.

Group - 4 (Commercial):

(a) Commercial Practice; (b) Book-keeping; (c) Commercial Geography or Elements of Economics and Civics; (d) Shorthand and Typewriting.

Group - 5 (Agriculture):

(a) General Agriculture; (b) Animal Husbandry; (c) Horticulture and Gardening; (d) Agricultural Chemistry and Botany.

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Group - 6 (Fine Arts):

(a) History of Art; (b) Drawing and Designing; (c) Painting; (d) Modelling; (e) Music; (f) Dancing.

Group - 7 (Home Science):

(a) Home Economics; (b) Nutrition and Cookery; (c) Mother Craft and Child Care; (d) Household Management and Home Nursing.

Major Recommendations of Secondary Education Commission

It was a matter of priority to introduce a variety of courses in the existing and new High Schools. All states, should provide different vocations in schools in all regions according to the needs and the aptitude of students, and should ensure that rural areas include the subject of agricultural education in their curriculum. Such courses should include horticulture, animal husbandry and cottage industries (State Governments). The Commission recommended that within the next two years, all Government Secondary Schools should be converted into multi-purpose High Schools which would provide courses in some of the practical groups. The Semi-Government or Private, which should be at least 5 per cent of the schools, should facilitate the teaching of at least one practical group of subjects (in addition to the existing subjects). During the period of the Second Five-Year Plan, 10 per cent more of the remaining High Schools should be able to teach diversified practical courses. Since the High Schools numbered nearly 10,000 at the time, the proposal meant the introduction of diversified courses in about 500 schools in the first two years and in 1,000 schools in the subsequent five years. The State and Central Governments were to provide financial assistance to High Schools to support the introduction of these courses. The following alternative types of financial assistance by the Government of India were suggested by the Committee:

- Depending on the amount of funds available, the Government of India was responsible for non-recurring expenditure and the State Government was responsible for the recurring expenditure.
- The 50 per cent of the total non-recurring expenditure and 50 per cent of the expenditure on teachers' salaries in practical subjects was to be assumed by the Government of India and the rest by the State Governments. Thus, the Government of India would only contribute on improvements which were made as per the guidelines formulated by it. Let us discuss the recommendations in detail:
  (i) **Need, Aim and Objectives of Secondary Education:** According to the Commission, the main objectives of education should be the development of democratic citizenship, improvement of vocational efficiency, development of personality and development of qualities for leadership.
  (ii) **Duration of Secondary Education:** According to the Commission, the education should commence after four or five years of junior Basic or Primary Education and should include: (a) Middle or Senior Basic or Junior Secondary Stage of three years, and (b) Higher Secondary stage of four years.
  (iii) **Multipurpose Schools:** Multipurpose schools should be opened with varied courses of interests and with diverse aims, aptitude and abilities. These schools aim to remove all distinctions between students preparing for different

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courses of studies, breaking the sense of inferiority associated with vocational subjects and, thus, leading to a democratic basis of education. This also facilitates the transfer of students within the same school. After completing such courses, successfully the students should be given the opportunities for higher specialized courses in polytechnics.

(iv) **Diversified Curriculum:** The pattern was suggested as already discussed.

(v) **Guidance and Counselling:** A comprehensive programme was suggested for guidance and counselling.

(vi) **Agriculture Schools:** Due attention should be given to subject of Agriculture in schools.

(vii) **Technical Schools:** A large number of technical schools should be started in order to come up with a workforce for the nation. Specialists in technical subjects may be recruited as teachers after they receive an intensive three months training in teaching methods. As incentive for them to join as teachers, they should be paid their full salary during their training period. The syllabus should be drawn up by a group of experts.

(viii) **Other Types of Schools:** Public schools, residential schools, co-educational schools, separate schools for girls and schools suitable for the handicapped should be established.

(ix) **Textbooks and Libraries:** A Committee should be formed to look after the quality of books. A single book should not be prescribed as the textbook. Well-stocked school libraries are an essential tool for proper education and for the successful implementation of the new curricula, and progressive teaching methods recommended by the Commission. Thus, all schools should have a good library which is looked after by a well-trained librarian. The Government of India and State Governments should encourage well-equipped libraries by giving an initial grant of ` 50,000 as a starting fund to all schools for this purpose. This expenditure would be shared in the ratio of 1 : 2 and may be spread over five years. The total amount for this proposal amounted to `5crore.

(x) **Methods of Teaching:** Desirable attitudes and values should be inculcated with the use of appropriate methods of teaching. Purposeful, concrete and realistic situations should be incorporated in the Activity Method and the Project Method in school teaching. In order to popularize progressive teaching methods and facilitate their introduction, 'Experimental' and 'Demonstration' schools should be established and given special encouragement where they exist, so that they may try out new methods freely without being fettered by too many departmental restrictions.

(xi) **Discipline:** Personal contact between the teacher and the student should be developed in order to maintain discipline in the schools. Self-government in the form of house system and student councils should be introduced in all the schools.

(xii) **Religious and Moral Teachings:** Religious instructions may be given to the students in the schools on the voluntary basis with the consent of the parties and management.

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(xiii) **Health Education:** A School Medical Service should be built in schools to provide facilities for a thorough medical examination of all the pupils and follow-up treatments. The State should ensure that schools provide healthy meals and medical services for the well-being of the students. Students and teachers should be encouraged to grow their own food produce as much as possible.

(xiv) **Extra-curricular Activities:** These should form an integral part of education. The State should encourage the Scout Movement by providing financial aid and helping to secure suitable sites for scout camps. Schools should organize for the students to go to these camps for a few days every year. The Central Government should be made responsible for the NCC (National Cadet Corps) for its proper maintenance, improvement and expansion.

(xv) **Physical Education:** Records of physical activities need to be maintained for all students and teachers to be involved in it. Each school should be equipped with at least one physical education specialist and one or more teachers as assistants.

(xvi) **Examination and Evaluation:** The number of examinations should be reduced and should be made objective. The system should be symbolic rather than numeric. Public examinations should be there after the completion of the secondary school course. Remodelling of the examination system was to be carried out in every state. This entailed the abolishing of public examinations (if any) before the end of the High schools, instead also giving more importance to periodic tests rather than annual examination results. School leaving certificates and records will, thus, provide information of the students activities and details from the entire year instead of just the annual examination result.

(xvii) **Teachers:** The probation period for teachers should be of one year. The teachers should be provided with quarters to be able to stay near the schools. To combat the shortage of teachers for specialized courses like technical engineering, the teachers should be paid above market salaries. The State Government should revise the pay scales as per the different categories prescribed by the Central Government. Teachers' salaries should be at par with personnel from other walks of life with similar qualifications and responsibilities. The system of triple benefit schemes for teachers, namely pension-cum-provident fund-cum-insurance should be introduced in all states. The children of teachers should be provided free education throughout the schooling period. Teachers should be given travel concession and leave facilities when they wish to attend educational seminars or go on vacation.

(xviii) **Teacher's Training:** Two types of teachers' training institutes were recommended by the Commission. Those who have taken the School Leaving Certificate or Higher Secondary School Leaving Certificate should take two years of training, and for graduates, the training should be of one academic year. During the training, teachers should be given the stipend. Seminars and training camps should be organized for a select group of headmasters and teachers on a regional basis so that they can get trained by experts about new examination techniques. If necessary, foreign experts

who are specialists in their field could also be invited for this purpose. These teachers can be taught the introduction of objective tests, adoption of the system of symbolic marking, evaluation and grading of school records, and so on.

(xix) **Organization and Administration:** There should be a Board of Secondary Education and State Advisory Boards. The schools should be inspected for their problems.

(xx) **Management of Schools:** The Managing Boards should be registered and no board member should directly or indirectly interfere with the internal administration of the school. In each district, a Class I District Education Officer should be appointed who would be directly in charge of Secondary Education for the district. In addition, District Inspectors or District Superintendents who are usually in Class II of the Education Service should be appointed to assist the officer. The Education Officer should be in charge of coordinating all education related work within his district. A panel of experts, with the Inspector as Chairman, should inspect the schools every three or four years.

(xxi) **Schools Building and Equipment:** There should be playgrounds in all the schools. Care should be taken to have 10 square feet per student in the classroom. The optimum number of boys in a class should be 30 and should not exceed 40 in number. It was recommended that an initial grant of about `15,000 should be sanctioned for each school to purchase adequate equipment, such as a laboratory for General Science, material for crafts and charts, posters and audio-visual aids, and so on and aids for teaching social studies. Attempts to meet a part of the school's expenses from the sale of articles made by the students should be encouraged. The scheme, which would be spread over seven years, involves an expenditure of about `2 crore per annum for the whole country. This cost was to be shared by the Central and State Governments in the ratio 1 : 2, the balance being funded by the schools concerned from independent sources.

(xxii) **Hours of Working and Vacations:** The total number of working days in the school should not be less than 200, and the working hours should not be less than 35 periods per week with 45 minutes each. The schools should work regularly for six days. Summer vacations of two months and two breaks of 10–15 days at suitable periods should be there in a year.

(xxiii) **Finance:** Industrial Cess should be levied to be utilized for the education.

(xxiv) **Study of Languages:** During the middle school stage, every child should be taught at least two languages. English and Hindi should be introduced at the end of the Junior Basic stage. At the Higher Secondary stage, at least two languages should be studied. The mother tongue or the regional language should be the medium of instruction throughout the secondary stage.

(xxv) **Revision of Curriculum and Introduction of the New Curriculum in High Schools:** Every High school in the country should be able to, in the the next seven years, proficiently teach General Science, Social Studies and Crafts. Refresher courses, seminars and conferences should be organized for the school teaching staff on an All-India and State basis every year, so

that there can be a productive interchange of ideas and staff can be made aware of new and innovative methods of teaching.

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Merits of the Commission

- Suggestions regarding the levy of Industrial Educational Cess
- Emphasized the provision of Higher Secondary Education according to the 3 A's (Age, Ability and Aptitude)
- Developing democratic citizenship
- Improvement of vocational efficiency
- Development of personality
- Development of qualities of leadership
- Multipurpose schools—provide varied types of courses for students with diverse aims, interests and abilities
- Suggested for the improvement of the system of evaluation
- Raising the standards of teachers
- Tax exemption for the promotion of educational facilities
- Improvement in methods of teaching
- Recommendation for medical check-ups

Demerits of the Commission

- No programme of action
- No financial estimates were calculated
- Recommendations for the structure of secondary education were not clearly defined
- Non-availability of qualified teachers
- Unpopularity of multipurpose schools
- Expansion occurred without quality
- Education (vocational studies) did not facilitate the task of finding suitable manpower for industries
- Lack of coordination between growth of manpower needs, employment opportunities and output of secondary schools
- No definite guidelines for conversion of high schools into higher secondary schools

Kothari Commission and Evolution of 10+2+3 Education System

The report of Kothari Commission was divided into four sections:

Section I: deals with general problems.

Section II: deals with education at different stages and in different sectors.

Section III: deals with the implementation of the various recommendations and programmes suggested by the Commission.

Section IV: consists of supplementary papers.

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The programmes of educational reconstructions proposed in the Report fall into three broad categories:

(i) Internal transformation of the educational system so as to relate it to the needs and aspirations of the nation.

(ii) Qualitative improvement of education so that the standards achieved are adequate, keep rising continuously and at least in a few sectors become internationally comparable.

(iii) Expansion of educational facilities on the basis of manpower needs and with an accent on equalization of educational opportunities.

The following were the major recommendations of the Kothari Commission:

- Important role of education in national development
- Stress on science and mathematics
- Introduction of work experience as an integral part of the school curriculum
- Need for vocationalization of education
- Introduction of a common school system
- Educational structure—12 years of schooling and a 3-year degree course
- About 234 instructional days with at least 1,000 hours in the schools and 216 days in colleges
- Free textbooks at the primary stage
- Adequate number of scholarships
- Identification of gifted students and their nurture
- One residential school in each community development block
- Provision of mid-day meals
- Facilities for learning while earning
- Promotion of the education for the handicapped
- Special measures for the education of the backward students
- Development plan for each district
- Enrolment of between 300 to 450 in a secondary school
- Schools should have the freedom for experimentation in their curricula
- Moral and religious education
- Continuous and objective evaluation
- Establishment of school complexes
- Establishment of neighbourhood schools
- Organization of State Evaluation
- Make Correspondence courses available
- Better pay scales and service conditions for teachers
- Passing of Education Acts
- Three Language Formula
- Delinking degrees from jobs
- Six per cent of Gross National Product (GNP) to be spent on education

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An important contribution of the Commission is a detailed analysis of financing of education in India. The financial analysis attempted in this report was the first of its kind in India. In fact, there were very few studies on the economics and financing of education even in other countries at that time. The Commission made a detailed expenditure analysis—by levels and objects, a detailed source-wise analysis of funds, unit cost analysis, and a detailed estimate of resources required for education for the next 20 years in constant prices. The detailed framework provided insightful analysis and was of great significance for the researchers in economics and financing of education, and for educational planners as well. The Commission noted the absence of studies and the critical need for such studies, and recommended support to universities for research to:

- Look into a scheme for expansion and improvement
- Constitute the Indian education service

Internal transformation of the education system

For the internal transformation of the system of education, the following programmes were to be given highest priority:

(a) Work experience as an integral part of general education, vocationalization of education at the secondary level, improvement of professional education, and research and promoting national consciousness

(b) Introducing a common school system, making social and national service compulsory and developing all modern Indian languages

(c) Making science education an integral part of all school education and developing scientific research

(d) Inculcation of high values—social, moral and spiritual—at all stages of education

Qualitative and quantitative programmes

The Kothari Commission identified three important facets of education that would bring about the desired 'educational revolution':

(a) Internal transformation in order to relate education to the needs and aspirations of the nation

(b) Qualitative improvement to achieve the adequate standard, to keep it continually rising and to become internationally comparable in some of the sectors

(c) Expansion of education facilities on the basis of manpower needs and with the consideration of equalization of educational opportunities

Public school and the Education Commission: The Commission has spoken of these institutions in scathing terms. The system of schools was largely reserved for those who have the capacity to pay high fees, 'was transplanted in India by British administration and we have clung to it for so long because it happened to be in tune with the traditional hierarchal structure of our society'.

Wide gulf between the classes and masses: The Commission noted that 'what is worse, this segregation is increasing and tending to widen the gulf between the classes and the masses'.

Undemocratic nature of Indian school system: The undemocratic feature of the Indian school system has been described by the Commission as one of the major

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weaknesses of the present educational structure. The number of children who receive scholarships is not very large; sometimes even the most able among them are unable to find access to good schools, while the economically privileged parents are able to ' buy good education for their children'.

The Commission said that whatever the past history of the so-called public schools, they had no valid place in the new democratic society the Indians desired to create.

According to the Commission, education had a very extensive role to play in changing the members of society and the society itself. It had to be entirely reformed and relate to the needs and aspirations of the people so that it may serve as a powerful tool of social, economic and cultural transformation.

Programmes for improving the quality of education: For national development, the quality of education is crucial for the nation, and the nation must be prepared to provide this. According to the Commission's recommendations, the major programmes for qualitative improvement are as follows:

- Raising the economic, social and professional status of teachers
- Improving the quality and scope of teacher education and in-service programmes
- Radical reform, especially in Science and Mathematics
- Vigorous improvement in the method of teaching and evaluation
- Providing quality textbooks and other teaching material
- Introduction of a nation-wide programme for the improvement of schools and colleges where each institute finds congenial conditions to strive to achieve the best results of which it is capable
- Establishment of 'quality' schools to act as pace-setters in all districts
- Supervision and reorganizing of the State departments
- The reorganization of the education structure on the 10+2+3 pattern

Expansion Programmes

The Commission hoped that by 1986, 5 per cent of the 3–5 age groups and 50 per cent of the 5–6 age groups would find places in nursery schools or classes. As per the recommendations of the Commission, five years of education should be given to all. It gave highest priority to free and compulsory education up to the age of 14 years. The Commission realized that it would not be financially possible for several years to provide universal secondary education as the problems and policies of expansion at the secondary stage are different from those in primary education. Another problem faced would be to enlist half the enrolment at the higher secondary stage in vocational education. According to the recommendation, the expansion of higher secondary and collegiate education should be related to manpower needs and must be selective. The programme of equalization of educational opportunities, visualized by Kothari Commission, included the reduction of the regional imbalances to the minimum, increasing the provision of free education and scholarships, paying special attention to the education of girls, and placing adequate emphasis on the spread of education among backward classes including the Scheduled Castes and the Scheduled Tribes. A nationwide campaign was to be launched for the complete liquidation of illiteracy within 20 years.

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The Commission also recommended that 6 per cent of the GNP should be spent on education. The Commission made a detailed analysis of the past trends in financing education in the post-Independence period, estimated the financial requirements of the educational system in India up to 1985–86, and recommended that 'if education is to develop adequately, the proportion of GNP allocated to education should rise to 6 per cent in 1985–86'. Of the several recommendations made by the Commission, this 6 per cent of GNP is one that was accepted and resolved by the Government of India (1968). In the National Policy on Education (NPE) 1968, it was recommended 'to increase the investment in education so as to reach a level of expenditure of 6 per cent of the national income as early as possible'. Since the goal could not be reached, the Government of India reiterated in 1986 its commitment to reach the target and stated in the NPE 1968: 'it will be ensured that from the Eighth Five-Year Plan onwards it (the outlay on education) will uniformly exceed to 6 per cent of the national income.'

Given the inadequate performance, the goal was to be reiterated again in the NPE (revised) 1992. The review committee on National Policy on Education [also known as Acharya Ramamurti Committee, 1990] made it clear that 6 per cent of national income should be devoted to education.

Other Recommendations

In order to relate education, the Commission recommended the following objectives:

1. **Increase in productivity:** The Commission suggested that education must be related to productivity in order to increase national income. In order to link education and productivity, the Indian Education Commission made the following recommendations:
   - Science is the basic component of education and culture; so it should be made an integral part of school education.
   - To inculcate the value of manual work, the Commission recommended the introduction of work experience in school education.

   To meet the increasing needs of technical personnel in industry, agriculture and trade, the Education Commission recommended introducing vocational subjects in the school curriculum. It also opined that vocationalization will bring education into a closer relationship with productivity.
2. **Promoting social and national integration:** According to the Commission, social and national integration is an important objective of a national system of education. The Commission made the following recommendations for strengthening social and national integration through education:
   - To make education a powerful instrument of national development, the common school system of public education should be adopted.
   - Bridge the gulf between the educated and the uneducated, intellectuals and masses, social and national service should be made an integral part of school education.
   - As language is a firm adhesive for social and national integration, suitable provisions should be made for teaching the mother tongue, Hindi and other modern Indian languages in schools.
3. **Education and modernization:** The present society is a science-based society. The present century has made tremendous advancements in scientific and technical

knowledge as a result of an explosion of knowledge. In such a situation, one of the main functions of education is to keep pace with this advancement of knowledge. Another feature of modern society is the rapid social change. In this situation of change, the school must always be alert if it is to keep abreast of significant changes. An education system which does not renovate itself continuously becomes outdated and is a hindrance to progress. To keep pace with modernization, the Education Commission was of the opinion that 'greater emphasis must be placed on vocational subjects, science education and research'.

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4. **Developing social, moral and spiritual values:** The national system of education should emphasize on the cultivation of social, moral and spiritual values among students. For this purpose, the Commission made the following recommendations:
   - The Central and State Governments should ensure the inclusion of educating the students about moral, social and spiritual values at all levels. This has been recommended by University Education Commission under the section on religious and moral instruction.
   - In order to develop social, moral and religious values, some periods should be provided in the timetable for teaching of the same. Instruction of this type should be given by general teachers.
   - The university departments should be especially concerned with the ways in which these values can be taught wisely and effectively, and should undertake preparation of the special literature for use by students and teacher.
5. **A common school system:** In a situation of the type we have in India, it is the responsibility of the educational system to bring the different social classes and groups together, and thus promote the emergence of an egalitarian and integrated society.

   The Commission commented that if the education system was to be seen as a tool of national integration, with the aim of bringing the different sections of Indian society together, a common school system of public education was the best solution to this problem.

   Characteristics of the common school system

   According to the Commission, the characteristics of a common school system are as follows:
   - All children, irrespective of caste, creed, community, religion, economic sanctions or social status, will have access to education.
   - Getting access to good education will depend on not how much money one has or to which class in society the person belongs to, but on talent in this system.
   - Schools will maintain adequate standards, and there will be a fair number of good institutions.
   - Under this system, education will be free and the average parent will not feel the pressure to send his children to an expensive school which is outside the system.
6. **Recommendations which received little attention:** The following areas from among the recommendations are by and large still neglected. They have not received the due attention they deserved.

Check Your Progress

3. State one aim of Secondary Education Commission with regard to secondary education.
4. Name a defect in school curriculum as observed by Secondary Education Commission.
5. Cite a recommendation made by Secondary Education Commission.
6. Give two demerits of recommendations made by Secondary Education Commission.
7. Give one method recommended by Kothari Commission to improve the quality of education.

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- Creation of school complexes
- Development of 'neighbourhood' concept of educational institutions
- Establishment of suitable organizations for assessing manpower needs and of employment opportunities at the national and state levels
- Provision of part-time education on a large scale
- Evolving integrated plans of development
- Development of a large programme of scholarships in all states and sectors
- Creation of the Indian Education Service
- Creation of District School Boards
- Strengthening of the Offices of the District Educational Officers
- National Education Act
- Creation of a National Board of School Education
- Establishment of a Farm University in each State
- Recognition of autonomous educational institutions
- Freedom to Headmasters
- Making Institutional Plans as an integral part of District, State and National Plan of Education
- Developing partnership between educational authorities and industry
- Discouragement to public schools
- Spending 6 per cent of GNP on education

National Policy on Education (NPE 1986)

After the formulation of the Policy in 1968, it was stipulated that various educational programmes would be undertaken, and these programmes will be reviewed every five years. But no such review was done for the next 17 years.

Main Features of NPE

The main features of NPE are as follows:

Essence and Role of Education

This includes education for all, for cultural development, for the development of the mind and spirit and scientific temper, for the development of manpower for economy, and for developing the ideals of socialism and democracy as per the Constitution.

National System of Education

It was the most distinctive feature of NPE (1986). The following were the main features of the National System of Education:

- **Based on the Constitution of India:** The National System of Education was based on the Constitution as per its philosophical and sociological foundations. It derived its inspirations from the ideals and values of democracy, secularism and socialism.
- **Universal access to education:** The objective of the National System of Education was that all students irrespective of caste, creed, location or sex have the right to quality education till a given age. The government was responsible for the funding of this initiative. The 1968 Policy had recommended the establishment of a common school system to fulfil this goal of education for all.

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- **Common educational structure:** The National System of Education visualized a common educational structure. The 10+2+3 structure was established throughout the country. The first ten years were divided into five years of primary education, three years of upper primary, followed by two years of High School. The +2 stage was also encouraged to become a part of school education throughout the country.
- **National curriculum framework:** Flexible national curriculum was to be the backbone of the National System of Education, with fixed and flexible components. The fixed component would include the history of India's freedom movement, the Constitutional obligations and other material to encourage national integration. These cross-cutting parts would be designed to promote the value of India's heritage, love of equality, democracy and secularism, equality of the sexes, protection of the environment, removal of social barriers, observance of the small family norms, and encouragement of the scientific temperament. All educational programmes were to be implemented strictly on the basis of secular values. These were to be taught through subject areas.
- **Education for international understanding:** Education has to strengthen the world view of peace and understanding between nations, treating the whole world as one family and motivating the younger generations towards international cooperation and peaceful co-existence as India has always worked for peace and understanding between nations.
- **Equality of opportunity of education:** To provide for equal opportunity to all not only in access but also in the conditions for success, equality was emphasized. The basic purpose was to remove prejudices and complexes transmitted through the social environment and the accident of birth.
- **Determination of minimum levels of learning:** Each stage of education had to fulfil a basic minimum of learning. Students were encouraged to appreciate the diverse cultural and social systems of the people living in different parts of India.
- **Promotion of regional languages:** Translation of books into different languages was encouraged so that students from all over the country would learn to appreciate the literature from different parts of the country, and the young could rediscover India through their own image and perception.
- **Inter-mobility in higher education:** Inter-regional mobility was encouraged at the higher education and technical education levels so that equal access was available to every deserving Indian regardless of his origins.
- **Pooling of resources:** Different science and technological institutions were encouraged to pool their resources and research findings, especially for projects of national importance.
- **Facilities for open and distance learning:** Distance learning and correspondence courses provided opportunities to the youth, housewives, agricultural, and industrial workers and professionals to continue the education of their choice, at the pace suited to them, while still being able to carry on with their daily lives.
- **National institutions:** There was a proposal to strengthen the national institutions, including University Grant Commission, National Council of Educational Research and Training, National Institute of Educational Planning and Administration, All India Council for Technical Education, Indian Medical Council, National Council of Teacher Education and National Institute of Adult Education, and so on.

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- **Partnership between State and Centre:** The Centre and States were to make their partnership meaningful in the field of education. The States' role and responsibilities were essentially unchanged, while the Union Government was to bear a greater responsibility in the reinforcement of national integration as a part of education.
- **Education for all:** Attempts were to be made to provide elementary and adult education to all, and NPE emphasized the removal of disparities to equalize educational opportunities for all, irrespective of their caste, creed or economic background.

  'Education for all' meant the provision of education for the following sections of society which were normally neglected:

  - *Education for women's equality*: The National Education System was to initiate a positive, interventionist role in the empowerment of women and to foster the development of new values through redesigned curricula (vocational, technical and professional education at different levels), textbooks, the training and orientation of teachers, decision-makers and administrators, and the active involvement of educational institutions. Women's studies were to be promoted as a part of various courses, and educational institutions were to be encouraged to take up active programmes to further women's development.
  - *Education of scheduled castes:* The equalization of the non-SC population at all stages and levels of education, in all areas and in all the four dimensions —rural male, rural female, urban male and urban female was emphasized.
  - *Education of scheduled tribes:* School buildings were to be constructed in the tribal areas on a priority basis with funds allocated for education and for different schemes, such as the Jawahar Rozgar Yojana, Tribal Welfare schemes, and so on. The curriculum and instructional materials needed to be in the regional languages. Incentive schemes were to be offered to the Scheduled Tribes, keeping in mind their special needs and lifestyles. Anganwadis, Non-formal and Adult Education Centres were also to be set up in areas which were predominantly inhabited by the Scheduled Tribes.
  - *Other educationally backwards sections and areas*: Appropriate incentives and infrastructure were to be provided to the educationally backward sections of society, particularly in the remote rural areas.
  - *Minorities*: Education of minority groups which are educationally deprived or backward were to be given greater attention. Constitutional guarantees were given, so that they could fund their own educational institutions which would be in the best interest to preserve their language and culture. Textbooks and curricula would also be customized.
  - *Handicapped*: Steps to include the physically and mentally handicapped into the mainstream as equal partners and to prepare them for normal life were encouraged. Teachers received special training to deal with the special needs of handicapped children.
  - *Adult education*: Adult education emphasized the ability to read and write.
- **National Literacy Mission:** It was aligned to the national goals, such as alleviation of poverty, national integration, environmental conservation, observance of the small family norm, promotion of women's equality, universalization of primary education, basic health care, and so on.

- **Expenditure on education:** Efforts were to be made to spend 6 per cent of GNP on education.

NPE and Early Childhood Education and Care

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National Policy on Education (NPE) emphasized the investment in the development of young children, particularly from sections of the population in which first generation learners predominate.

Important Features and Programmes

(a) NPE has used the term Early Childhood Education and Care (ECCE) in place of pre-primary or nursery education. It lays stress on the holistic nature of child development, viz., nutrition, health, social, mental, physical, moral and emotional development, and recommends that ECCE should be suitably combined with Integrated with Child Development Services (ICDS) Programme, wherever possible.

(b) The span under consideration in ECCE is from conception to about six years.

(c) ICDS includes six services: (i) supplementary nutrition, (ii) immunization, (iii) health check-up (iv) referral services, (v) health education, and (vi) non-formal pre-school education.

(d) Day care centres should be provided as a support service for universalization of primary education to enable girls, engaged in taking care of siblings, to attend school and as a support service for working women belonging to poorer sections.

(e) Programmes of ECCE should be child oriented.

(f) Programmes of ECCE should focus around play and the individuality of the child.

(g) Formal methods and introduction of the `3 should be discouraged at this stage.

(h) The local community should be fully involved in ECCE programmes.

(i) A full integration of child care and pre-primary education should be brought about as a feeder and to strengthen primary education and human resource development.

Elementary Education

The three areas in elementary education which were focused on are as follows: (i) Availability and access to education for all; (ii) Compulsory education for children up to 14 years of age; and (iii) Standardization in the quality of education to ensure that all children receive the same essential levels of learning.

- **Child-centred approach:** Education at the primary stage should focus around play so that children start to enjoy learning. First generation learners were to be allowed to set their own pace and to be given additional assistance when required so that they may improve their learning through repetition and practice. There was to be no detention at the primary stage and the practice of corporal punishment was banned from the entire education system. Vacations and school timings were to be fixed as per the convenience of the children.
- **School facilities:** All primary schools were to be provided with the essential facilities. The objective of Operation Blackboard was to provide three large rooms which could be used in all weather, and blackboards, maps, charts, toys, other necessary learning aids and a school library. There were to be at least three

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teachers in every school, with the ultimate aim being to have one teacher per class. At least 50 per cent of the teachers were to be women. Operation Blackboard was to be extended till the upper primary stage.

- **Non-formal education:** Non-Formal Education (NFE) Programme was started keeping in mind school dropouts, children from habitations without schools, working children and girls who cannot attend whole-day schools. The curriculum was framed on the lines of the national core curriculum, but took into account the needs of the learners and the environment they stayed in. The instructional material was to be of good quality and to be provided free of cost to all students. The government was in over-all charge of NFE. Voluntary agencies and Panchayati Raj Institutions were to assist in the implementation of the NFE programmes.

Secondary Education

Access to secondary education was to be widened with emphasis on enrolment of girls, SCs (Scheduled Castes) and STs (Scheduled Tribes), particularly in science, commerce and vocational streams. This stage of education includes the different streams of science, the humanities and social sciences. In addition to this education, information regarding the history and culture of India was to be imparted to the students so as to instil a feeling of national pride and duty in them.

Boards of Secondary Education were to be reorganized and given the authority and responsibility to improve the quality of secondary education. The introduction of computer skills was to be encouraged so that children could face the challenges of the emerging technological world. The curriculum was to include a proper understanding of the work culture and a caring work environment was to be encouraged.

Manpower for the industries was to be provided by vocationalization through specialized institutions.

Navodaya Vidyalayas (Pace-setting Schools): Good quality education was to be made available to children with special talent or aptitude, to proceed at a faster pace whether they could afford to pay for it or not. Special residential schools, were set up for this purpose. The objective was to encourage the raising of levels of excellence on an equality basis (with reservation for the rural areas, SCs and STs). These schools would also promote national integration by the provision of opportunities to talented children from all over the country, when they came together to live and learn, and be part of a nationwide effort to improve the standard of learning in schools.

Health planning and health service management

Health education at the primary and middle levels will win over the family and community, and also familiarize the higher secondary students with the advantages of health-related vocational courses. Similar vocational courses should be designed for Agriculture, Marketing, Social Services, and so on. Vocational education courses encourage the growth in attitudes, knowledge, and skills for self-reliance and self-employment.

Higher Education

Higher education is a major contributor to national development as it empowers people with information and skills which are necessary to combat the critical social, economic, cultural, moral and spiritual issues facing humanity.

- Expansion of facilities in the existing institutions was proposed. Courses and programmes were to be redesigned to meet the demands of specialization better.

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- State level planning and coordination of higher education was to be done through Councils of Higher Education. UGC and other to-be-Councils were to maintain the standards.
- Audio-visual aids and electronic equipment was to be introduced; development of science and technology curricula, and material, research and teacher orientation was given emphasis.
- Training of teachers on a continuous basis was recommended. Teachers' performances needed to be constantly assessed as posts needed to be filled only on merit.
- High quality research was to be encouraged in universities.
- A national organization to encourage higher study in the fields of agriculture, medicine, law, and so on, was set up.

Open university and distance learning

To increase the opportunities for higher education as an instrument of democratizing education and to make it a lifelong process, the open learning system was initiated. Indira Gandhi National Open University (IGNOU) was established in 1985 to fulfil these objectives. National Open School was also established and open learning facilities were extended at the secondary level in all parts of the country.

Delinking degrees from jobs

A beginning was made to de-link degrees from jobs in selected areas like in services, for which a university degree need not be a necessary qualification. An appropriate body such as National Evaluation Organization was to be established to conduct tests to determine the suitability of candidates for specific jobs and to bring about an over-all improvement in testing and measurement.

Technical and management education

The two streams of technical and management education were to function separately. Programmes of computer literacy were to be organized from the school stage. Technical and management education programmes, (education in polytechnics) were also to be on a flexible modular pattern based on credits, with provision for multi-point entry. A strong guidance and counselling service would be provided.

For women, economically and socially weaker sections, and the physically handicapped suitable curricula were to be designed. This specialized teaching would mean the need for more teachers who could handle teaching these vocational courses. Thus, there was a demand for training courses to meet these demands.

Self-employment as a career option was to be encouraged among students. This training in entrepreneurship was to be provided through modular or optional courses in degree or diploma programmes.

Innovation, research and development

All higher technical institutions were to explore new methods of ensuring the availability of qualified teachers and staff who were capable of carrying out research to improve the present technology and develop new ones. The scope for cooperation, collaboration and networking relationships between institutions at various levels was to be utilized. Proper maintenance and an attitude of innovation and improvement was to be promoted

systematically. Major steps were to be taken up for cost-effectiveness and to promote excellence.

Main Features and Recommendations of NPE

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The main features recommended by NPE are as follows:

1. Making the system work

Education should be nurtured in an atmosphere of intellectual creativity and freedom to innovate. Along with this state of inventiveness, discipline was also important as a state of disorder was not conducive to the thriving of new methods for education.

2. Reorienting the content and process of education

The gap between education and India's rich culture needed to be bridged as India's history and culture cannot be rooted out by modern technologies. Education aimed at blending modern-day technology and ancient traditions.

The curricula and processes of education were to enrich Indian culture. Children were to be taught to appreciate beauty, harmony and refinement. Respected people in the community, whether they were formally educated or not, were to assist in handing down the wealth of Indian culture to future generations.

Linkages were to be established between the university system and institutions of higher learning in Art, Archaeology, Oriental Studies, and so on. Specialized disciplines of Fine Arts, Musicology, Folklore, and so on, were also to be paid attention to. Teaching, training and research in the following disciplines were to be strengthened:

- **Value education:** Rearranging the curriculum to enable education to instil in future generations social and moral values was very important. Due to the erosion of values in modern life, such value education was aimed to help eliminate obscurantism, religious fanaticism, violence, superstition and fatalism.
- **Books and libraries:** Books should be made available at low prices to ensure that education can benefit everyone whether they can afford it or not. Research should be undertaken into improving the quality of books, promoting the reading habit and encouraging creative writing. Translation of foreign books into Indian languages was to be supported. Special attention was to be paid to the production of quality of books for children, including textbooks and work-books. A nationwide movement for the improvement of existing libraries and the establishment of new ones was to be taken up.
- **Media and educational technology:** Educational technology was to be employed in the spread of useful information, the training and re-training of teachers, to improve quality, sharpen awareness of art and culture, inculcate abiding values, and so on, both in the formal and non-formal sectors. The media has a profound influence on the minds of children as well as adults. Inappropriate radio and TV programmes which conveyed the wrong message regarding moral and social values should not be aired. The media should accept responsibility to transmit the correct message. The production of children's films of high quality and usefulness was to be encouraged.
- **Work experience:** Purposive and meaningful manual work, i.e., **work experience** was to be organized as an integral part of the learning process resulting in either goods or services useful to the community. This was to be considered as

an essential component at all stages of education. The student would gain training in skills according to his interest and abilities, which would help in his future entry into the workforce.

- **Education and environment:** Consciousness of the environment is to be created among all. Beginning with the child, it must permeate to all ages and all sections of society. This aspect will be integrated in the entire educational process.
- **Population education:** To contain the growth of population, population education must be given due importance. Starting at the primary and secondary levels, students should be made aware of the dangers of an exploding population and should be informed about family planning and responsible parenthood.
- **Mathematics teaching:** Mathematics should be considered as the vehicle to train a child to think, reason, analyse and to articulate logically. It should be treated as any subject involving analysis and reasoning.
- **Science education:** To develop well-defined abilities and values, such as the spirit of inquiry, creativity, objectivity, the courage to question and an aesthetic sensibility in children, science education needs to be given to all. The learner can acquire problem-solving and decision-making skills and can discover the relationship of science with health, agriculture, industry and other aspects of daily life.
- **Sports and physical education:** Sports and physical education are an integral part of the learning process, and have to be included in the evaluation of a performance. A nationwide infrastructure consisting of play fields, equipment, coaches and teachers of physical education was to be built as a part of the School Improvement Programme. Open spaces available in urban areas were to be reserved for playgrounds. Efforts were to be made to establish sports institutions and hostels where specialized attention was to be given to sports activities and sports-related studies, along with normal education. Due stress was to be laid on indigenous traditional games.
- **Yoga:** Yoga was to receive special attention as a system which promotes an integrated development of body and mind. Efforts were to be made to introduce Yoga in all schools.
- **Role of youth:** Through educational institutions, opportunities were to be provided for the youth to involve themselves in national and social development. Students were encouraged to participate in schemes like National Service Scheme (NSS), National Cadet Corps (NCC), and so on. Youth should also be encouraged to participate in voluntary programmes like the National Service Volunteer Scheme.

Evaluation Process and Examination Reform

Appraisal of performance is an important part of any process of learning and teaching. Examinations are the tools used to assess the students' learning and to bring about improvements where required. So the main objective of the examination system is to give an accurate report of the students' retention. Continuous and comprehensive evaluation includes the testing of both bookish and practical knowledge. Effective use of this type of appraisal by teachers, students and parents ensures an all-round development of the child.

Examinations at the external level should not get undue importance; instead, institutions should be able to carry out their own evaluations. A National Examination

Reform Framework is a guideline which can be adjusted according to the specifications of the examining authority.

1. The teacher

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The socio-cultural ethos of a society is reflected in the status of its teachers. So teachers should have the freedom for innovation. The recruitment of the teachers should be devised in order to ensure merit, objectivity and conformity with spatial and functional needs. The pay and service conditions should be as per their social and professional responsibilities. A code of professional ethics for teachers should be prepared. Teacher preparation is to be given due importance with pre-service and in-service components. District Institutes of Education and Training (DIET) should be established for elementary school teachers. National Council for Teacher Education (NCTE) needs to be supported with necessary resources.

2. Management of education

High priority should be given to the planning and management of education. This can be achieved by decentralization, people's involvement including association of non-governmental agencies and voluntary efforts. Involvement of women should be sought and they should be inducted in the planning and management of education.

At the national level, Central Advisory Board of Education (CABE) will play a pivotal role in reviewing educational development and bring changes to improve the education system. Indian Education Service will be established as a national service.

At the State level, State Advisory Boards of Education on the lines of CABE will be set up. Educational planners, administrators and heads of the institutions are to be given special training.

District Boards of Education should be created to manage the education up to the higher secondary level.

3. Voluntary agencies and aided institutions

Non-governmental Organizations (NGOs) including social activists groups should be encouraged to establish institutions.

4. Resources and review

Making investment in education is the only way to achieve the egalitarian goals and the development oriented objectives of Indian society. This was realized by Education Commission of 1964–66 and National Policy on Education of 1968.

For resources, donations were to be mobilized through communities to maintain school buildings. Raising the fee was also thought of. Levying Education Cess was also another way to improve the resources in a big way. Education was to be treated as an important area of investment for national development. National Policy on Education (1968) had recommended that the government should gradually keep increasing its investment in education till the amount reached the prescribed 6 per cent of the GNP as early as possible. As the target was not achieved, it was important to raise it now, though the actual requirements would be calculated from time to time.

The implementation of the various programmes of the New Policy on Education was to be reviewed every five years.

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Advantages of NPE

The advantages of NPE 1986 are as follows:

(i) **National system of education:** NPE proposed a national system of education to provide access to education of a comparable quality to all students, to have a common educational structure with national curricular framework containing a common core.

(ii) **Improvement in primary education:** NPE very rightly laid stress on the qualitative improvement of elementary education.

(iii) **Pace-setting schools:** Setting up of *Navodaya Vidyalayas* is a great landmark in the history of education in India.

(iv) **Vocational targets:** The policy fixed somewhat realistic targets of covering 10 per cent of higher secondary students by 1990 and 25 per cent by 1995 in vocational courses.

(v) **Delinking degrees from jobs:** Delinking degrees from jobs in selected areas was started.

(vi) **Performance and accountability:** Stress was laid on performance and accountability at all levels.

(vii) **Decentralization of management of education:** The policy very aptly called for evolving a strategy of decentralization and the creation of a spirit of autonomy for educational institutions.

(viii) **Indian Education Service:** It envisaged that the constitution of Indian Education Service would bring about a national perspective in education.

(ix) **National Testing Service:** This was helpful in determining the suitability of candidates for specified jobs and pave the way for the emergence of norms of comparable competence across the nation.

(x) **Raising resources:** The policy suggested appropriate methods of financing education: (a) beneficiary communities to maintain the school building and supplies of some consumables; (b) raising fees at the higher levels of education; (c) levying a cess or charge on user of research and development agencies; and (d) affecting saving by the efficient use of facilities.

Disadvantages of NPE

The disadvantages of NPE 1996 are as follows:

(i) **Financial aspects not worked out:** Workable document backing the financial resources was missing and the financial implications were not worked out.

(ii) **Too much of community help:** The community was more into contributing to political parties rather than educational purposes.

(iii) **Ignorance of basic system:** There was no reference to basic education at the school level.

(iv) **Neighbourhood school concept ignored:** The Neighbourhood School Concept, as recommended by Kothari Commission for eliminating segregation based on economical status, was ignored.

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(v) **Working hours in schools:** Increased working hours in educational institutions should have been recommended for the optimum use of human resources.

(vi) **Ignorant to the existing public schools:** NPE evaded the commercialization of education by most of the public schools.

(vii) **Multiplication of institutions:** There was no use of setting up of State Advisory Boards of Education, District Institutes of Education and Training, and District Boards of Education.

(viii) **No check on working of minority schools:** There was no provision for checking the exploitation of staff working in public schools.

Implementation of Policy Programme of Action

A Programme of Action (POA) was announced by Ministry of Education, after the declaration of National Policy on Education. This was the first time that such a programme was developed. A 23-member task force with eminent educationists, experts, senior bureaucrats, and representatives of Central and State Governments were formed to examine the situation. The reports were discussed at meeting of the Central Advisory Board of Education in August 1986, and were approved as Programme of Action. POA includes the vast educational parameters and suggests strategies of implementation.

NPE 1986 and its POA gave priority to UEE and introduced many innovative programmes.

Firstly, the emphasis was shifted to enrollment as well as retention.

Secondly, NPE 1986 sought to adopt meticulously formulated strategies at the grass-roots level all over the country, to ensure children's retention at school. POA 1986 sought to replace enrolment drives by participative planning in which the teachers and the villagers would formulate family-wise and child-wise, and design of action to ensure that every child regularly attended school or a non-formal education centre and completed at least five years of schooling or its non-formal equivalent.

Thirdly, NPE 1986 recognized that unattractive school environment, unsatisfactory condition of buildings and insufficiency of instructional material function were the demotivating factors for children and their parents. Therefore, a drive for a substantial improvement of primary schools and provision of support services was called for. Thus, the scheme of Operation Blackboard was launched.

Fourthly, NPE 1986 recommended the adoption at the primary stage of a child-centred and activity-based process of learning.

Fifthly, NPE 1986 and its POA advocated reconstruction of teacher education, pre-service as well as in-service.

Lastly, NPE 1986 sought to address the aspects of access, viz., access to education of millions of girls and working children who were not able to participate in school system, because of socio-economic compulsions via Non-Formal Education (NFE).

Main Schemes Launched as a Result of POA 1986

1. National system of education

The formulation of a National System of Education was the most distinctive feature of NPE (1986).

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2. Reconstruction of curriculum

The curriculum is the one of the most important elements of education through which it can bring about the 'fine synthesis between change-oriented technologies and the country's continuity of cultural traditions as observed by NPE. The curriculum contains subject matter of various disciplines and activities. It fulfils the set tasks. NPE provided the direction and the POA formulated for their implementation worked out the details of the curriculum.

The National Council of Educational Research and Training (NCERT), New Delhi, prepared a National Curriculum for elementary and secondary education. Emerging curricular concerns and imperatives based on socio- cultural, political and economic considerations were included in the curriculum. NCERT revised the curriculum in 2000 and later in 2005.

3. Operation Blackboard

The objective of Operation Blackboard was to provide three large rooms which could be used in all weather, and blackboards, maps, charts, toys, other necessary learning aids and a school library. There were to be at least three teachers in every school, with the ultimate aim being to have one teacher per class. At least 50 per cent of the teachers were to be women. Operation Blackboard was to be extended till the upper primary stage.

4. Navodaya/Jawahar Vidyalayas (Pace-setting Schools)

NPE 1986 envisaged the setting up of model schools, one in each district. Accordingly, a scheme was formulated under which it was decided to set-up co-educational residential schools (*Jawahar Navodaya Vidyalayas*).

Navodaya Vidyalayas are fully residential co-educational institutions providing education up to senior secondary stage. The scheme was started with only two schools on experimental basis in 1985–86. It has covered as many districts in 34 States/Union Territories. The *Vidyalayas* envisaged a new style of growth with identification and development of talented, bright and gifted children predominantly from rural areas. Efforts are made to ensure that at least 33 per cent of the students enrolled are girls.

Migration is a unique feature of *Navodaya Vidyalayas* scheme, whereby 30 per cent of students of Class IX from a *Vidyalaya* located in Hindi speaking area spend one academic year in a *Vidyalaya* located in Non-Hindi speaking area and vice-versa to promote national integration through understanding of the diversity and plurality of country's people, their language and culture.

Main features of Navodaya schools

- Caters to the talented students
- Are residential
- Provides free education
- Caters primarily to rural areas
- Reserved seats for SCs and STs as per actual population in the district
- Foster national integration
- Special emphasis is laid on diagnostic and remedial teaching
- Are expected to provide full scope for innovation and experimentation

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- Schools implement Three Language Formula
- Selection will be based on scholastic aptitude test aimed at eliminating subjectivity

Organization of Navodaya /Jawahar Vidyalayas

In the Ministry of Human Resource Development, a *Navodaya Vidyalaya Samiti*, an autonomous organization was set up to manage these schools and they were affiliated to Central Board of Secondary Education (CBSE). The Central Government bears 100 per cent of the expenditure for running these schools with the responsibility on State Governments who provide land free of cost.

Fall out in the scheme

- Lack of proper planning resulted in infrastructure being missing for the schools
- Inadequate accommodation was the problem faced by *Navodaya Vidyalayas*
- The location was not suitable in certain cases
- Non-availability of experienced staff was another problem faced by the *Navodaya Vidyalayas*
- Teachers selected on merit were not willing to work in the remote areas
- Suitable playgrounds were not available for the schools
- Library facilities were inferior in quality
- Admission tests did not take into consideration the rural background
- Children of middle class were able to get admission in large numbers at cost of lower income group due to coaching facilities
- State Governments felt the burden due to these schools
- Common School System was discarded by the opening of *Navodaya Vidyalayas*

5. Vocationalization of education

Vocalization means the introduction of systematic, well planned and meticulously planned programmes to promote in students an appreciation of the dignity of labour and to encourage self-employment. This is aimed to reduce the disparity between the demand and the supply of skilled manpower, and to offer choices to those students who have not yet made their career choice. To achieve this, vocational courses leading to several occupational fields were to be introduced. The government as employers in the public and private sectors had to take the initiative of establishing these vocational courses or institutions.

The 1986 National Policy on Education was modified in 1992 by the P. V. Narasimha Rao government. In 2005, Prime Minister Manmohan Singh adopted a new policy based on the 'Common Minimum Programme' of his United Progressive Alliance (UPA) government. Programme of Action (POA), 1992, under the National Policy on Education (NPE), 1986 proposed to conduct a common entrance examination on all India basis for the admission to professional and technical programmes in the country. For admission to Engineering and Architecture/Planning programmes, Government of India through the Resolution dated 18 October 2001 has laid down a Three-Exam Scheme (JEE and AIEEE at the National Level and the State Level Engineering Entrance Examinations (SLEEE) for State Level Institutions, with an option to join AIEEE. This helps in maintenance of professional standards and also solves problems of overlaps, and reduces physical, mental and financial burden on students.

Check Your Progress

8. Give two main features of National System of Education.
9. What were the two prominent features of ECCE?
10. Why was the National Evaluation Organization established?
11. What was the role played by CABE?
12. How often were the programmes of NPE 1986 to be reviewed?
13. What are Navodaya Vidyalayas?

SUMMARY

NOTES

- Secondary Education Commission was appointed under the chairmanship of L. S. Mudaliar on 23 September 1952; the Commission pointed out some defects in the then existing system of secondary education.
- The main aim of secondary education was to produce good citizens with leadership qualities and who are self-reliant according to Secondary Education Commission.
- Kothari Commission set 12 task forces and 7 working groups, interviewed 9,000 men and women interested in education in the country, and toured for 100 days. The report contains 19 chapters. The Commission tried to cover every field and aspect of education. It firmly believed that education is the most powerful instrument of national development.
- Some unique features of the Kothari Commission are as follows:
  - Not to limit its inquiry to specific sectors or aspects of education, but to have a comprehensive review of the entire education system.
  - Its firm belief that education is the most powerful instrument of the national development.
- The Ministry of Human Resource Development brought National Policy on Education in 1986.
- The most distinctive feature of the NPE was the National System of Education. This was based on the Constitution of India, and derived its inspirations from the ideals and values of democracy, secularism and socialism.
- The objective of National System of Education was that all students irrespective of caste, creed, location or sex have the right to quality education till a given age.
- National Policy on Education (NPE) emphasized the investment in the development of young children, particularly from sections of the population in which first generation learners predominate.
- Operation Blackboard was launched to provide schools with essential facilities, such as a well-stocked library, blackboards, maps and other necessary learning aids.
- Pace-setting schools, also known as *Navodaya Vidyalayas*, were set up to provide good quality education to children with special talent or aptitude, to proceed at a faster pace.
- Educational reorganization includes the introduction of systematic, well-planned and meticulously planned programmes of vocational education to promote in students an appreciation of the dignity of labour and to encourage self-employment, so as to reduce the disparity between the demand and the supply of skilled manpower, and to offer choices to those students who had not made their career choice.

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KEY TERMS

- **Work experience:** It means purposive and meaningful manual work.
- **Multipurpose schools:** They are schools with varied courses of interests and with diverse aims, aptitude and abilities; these schools remove all distinctions between students preparing for different courses of studies.
- **UGC:** It is the body responsible for affecting the transfer of all pre-university or intermediate work from university and affiliated colleges to schools.

ANSWERS TO 'CHECK YOUR PROGRESS'

1. The different levels of Indian education system are as follows:
   - Pre-primary
   - Primary
   - Secondary
   - Undergraduate
   - Post Graduate
2. The different types of schools present in India are Public/government schools, Private schools, International schools, National Open School and Special-needs schools.
3. One aim of Secondary Education Commission was the development of democratic citizenship.
4. One defect in school curriculum as observed by Secondary Education Commission was that it was bookish and theoretical.
5. One recommendation offered by Secondary Education Commission was that multipurpose schools should be opened with varied courses of interests and with diverse aims, aptitude and abilities. These schools would remove all distinctions between students preparing for different courses of studies, break the sense of inferiority associated with vocational subjects, and, thus, lead to a democratic basis of education.
6. No financial estimates and non-availability of qualified teachers were two demerits of the recommendations made by Secondary Education Commission.
7. One method recommended by the Kothari Commission to improve the quality of education was to improve the quality and scope of teacher education and in-service programmes.
8. The two main features of National System of Education were as follows:
   (i) It was based on the Constitution of India.
   (ii) It advocated universal access to education.
9. Programmes of ECCE were supposed to be child oriented, and focus around play and the individuality of the child.

10. The National Evaluation Organization was established to conduct tests in order to determine the suitability of candidates for specific jobs, and to bring about an overall improvement in testing and measurement.
11. The Central Advisory Board of Education (CABE) played a pivotal role in reviewing educational development and improving the education system.
12. The programmes of NPE 1986 were to be reviewed every five years.
13. *Navodaya Vidyalayas* are fully residential co-educational institutions providing education up to senior secondary stage.

QUESTIONS AND EXERCISES

Short-Answer Questions

1. What is the basic structure of the Indian education system?
2. What defects were pointed out by the Secondary Education Commission in the school curriculum?
3. List the merits of Secondary Education Commission.
4. Why was the composition of Kothari Commission considered to be of international standard?
5. Write a short note on the aspect of financial analysis as introduced by the Kothari Commission.
6. Which were the subjects included in the Humanities stream as per Secondary Education Commission?
7. What were the programmes introduced by POA 1986?

Long-Answer Questions

1. Write in detail the educational ladder of Indian education system.
2. Elaborate on the recommendations of the Kothari Commission.
3. Discuss the ways in which the recommendations of the Kothari Commission were implemented.
4. What were the recommendations made by the Secondary Education Commission?
5. What were the drawbacks of the Secondary Education Commission? Explain in detail.
6. What were the recommendations made for secondary education by NPE 1986?
7. Discuss the merits and demerits of NPE 1986.

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UNIT 4 EDUCATIONAL PSYCHOLOGY

NOTES

Structure

INTRODUCTION

Educational psychology is the most important branch of applied psychology. It is the study of the psychological aspects of educational situations. It is a study of educational problems with reference to psychological facts. Psychology is the science of behaviour and education aims at modifying the behaviour in the most desirable way. The modification of behaviour depends on some fundamental psychological laws and limitations. Educational psychology studies those facts and limitations. It covers the development of the child from early childhood to maturity.

In this unit, you will learn the meaning and scope of educational psychology. You will also learn about the concept and theories of learning.

UNIT OBJECTIVES

After going through this unit, you will be able to:

- State the meaning and definition of educational psychology
- Discuss the scope of educational psychology

- Explain the meaning and nature of learning
- Discuss the various theories of learning
- Differentiate between the various laws of learning

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MEANING, NATURE AND SCOPE OF EDUCATIONAL PSYCHOLOGY

Educational psychology consists of two words—psychology and education. Some of the important definitions of educational psychology as given by eminent psychologists are given below:

1. **Anderson** — 'Educational psychology is a subject to be studied, an area or field of knowledge, a set of application of laws and principles from a wide field of knowledge to a social process, a set of tools and techniques, and a field of research. While general psychology is pure science, educational psychology is its application in the field of education with the aim of socializing man and modifying his behaviour.'
2. **Crow and Crow** — 'Educational psychology describes and explains the learning experiences of an individual from birth through old age.'
3. **Anusubel, David P** — 'Educational psychology is the special branch of psychology that is concerned with the nature, conditions, outcomes and evaluation of school learning and retention.'
4. **Encyclopaedia of Educational Research** — 'Educational psychology is the study of the learner and of the learning-teaching process in its various ramifications (branches) directed towards helping the child come to terms with society with a maximum of security and satisfaction.'
5. **Judd** — 'Educational psychology is the science that explains the changes that take place in the individuals as they pass through various stages of development.'
6. **Kolesnik, Walter B —** 'Educational psychology is the study of those facts and principles of psychology that help to explain and improve the process of education.'
7. **Peel, E A** — 'Educational psychology is the science of education.'
8. **Skinner** — He gives two definitions: (1) 'Educational psychology covers the entire range of behaviour and personality as related to education.' (2) 'Educational psychology is that branch of psychology that deals with teaching and learning.'
9. **Stephen** — 'Educational psychology is the systematic study of educational growth and development of a child.'
10. **Trow** — 'Educational psychology is the study of psychological aspects of educational situations.'

A perusal of the above-mentioned definitions shows that educational psychology deals with the conditions that promote or retard the development of the learner. Educational psychology attempts to define, describe and explain the changes that take place in the learner through his various stages of development. It is the study of the human mind as it bears upon learning and teaching activities. Teaching and learning are the focal points of educational psychology. Educational psychology investigates the methods and techniques of imparting education to the learner, discovers a number of general rules and applies these to the practical problems of learning.

Nature of Educational Psychology

Following are the important characteristics of educational psychology:

1. It combines two fields, i.e., education and psychology.
2. It is the scientific study of human behaviour in educational situations.
3. It is one of the many branches of applied psychology.
4. It is concerned with those factors, principles and techniques that relate to the various aspects of child's growth and development.
5. It is concerned with learning situation and the process by which learning can be made more efficient and effective.
6. Educational psychology draws heavily from various branches of psychology, biology, sociology and anthropology.
7. Educational psychology is not as exact and accurate as natural sciences since human behaviour cannot be predicted exactly.
8. Educational psychology is a science of education dealing primarily with *how, when* and *what* of education.

Although educational psychology has drawn a great deal from the main field of psychology for its techniques, strategies and solution to problems of education, this branch of science is not merely a discipline made up of borrowed knowledge. It is a special field of study in its own right.

Tasks of Educational Psychology

Well-known psychologist W. A. Kelly (1941) listed the following tasks of educational psychology:

1. To give knowledge about the nature of the child
2. To give understanding of the nature, aims and purpose of education
3. To give understanding of the scientific methods and procedures that have been used in arriving at the facts and principles of educational psychology
4. To present the principles and techniques of learning and teaching
5. To impart training in the methods of measuring abilities and achievement in school subjects
6. To give knowledge about the growth and development of children
7. To assist in better adjustment of children and to help them avoid maladjustment
8. To study the educational significance and control of emotions
9. To give an understanding of the principles and techniques of correct training

Focal Areas and Scope of Educational Psychology

Five major areas covered by educational psychology are as follows:

1. The Learner
2. The Learning Process
3. The Learning Situation
4. The Teaching Situation
5. Evaluation of Learning Performance

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The scope of educational psychology is as under.

1. **Educational psychology helps the teacher to realize the aims of education:** The main aim of education is harmonious and all-round development of the educand. Development comes from within, and the inner potentialities must be understood and approached for the desired modification in the development of the child. Educational psychology helps the teacher to understand the inner potentialities that underlie the behaviour of the child.
2. **Knowledge about the learner is as necessary as knowledge of the subject:** Acquisition of knowledge is no more the main object of education, though it is still a significant component of the process. Acquisition of knowledge also helps modifying the behaviour of the child. For this purpose, the educator will have to consider the mental processes of the child and not just the quality of knowledge that he is putting into the child's mind.
3. **Psychology tests the aims of education:** Educational psychologists can analyse an aim and determine its practicality with reference to the fundamental laws of psychology.
4. **The teaching situation:** Effectiveness of educational psychology becomes relevant only when its findings and methods become a part of educational practices followed by teachers.
5. **Evaluation of learning performance:** It includes the use of statistical methods and conducting research on educational problems.

A course in educational psychology must seek to enrich knowledge and develop competence in the following areas:

1. Individual growth and development
2. The process of learning
3. Motivation
4. Personality
5. Individual differences—heredity and environment
6. Intelligence
7. Measurement and evaluation
8. Elementary statistics in education
9. Special education
10. Elementary research techniques

Relevance and Significance of Educational Psychology for People Engaged in the Process

It is a well-known fact that educational psychology and its applications are very helpful in making the teaching-learning process interesting, inspirational and effective. A century ago, when educational reformer J. H. Pestalozzi wanted to psychologize education, not much heed was paid to it, but today, it is increasingly being realized that the teacher is not merely expected to know his subject adequately but also the various stages of child development and his behaviour so that optimum results are achieved.

1. **Catering to individual differences:** No two persons are exactly alike. Pupils always differ in their level of intelligence, aptitudes, likes and dislikes, and in other

propensities and potentialities. Different varieties of minds are to be trained by the teacher. There are gifted, backward, gifted, talented and handicapped children. All of them should not be treated in the same manner. The knowledge of educational psychology helps the teacher to cater to individual differences of children.

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2. **Understanding the learner:** As discussed above, acquisition of knowledge is not the main object of education; it also involves understanding and modifying the behaviour of the child. The educator, thus, has to consider the mental processes of the child.
3. **Understanding developmental characteristics:** Children, or learners, pass through different stages of development—infancy, childhood and adolescence. Each stage has its own characteristics. The teacher must be acquainted with the characteristics of each stage and utilize these in imparting instruction and moulding the behaviour of the individual learner.
4. **Understanding group dynamics:** In recent years, the importance of social behaviour has acquired a great significance. The teacher, therefore, must know the operations of group dynamics in classroom teaching-learning as well as total school and social environment and their effect on learning.
5. **Understanding the nature of classroom learning:** Educational psychology helps the teacher to adapt and adjust his teaching according to the level of learners. When a teacher teaches in a class but if the students do not understand the subject-matter being taught, the teacher must identify the cause. It is possible that the behaviour of the teacher is not conducive to learning. If it is so, the teacher should change the instructional strategy. There could also be many other reasons. It is the science of behaviour which is helpful.
6. **Understanding effective methods of teaching:** Educational psychology has helped in discovering several new approaches, principles and techniques of teaching which eliminate many traditional practices that are irrelelvant in modern times. Recent researches have given valuable suggestions on better methods of teaching and memorizing for developing desirable habits. Psychology tells us how significant games and recreation are for the children and how play-way methods transform the drudgery of learning into an interesting task.
7. **Framing the curriculum:** Psychological principles also help in formulating curricula for different stages. Such subjects and activities can be included in the curriculum which are in conformity to the needs of the students, their developmental characteristics, learning patterns and also needs of the society.
8. **Measurement of learning outcomes:** Educational psychology has made great strides in this respect. It has developed many reliable tests and instruments of mental measurement which are proving extremely useful. It is now possible to quantify measurement of mental capacities, basic intelligence, temperamental attitudes and special inclinations of individuals, and develop educational programmes suitable for the individual's level. These measurements show that children differ from each other and that every child is a unique being.
9. **Understanding the learning process:** Teaching and learning go side by side. All education depends upon the learning of new responses and the capacity of a child to learn new responses. Educational psychology discusses the nature of learning theories and types of learning for different age levels and situations.

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Therefore, expertise in educational psychology becomes essential for a teacher to be able to deliver fully.

10. **Knowledge of mental health**: Knowledge of the mental health of the taught is very important for effective teaching-learning. A study of educational psychology helps the teacher to know the various factors which are responsible for the mental ill-health and maladjustment.
11. **Developing scientific attitude**: Educational psychology is helpful in making the teacher more scientific in his educational practices and, consequently, he may become more methodical, objective and rational in his effort.
12. **Educational psychology and nervous system**: The entire education depends on the function of the brain and nervous system. It becomes essential for a teacher to study the nervous system which controls human behaviour. He must have the knowledge of sensory organs which are the gateway of knowledge.
13. **Educational psychology and play**: Play is a natural tendency having great educational potential. Educational psychology helps the teacher to provide for a variety of activities for children.
14. **Educational psychology and productive activities**: A great stress is being laid these days on work experience and socially useful productive work. Educational psychology helps the teacher to know how various activities in these fields can be used for the fulfilment of basic needs of children.
15. **Understanding the significance of research**: Educational psychology helps in developing tools and devices for the measurement of various variables which influence the behaviour and performance of learners as well as teachers.
16. **Guidance for the education of exceptional children**: Educational psychology has contributed a lot for making specific provision and organization of educational programmes for the exceptional children who remained neglected in the past and were denied suitable educational facilities.
17. **Character development**: Educational psychology contributes a lot to the formation and development of character. The teacher learns suitable methods for inculcating character traits and moral principles among the children.
18. **Constructive and creative discipline**: The slogan of the traditional teacher was 'Spare the rod and spoil the child'. 'Flogging the Child' was the chief method. One should adopt a cooperative and scientific approach to modify the behaviour of the students. Emphasis is laid on self-discipline through creative and constructive activities. The modern teacher, thus, plays the role of a democrat, not of an autocrat.
19. **Democratic administration and management**: Democratic practices in functioning of educational institutions are taking the place of autocratic practices. Teachers and students are associated in several areas of school administration.
20. **Use of audio-visual aids or new instructional technology**: It has been experimentally proved that the use of audio-visual aids holds the attention and interests of the children for a longer period and makes difficult concepts clearer, and learning becomes more lasting. Parrot-like memorization no longer holds good.
21. **Timetable framing**: Psychological principles are kept in view while framing the timetable. Efforts are now made not to teach difficult subjects in successive periods or in the last period before interval or at the end of the school day.

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22. **Provision for co-curricular activities**: For balanced and harmonious development of children, it is now realized that there should be adequate provision for activities, such as debates, discussions, dramas, social service activities, games and sports.
23. **Use of innovation and projects**: For the improvement of the teaching-learning, several innovative ideas are being introduced. Some of the important innovations are microteaching, programmed instruction, non-graded schooling at the elementary stage and team teaching.
24. **Production of suitable textbooks**: New textbooks are being written keeping in view the intellectual development of children, their needs and interests at different levels. Emphasis is laid on providing sufficient illustrations in textbooks.

    In short, educational psychology helps the teacher and the educator in understanding the following:

    Whom to teach: The child is to be taught and he should be studied carefully by the teacher. His abilities, aptitudes and interests must be taken into consideration in the teaching-learning process. The knowledge of psychology helps to know individual differences of children.

    Who is to teach: The teacher is to teach and he must understand himself thoroughly. 'Physician heal thyself' should be his first watchword. He must have a stable personality.

    What to teach: The subject-matter, experiences and activities should be organized according to the various stages of the development of the child.

    When to teach: This involves motivational aspects. The mind of the child has to be prepared for the lesson. Motivation is the internal force which accelerates behaviour.

    How to teach: The knowledge of psychology helps us to understand the significance of various approaches, methods and techniques of teaching.
25. **Educational psychology and the parents**: An elementary knowledge of educational psychology is very essential for parents also. After all, children spend a good deal of their time at home. There is no doubt that parents are the first teachers. Therefore, educational psychology helps parents,
    (a) In understanding the process of development and growth of their children.
    (b) In acquainting them with emotional, mental and physical needs of the children.
    (c) In impressing upon them the necessity of providing wholesome environment to the children so that they are free from anxiety, and lead a stress-free and happy life.
    (d) In enabling them to know that they should not take recourse to repression and punishment, which adversely affect the mental health of children.
    (e) In enabling them to observe keenly the behaviour of children. It also assists them in controlling their habits.
    (f) In showing them the need to shower love and affection on their children.

Limitations of Educational Psychology

Educational psychology provides to the teacher information on certain problems regarding the development of children. Teacher's effectiveness will depend on their own experience

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and approach towards educational problems. Educational psychology deals with the nature of the children and the environment, and both these are unstable. A child may not behave the same way even in the same environment at different times. Educational psychology provides only the guidelines. Its generalizations are not as exact as the generalizations of natural sciences.

To sum up, we may not entirely agree with the tall claim of scottish academic and psychologist James Drever (1873–1950) that: 'We can hardly settle any essential and vital question in education except in a merely academic way, and without reference to practical problems, independently of the science of psychology', but we must admit that there is a great truth in it.

METHODS OF EDUCATIONAL PSYCHOLOGY

Educational psychology employs various methods to improve the teaching-learning process in the classroom. It uses these methods to gather facts about the nature of children, how they learn and how they develop. It employs methods to know how any aspect of a child's personality, such as, learning, social adjustment or skills, develop from the elementary stage to a complex one. It studies how children pass through several stages of growth and development. As educational psychology is an applied branch of general psychology, it uses methods of general psychology.

In recent years, with the development of technology, researchers have started using new methods of collecting and analysing data. In this context, the use of computers has become a common feature in developed countries. In our country, the use of computers in educational psychology is at its initial stage.

With rapid use of technology in education, psychology and other social sciences, new research strategies are being evolved for conducting research.

The important methods and techniques for collecting data are as under:

I. Introspection
II. Observation
III. Clinical
IV. Scientific, or experimental
V. Correlational, or differential
VI. General statistical
VII. Projective
VIII. Sociometry

Each of the above-listed techniques is discussed in detail in the following sections.

Check Your Progress

1. What is educational psychology?
2. State any three characteristics of educational psychology.
3. Mention any four ways how educational psychology is helpful for people in the field of education.

I. Introspection

Introspection is composed of two words, *intro* and *aspection. Intro* means *within* or *inward* and *aspection* means *looking.* Hence, the word implies self-observation or looking *within* or looking *inward* to experience 'one's' mental state. It is a process of examining one's mental process of thought, feelings and motives. An individual looks within, observes, analyses and reports his feelings. Let us explain this process with the help of an example. Suppose you are happy and in this state of happiness, you look within yourself. Thus, you are introspecting your mental feelings and examining what is going on in your mind in the state of happiness. Similarly, you may introspect in states of

anger, fear, and so on. Introspection is also defined as the *notice* that the mind takes of itself. Introspection is the oldest method that was formerly used by philosophers. It was developed by structuralists in psychology who defined psychology as the study of conscious experiences of the individual.

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Merits of the Introspection Method

1. It is the most economical method. No apparatus or laboratory is required for its use.
2. This method can be used any time and anywhere.
3. It is the easiest method and is readily available to the individual.
4. Introspection has generated research that gradually led to the development of more objective methods. It is still used in all experimental investigations.
5. It is the only method through which an individual can know his emotions and feelings.
6. American philosopher and psychologist William James has pointed out the importance of this method in the following words: 'Introspective observation is what we have to rely on first and foremost, and always. The word introspection need hardly be defined—it means, of course, looking into our own minds and reporting what we there discover. Everyone agrees that we there discover states of consciousness. So far as I know, the existence of such states has never been doubted by any critic, however skeptical in other respects he may have been.'

Limitations of the Introspection Method

1. In introspection, the mind studies its own working. But the mind cannot study itself. For example, when one is in a state of anger or fear, one is too agitated to study the working of one's mind and when one is able to study one's mind, the state of anger, fear, and the like disappears. It is a futile effort to expect any individual to attend to the working of his mind during an emotional state. As well-known psychologist James S. Ross has observed, 'The observer and the observed are the same, the mind is both the field and the instrument of observation.'
2. Human beings are not static objects, such as chairs or stones. Their mental process is under constant change. So when one attempts to introspect, the state of the mind may change. It is difficult to introspect over psychological experiences that are constantly changing.
3. The data collected by introspection cannot be verified. An individual may not pass through the same mental state again. There is no independent way of checking the data.
4. The data collected by introspection is highly subjective. It carries the risk of being biased and influenced by preconceptions of the individual.
5. There is ample scope for the reporter—the individual who introspects—to lie deliberately and hide the facts from the researcher.
6. Introspection can be done by normal and stable individuals. Mentally unstable human beings cannot introspect.
7. Introspection cannot be done by children. It can only be done by adults.
8. Introspection can be assisted by trained and skilled guides.
9. According to Gestalt psychologists, it does not yield adequate representation of the unitary experience in its totality.

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10. Introspection is generally carried out when a particular state of mind that we wish to study has passed. So it is really *retrospection* that the individual goes through because we study the event after it has taken place.
11. Limitations of introspection can be overcome by practice and training, by remaining alert during introspection and by comparing results obtained by experts. Leading English philosopher and psychologist G.F. Stout observed, 'Introspection to be effective for the advancement of science must, like other modes of observation, be carried on by a number of experts in cooperation.'

II. Observation

Observation is one of the oldest techniques that man has made use of. Even today, we notice farmers feeling the breeze, watching the sky, sun, moon and stars in order to determine what the weather is likely to be and what season is approaching.

In the words of Carter V. Good of the University of Cincinnati, 'Observation deals with the overt behaviour of persons in appropriate situations.' Observation has been defined as 'measurement without instruments'. In education, observation is the most commonly employed method among all measurement techniques.

Merits of the Observation Method

1. Being a record of the actual behaviour of the child, it is more reliable and objective.
2. It is a study of an individual in a natural situation and is, therefore, more useful than a restricted study in a test situation.
3. The method can be used with children of all ages; of course, the younger the child, the easier it is to observe him. This method has been found very useful with shy children.
4. It can be used with little training and almost all teachers can use it. It does not require any special tools or equipment.
5. It can be used in every situation including physical activities, workshops and classroom situations as well.
6. It is adaptable both to the individual as well as groups.

Limitations of the Observation Method

1. Great scope exists for observer's personal prejudice and bias to creep into the analysis.
2. Records may not be written with 100 per cent accuracy as the observation is recorded after the actions. There is also some time lag.
3. The observer may only get a small sample of student behaviour. It is very difficult to observe everything that a student does or says. As far as possible, observations should be made from several events.
4. It reveals the overt and expressed behaviour only and not the behaviour that is within.

Types of Observation

1. Participant Observation

Here the observer plays a double role. He becomes by and large a member of the group under observation and shares the situation as a visiting stranger, an eager learner and an attentive listener.

Merits

(a) It is more reliable.

(b) It is very flexible.

(c) It enables greater degree of probing.

(d) It discloses the minute and hidden facts.

(e) Its cost is relatively less.

Demerits

(a) It is time consuming.

(b) The observer's presence is likely to modify the behaviour of the subjects under study.

(c) It becomes more subjective.

2. Non-Participant Observation

This is used with groups, such as infants, children or mentally disabled people. The observer takes a position where he is able to observe in detail the behaviour of the individual under observation. The position of the observer should be least disturbing to the subject under study. Non-participant observation permits the use of recording instruments. It also permits the gathering of larger quantity of data.

3. Structured Observation

Structured observation starts with relatively specific formulations. The observer sets up categories in terms of which he wishes to analyse the problem. He must keep in view:

(a) A frame of reference

(b) Time units

(c) Limits of an act

4. Unstructured Observation

It mainly takes the form of participant observation. The observer takes the role of a member of the group.

III. Clinical Method

It is a method employed to an individual in cases when he/she has a problem. A clinical study is the in-depth study of an individual in all its details. It helps to reveal the underlying causes of misbehaviour by careful observation of an individual. It provides insights into adjustment problems.

The clinical method is based on the truism that each individual is different from another and is, therefore, a unique case. His problem has some definite causes and antecedents lying both within the individual and in his/her environment. The problem does not arise suddenly but has a history behind it. Clinical method employs both methods of diagnosis and treatment, and in doing so, it operates at the level of art as well as of science. The types of problems under investigation are shyness, nervousness, thumb-sucking, speech defects, truancy, phobias, stealing, telling lies, sexual disorders, sex offences and so on.

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Diagnosis of the Problem

Diagnosis of the problem is the first step. It begins with a careful physical examination. Then the case history is prepared to gain insights into the problem. It is followed by a clinical interview and psychological testing of individual's abilities and personality traits.

Treatment follows on the basis of a hypothesis developed and inferences drawn from the comprehensive diagnosis. It may involve change of environment (school or home). The issue of utmost importance is that the individual must undergo a change. Children can be helped in this regard through play-therapy, psycho-drama, role-playing or behaviour modification techniques that are based on the principle of conditioning.

Clinical approach involves the following steps:

(i) Preparation of case history

(ii) Study of the environment

(iii) Direct observation of the individual during interview or play

(iv) Psychological examination with the help of certain tests and techniques

IV. Experimental Method

The experimental method is generally regarded as the most sophisticated research method for testing hypotheses. In the words of well-known psychologists W. S. Manro and M. D. Engelhast, 'Experimentation is the name given to the type of educational research in which the investigator controls the educative factors to which a group of children is subjected during the period of inquiry and observes the resulting achievement.'

Eminent philosopher J. W. Best describes it as, 'Experimental research is the description and analysis of what will be, or what will occur, under carefully controlled conditions.' Thus, the keywords in experimental research are as follows:

1. What will be
2. What will occur
3. Carefully controlled conditions

According to researcher analyst Festinger, 'The essence of an experiment may be described as observing the effect on a dependent variable of the manipulation of an independent variable.'

Characteristics of an Experiment

An experiment calls for the satisfaction of three basic interrelated conditions, i.e., Control, Randomization and Replication.

1. *Control:* Control is the basic element in experimentation. The influence of extraneous factors that are not included in the hypothesis are prevented from operating and confusing the outcome that is to be appraised. These types of controls are exercised in an experiment:
   (i) Physical control
   (ii) Selective control
   (iii) Statistical control
2. *Randomization:* As it is very difficult to exercise complete control, efforts are made to assign cases in the experiment and control groups randomly.

3. *Replication:* This implies conducting a number of sub-experiments within the framework of an overall experimental design.

Use of Experimentation in Education: Some of the main uses of experimentation in education are as follows:

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1. Determining and evaluating the adequacy and effectiveness of educational aims and objectives through the measurement of outcomes
2. Serving as a basis for the formulation, execution and modification of educational policies and programmes
3. Ascertaining the effects of any change in the normal educational programmes and practices

Merits of the Experimental Method

1. Experimental method is the most systematic method of getting reliable data.
2. In this, research is conducted under rigorously controlled conditions. The experimenter can control the application and withdrawal of independent variables.
3. Findings of the experimental method are verifiable by other experimenters under identical conditions.
4. Experimental method provides adequate information about the problem.
5. It provides objective information about the problem.
6. It tests the traditional beliefs and throws new light on them and opens avenues for future progress.
7. It helps to minimize subjective opinions in the analysis.
8. It increases our knowledge of cause-effect relations in the behaviour of the learners and provides guidelines for making teaching-learning effective, interesting and inspirational.
9. It provides innovative ideas for further experimentation.

Limitation of the Experimental Method

1. Psychologists like Thorndike and Skinner conducted experiments on animals like cats and dogs, and deduced principles on the basis of these experiments. This raises the issue that how far is it justifiable to generalize those principles and laws on human beings.
2. Human nature is changing. One may not act exactly in the same manner even in identical situations.
3. Experiments are conducted in an artificially determined pattern of behaviour. In real life, the situation is quite different.
4. Each child is unique. He/she differs from other children in several aspects. This fact hinders objective generalizations.
5. Experimental data do not provide insights into the total behaviour of the learner. For all practical purposes, behaviour is an interaction between the learner and the environments. The experimentalists often omit important factors by their tendency to eliminate and isolate experimental variables or to keep them constant.

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6. Various types of actions of children do not fit into a laboratory setting.
7. Experimental method is time-consuming.
8. Experimental method is costly.
9. Experimental method needs specialized knowledge and, therefore, every teacher cannot be expected to conduct an experiment.
10. Experiments in social sciences are not possible in the same sense as they are in physical sciences.
11. Some religious leaders and other thinkers have raised ethical issues regarding administration of experiments and tests, especially those that encroach upon the privacy of the subjects (individuals).
12. It is not always possible to construct tools that will make accurate measurements of individual differences.
13. In several experiments, it is not possible to manipulate human beings according to the research designs that are theoretically possible.
14. It is not possible to reach certainty in matters of social sciences, including educational psychology.

V. Correlational or Differential Methods

Correlational methods are used to study the subjects as they are, without changing the conditions surrounding them. For instance, various tests are given to the individuals and their results are compared with other performances. In vocational guidance, jobs are matched with the candidates to be employed for those jobs. Correlational methods are also used to study individuals in pairs, for example, twins, siblings, and so on. These methods are also used for comparing groups that are more or less alike.

VI. General Statistical Methods

All methods that make use of statistics fall under this category. As a matter of fact, most of the methods like experimental and correlated methods may be classified under this category, especially when they make use of statistical techniques.

VII. Projective Methods

These methods are called projective because the assumption is that an individual tries to project his feelings on the environments and, thus, reveals his personality.

Check Your Progress

4. List any four methods of collecting data?
5. What is an introspection method?
6. Name the different types of observation.
7. What happens in the clinical method?

VIII. Sociometry

The sociometric technique was developed by leading psychiatrist and psychologist or Jacob L. Moreno to determine the degree to which individuals are accepted in a group. It is used to discover the relationships that exist among members of a group. These relationships are found out by asking the following questions to the members:

(a) With whom would you like to sit?

(b) With whom would you like to work?

The details of these methods are discussed separately in the last unit of this book.

CONCEPT OF LEARNING

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Learning occupies an important place in the school programme. In fact, schools are set up for making children learn. All efforts of teachers and parents are devoted to help children learn. Learning is an enriching experience as there is an interaction with the environment. Without learning, all efforts of children as well as of teachers have little meaning. It is generally observed that in the determination of a child's behaviour, there is no process more important than learning. However, psychologists differ on the concept of learning. Several attempts have been made to define learning. The following definitions by well-known research analysts and philosophers give a comprehensive view of learning:

1. **According to R S Woodworth (1945)**, 'Any activity can be called learning so far as it develops the individual (in any respect, good or bad) and makes his behaviour and experiences different from what that would otherwise have been.'
2. **H L Kingsley and R Garry,** (1946) said, 'Learning is the process by which behaviour (in the broader sense) originates or changes through practice and training.'
3. **Gates and Others** (1946) observed, 'Learning is the modification in behaviour to meet environmental requirements.'
4. **F S Freeman** (1958) defined, 'Learning is the process of developing the ability to respond adequately to a situation which may or may not have been properly encountered.'
5. **B L Hilgard** (1958) was of the view, 'Learning is the process by which an activity originates or is changed through reacting to an encountered situation, provided that the characteristics of the change in activity cannot be explained on the basis of native responses, tendencies, maturation or temporary states of the organism (e.g., fatigue or drugs, etc.)'
6. **H Faigan** (1958) believed, 'Learning is a sequence of mental events or conditions leading to changes in the learner. As a sequence of events, the learning process is as follows:
   (i) The individual has needs and is therefore in a state of readiness to respond. These are antecedent conditions within the learner.
   (ii) He meets a learning situation or problem. A new interpretation is required because previously learned responses are not adequate for reaching the goal and satisfying his need. He encounters something new or unexpected, and must search for a different response.
   (iii) He interprets the situation with reference to his goals, and tries a response or responses which seem to satisfy his need. The way he perceives the situation and the response he makes depends both on his "readiness" and on the external conditions of the situation.
   (iv) If his response leads to devised goals or satisfaction, he will tend to interpret and respond to similar future situations in the same way. If not, he keeps on trying and reinterpreting until consequences are attained. The learning process is this whole sequence!'

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Key Phrases Used in the Definitions of Learning

An analysis of the above mentioned definitions would reveal the following key words and phrases in learning:

(i) Modification of behaviour
(ii) Practice for behaviour
(iii) Training for behaviour
(iv) Changes in environment
(v) Motivated individual, i.e., the learner
(vi) Attainment of a goal
(vii) Acquisition of habits, knowledge and attitudes
(viii) New ways of doing things
(ix) Overcoming obstacles
(x) Readjusting to new situation
(xi) Ability to respond
(xii) Satisfaction of needs through encountering something new
(xiii) Trying and reinterpreting the situation for the satisfaction of needs
(xiv) Acquisition of new behaviour
(xv) Strengthening of old behaviour
(xvi) Weakening of old behaviour
(xvii) Satisfaction of motivations by adopting and adjusting behaviour
(xviii) Overcoming obstacles
(xix) Changes in the individual through changes in the environment
(xx) Adopting behaviour to the situation
(xxi) Permanent modifications in the behaviour
(xxii) Changes in behaviour as a result of reinforcement
(xxiii) Changes occurring in behaviour through practice
(xxiv) Improvement in the efficiency of adjustment through practice
(xxv) Learning as the synthesis of old and new experiences

It may be stated that learning should enable us to make the best use of the things around us. If a man has not learnt the art of living harmoniously with others, he would be beset with difficulties than the person who has learnt to establish social relations with his fellows. So the acquisition of abilities, which enable us to adjust ourselves in an effective manner in an environment and to control it successfully, is said to be the aim of learning.

Main Characteristics of Learning

Subject experts Yoakman and Simpson enumerated nine general characteristics of learning, which are discussed as follows:

(i) **Learning is growth:** The word 'growth' is generally associated not only with the body which is growing physically, but with the mental growth of an individual. Through his daily activities, a child grows both mentally and physically. Therefore, we say that learning is growth through experience.

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(ii) **Learning is adjustment:** Learning helps the individual to adjust himself adequately to new situations. Children come across new situations which demand effective solutions. Life is full of experiences, and each experience leaves behind some effects in the mind, which in turn, modify our behaviour.

(iii) **Learning is experience:** Learning is not mere addition to knowledge and acquisition of facts and skills through drill and repetition. It is the reorganization of experience.

(iv) **Learning is purposeful:** True learning is based on purpose. Purpose plays a big role in learning. According to renowned psychologist Ryburn, 'This purpose is always connected with the use of some instinctive power, with the use of the energy with which we are endowed with birth.' We do not learn anything and everything that comes in our way, in a haphazard manner. All school activities should be purposeful so that a child feels the real urge for learning.

(v) **Learning is intelligence:** Meaningless efforts do not produce permanent result as work done mechanically is without any soul. When a child learns something unintelligently, he is likely to forget it soon. He does not assimilate but simply memorizes. Only efforts made intelligently have lasting effects.

(vi) **Learning is activity:** Learning does not take place without a purpose and self-activity. In the teaching-learning process, the activity of the learner counts more than the activity of the teacher. This is the main principle of learning and it has been recommended by all modem educationists. In fact, all progressive methods of education, such as the Dalton, the Project, the Montessori and the Basic, are based on this.

(vii) **Learning is both individual and social:** Learning is more than an individual activity; it is a social activity too. An individual's mind is affected by the group mind consciously as well as unconsciously, as he is influenced by his friends, relatives, classmates, parents, among others, and learns their ideas, feelings and notions. Social agencies, such as the family, church, playmates, social networking including media, have a tremendous influence on a child's mind.

(viii) **Learning is the product of the environment:** Environment plays an important role in the growth and development of an individual. A conducive healthy and educative environment should be provided for effective learning.

(ix) **True learning affects the conduct of the learner:** There is a change in the mental structure of the learner after every experience.

When and Where Learning Takes Place

Learning is not limited to school only; it begins long before and may continue long after school days. Thus, the ability to speak one's mother tongue begins in early infancy. On the other hand, the ability to practise a profession, such as that of a doctor, is acquired after leaving the medical college. Similarly, one learns the art of walking before one goes to school. The behaviour towards one's family is learnt at home, but to behave as a member of society is learnt in school.

Goals of Learning

Goals of learning can be classified in three broad categories: (*i*) Acquisition of knowledge, (ii) Acquisition of skills, and (*iii*) Acquisition of attitudes and ideals.

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(i) Acquisition of knowledge includes Perception, Conception and Associative learning.

(a) Perception: Perception refers to the acquisition of specific knowledge about objects or events, directly stimulating the senses at any particular moment. An object comes before our sense organs. We get its sensation and attach meaning to it on the basis of our past experiences. This is called perception and the type of learning is known as perceptual learning. An infant sees a woman. In the past, the woman had fed him. On the basis of that experience, he comprehends that the woman is his nurse or mother.

(b) Conception: Conception means the acquisition of organized knowledge in the form of general ideas or concepts. Perception refers to an individual or specific situation and conception to general or universal situation. The child gets the perception of an apple, banana, orange, and so on, and is able to locate certain general qualities in them. On the basis of these qualities, he forms a conception of fruits.

(c) Associative learning: Associative learning corresponds to memory, both as the deliberate recall and recognition, past experience and a habit or automatic memory due to association. Associative learning is fundamental to all other learning.

(ii) Acquisition of skills: Under this, we include the sensory-motor processes—writing, reading, musical performance, language acquisition in its vocal aspect, art, drawing, handwork, and so on.

(iii) Acquisition of attitudes and ideals: This is present in the affective or feeling element. An ideal is a concept which is attached with some worthwhile value.

Classroom Educational Implications of Learning

Educational implications of classroom learning may be summarized as under:

1. *Who is to learn?* The child is to learn and, therefore, his age, abilities, aptitudes and interests may be taken note of by all those who are responsible for the child's learning.
2. *From whom to learn?* Learning is from the teacher. Therefore, a teacher must present good models of teaching and learning.
3. *Why to learn ?* Learning is for individual good as well as for the good of the society.
4. *What to learn?* Learning is not merely in terms of the traditional 'Three R's', i.e., reading, writing and arithmetic but in terms of 'Seven R's', i.e., reading, writing, arithmetic, rights, responsibilities and their relationships and recreation.
5. *How to learn*? It involves various methods of learning, for instance, learning through rote memory, learning through imitation, learning through insight, and so on.
6. *When to learn*? This is concerned with motivational situations for the learner.
7. *Where to learn?* Learning takes place in the classroom, on the playfield, in the workshop, in the neighbourhood, and so on. School is not the only place of learning.

Kinds and Types of Learning

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Learning has been classified in a number of ways into various categories. It is very difficult to divide learning into clear cut categories because one category overlaps the other. Some of the important categories are as follows:

1. **Deliberate or conscious learning:** This includes learning of a skill or subject, which can be of two types:
   (i) *Primary learning:* This includes learning of facts, principles and theories, which form the main basis of lessons.
   (ii) *Associated learning:* This consists of learning of facts and other objective materials because they are related to primary learning and are logically brought into the lesson.
2. **Unconscious or concomitant learning:** This includes learning of likes and dislikes, attitudes, and so on. This type of learning is as important as conscious learning.
3. **Development learning:** Depending on the type of development, learning is classified as follows:
   (i) Academic learning
   (ii) Emotional learning
   (iii) Intellectual learning
   (iv) Moral learning
   (v) Motor learning
   (vi) Sensory learning
   (vii) Social learning
4. **General concept of learning:** Knowledge and skills, attitude and value formation, and so on, fall under the category of general concept of learning.
5. **Hierarchical learning:** American educational psychologist Robert M. Gagne (1970) classified learning into eight categories:
   (i) **Signal learning:** It is usually termed as classical conditioning which was developed by a Russian physiologist, Pavlov. In classical conditioning, unconditioned stimulus (food) and conditioned stimulus (sound of the bell) were paired together and presented to a dog a number of times. The result obtained was that when conditioned stimulus, i.e., CS (the sound of the bell) was presented alone, it elicited saliva from the mouth of the dog. This modification of behaviour, which caused salivation to the sound of the bell, was called conditioning. (More details on this are given while discussing the theory of classical conditioning.)
   (ii) **Stimulus-Response (S-R) learning:** American psychologist E. Thorndike initiated the study of instrumental conditioning with puzzle box experiments on cats. American psychologist B. F. Skinner conducted a series of experiments on animals and prepared ground for the application of those principles in human learning.
   (iii) **Chain learning:** Chain learning consists of motor and verbal chaining. *Verbal chaining* is connecting together, in a sequence, two or more previously learnt stimulus responses (S's - R's), in which the first member or element of the sequence seems firmly tied with the second. Some examples are:

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a boy and a girl, daddy and mummy, horse and buggy, among others. *Motor chaining* may be illustrated with the stimulus response connections in the process of unlocking a door: (a) Key in hand, (b) Facing the lock, (c) Checking the side of the key to be inserted, (d) Inserting the key into the lock until the end of the lock is reached, and finally, (e) Pushing the door to open it. However, it must be remembered that for establishing a chain, one must be capable of performing the individual links.

(iv) **Verbal associate learning:** Verbal associate learning can be explained by the following example: A child is shown an object, say a doll. The next time he sees this particular object, he will be able to say that it is a 'doll'. Thus, two chains are involved here:

(a) Observing response (Ss-R) connection that connects the appearance of the object and distinguishes it from other objects, .

(b) Ss-R connection that stimulates the child himself to say 'doll'.

S	□	**R**	**S**	□	**R**
Object		Observing	Doll		Doll

(v) **Discrimination:** When a behaviour shows a specificity of response to one given stimulus to the exclusion of others, we may say that discrimination has taken place. From the very beginning, an infant learns to discriminate between a feeding bottle and a simple bottle, between walking and talking, and so on. Gradually, the child learns to discriminate more objects and ideas. Discrimination involves higher mental processes. In discrimination, the emphasis is not on the stimulus side but on the response side and in differentiation.

(vi) **Concept learning:** In concept learning, we deal with a set of objects as the stimuli. We form concepts by finding properties which a set of objects have/share in common. Thereafter, we learn generalizations within groups and gradually learn to discriminate between them. First, we learn about a dog, then various breeds of dogs and then cats, and so on.

(vii) **Learning of principles:** Learning of principles depends on learning of concept formation and other forms of learning. Principles denote regular relationship among two or more concepts.

(viii) **Problem-solving:** Problem-solving comes at the higher stage in the hierarchy of learning process. In fact, all the earlier steps lead to problem-solving.

Factors Affecting Learning

There are essentially four interrelated factors which affect learning. These are as follows:

1. Psyche of the Student

The student is the subject who has to learn. It is the student's state of being which is most important to study. This state is affected by the student's will to learn, his or her ability or disability, if any, which assists or prevents learning, memory or power of retention, attention and capacity to recapitulate. These are traits of the child which affect learning. The barriers of language caused by numerous movements and migrations in today's volatile environment can have a significant adverse affect on learning if there are frequent changes in language or medium of instruction.

2. School Atmosphere

The school includes the following three important contributors to the learning process:

(i) Overall School Environment

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Meaning of school ethos: School ethos implies moral nature or environment of the school, its guiding principles, its distinguishing character and its sentiment.

The concept of an ideal ethos for a school has been beautifully summed up by well-known educationist Dr S. Balakrishna Joshi as, 'A school is not a mere brick and mortar structure housing a miscellany of pupils and teachers; a school is not a market place where a heterogeneous crowd gathers with diverse objects; a school is not a rigorous reformatory where juvenile suspects are kept under vigilant watch. A school is a spiritual organism with a distinctive personality of its own; a school is a vibrant community centre, radiating life and energy all round; a school is a wonderful edifice, resting on the foundation of goodwill—goodwill of the public, goodwill of the parents; goodwill of the pupils. In a word, a well conducted school is a happy home, a sacred shrine, a social centre, a state in miniature and bewitching Vrindavan, all beautifully blended into a synthetic structure.'

It is not without reason that the Education Commission, 1964–66, observed: 'The destiny of India is now being shaped in its classrooms. On the quality and number of persons coming out of schools and colleges will depend our success in the great adventure of national reconstruction.'

(ii) Class Environment

Meaning of Classroom Climate: Classroom climate implies classroom environment in which change of behaviour or learning takes place through interaction in the group. It consists of students of various shades and the teacher who is the leader of the group. The mental health of the group is an important factor in the process of learning. As a leader, the teacher is expected to create a democratic environment. His democratic behaviour in the classroom can steer constructive and inspirational individuals as well as group activities in the right direction.

General Suggestions for Creating Democratic Climate: Apart from the above mentioned factors for creating a democratic classroom climate, the following suggestions should prove very useful:

1. It would be desirable for a teacher to throw some light on the qualities of leadership so that students choose their leaders wisely and the teacher is able to influence the class through its leaders. However, it must be stressed that a teacher must remain neutral in the selection of leaders.
2. The behaviour of the leader of the group is imitated by the members of the group.
3. Suggestion plays a big role in influencing the group behaviour. The suggestions put forward by the leader of the group are readily accepted.
4. The recent studies have made it clear that for bringing about changes in the individual, we must bring about changes in the characteristics of the group. The teachers, therefore, should adopt appropriate group methods in the class and through these influence the attitudes of the members of the group. Group training is better than individual training.

(iii) The Teacher

Teacher's Personality: It has been rightly observed. 'While books can teach, only personality can educate.' A good personality includes:

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(a) Impressive Appearance

(b) Modulated Voice

(c) High Character

(d) Effective Power of Communication

Personality of the child in the desired dimension cannot be developed if the teacher who is the model to be followed lacks personality. Children are imitative and suggestive by nature. They imitate the dress, voice, habits and manners of their teachers. On several occasions, the likes and dislikes of teachers become the likes and dislikes of their students. Children who are in the plastic period of their lives are easily influenced by their teachers. 'Man, know thyself' is the advice given by sage Yajnavalkya in India and the philosopher Socrates of Greece. The teachers must undergo a spiritual inner training. They should try to find out their own shortcomings and remove them.

Teachers should practice the following:

(a) *Dynamic Methods of Teaching:* The Secondary Education Commission (1952–53) has very rightly observed, 'Every teacher and educationist of experience knows that even the best curriculum and the most perfect syllabus remains dead unless quickened into life by the right methods of teaching and the right kind of teachers.'

Some specific group techniques which could be used for the improvement of the group are as follows:

(i) Buzz session, in which a small group of five or six students participate, is organized for purposes of stimulating discussion.

(ii) Role playing, in which problems of handling a situation are dramatized for the benefit of the group.

(iii) Brainstorming, in which a group is organized for stimulating discussion.

(iv) Catharsis, in which a planned group expression of problems of concern to the group is provided.

(v) Recreational experiences, in which opportunities are provided for participation in dramatics, picnics, parties, and so on, to improve morale.

(b) *Effective interpersonal communication:* Good teaching is interpersonal communication. Teaching is a two-way communication. As the name indicates, interpersonal communication is the presence of the facility to seek reactions, information, and so on. One way communication, i.e., telling or lecturing by the teacher, denies the facility to the learners to seek clarification, confirmation, and so on. The learners do not get the opportunity to develop interpersonal relationships. Interpersonal communication has a built-in system of feedback. It ensures that further information and clarification are provided wherever possible. The receiver or the learner gets an opportunity to understand the message or the content of the communication.

Healthy interpersonal communication is the sound basis of sound instruction or teaching.

(c) *Ego-involvement:* The personality of the child should be given due recognition. Well-known educationist Emerson has observed, 'The secret of education lies in respecting the pupil.'

(d) *Constructive and creative discipline:* The teacher should have a sympathetic but firm attitude towards his charges.

(e) *Learning combined with creative humour and appropriate laughter:* An experienced teacher once observed. 'I consider a day's teaching–learning wasted, if we do not have a hearty laugh.'

(f) *Teacher as a guide:* Eminent philosopher and nationalist Sri Aurobindo writes in the regard, 'The first principle of true teaching is that nothing can be taught. The teacher is not an instructor or a taskmaster, he is a helper and a guide. His business is to suggest and not to impose. He does not impart knowledge to the pupil: he shows him how to acquire knowledge for himself.'

3. The Home Environment

The environment at home is the next important factor which affects learning. Stressed or disturbed atmosphere, family discords family feuds and similar tension-inducing situations at the home have a serious negative impact on the learning process as they cause anxiety, divert attention, dilute focus and disrupt learning. The education level of parents, the time and energy they devote towards the child and the assistance they provide have a direct effect on the learning process. The home and the neighbourhood where the child spends the after-school hours can have both a positive and the negative affect on learning. A healthy atmosphere around the home, the general health pattern within the home, sickness and disease—all such things can affect concentration and, ultimately, learning.

4. Socio-Economic Factor

This is another factor which comes into play in the modern world which impacts learning. Students come from various backgrounds. Some are poor, while others come from affluent households. Students from affluent backgrounds will most likely have more educational support and resources to help them through school and college. Often, these neighborhoods have more tutoring support, after-school activities and bookshops than middle class or poor neighborhoods. The availability of new technology affects faster access to knowledge and resources and, thus, has an impact on learning. Therefore, economic status and environment makes a lot of difference to the overall learning process.

Phases of Learning

Figure 4.1 shows the processes or different phases of learning. Obviously, the learning sequence depends upon what is initially attended to by the learner. All signals could not be received. Our perception is selective and dependent on motivation, on prior knowledge and on features of the external stimuli, like intensity and suddenness. The first process illustrates one act of learning. The second adds the phase of transfer and reinforcement which link up bits of learning into systems. All these processes can happen naturally.

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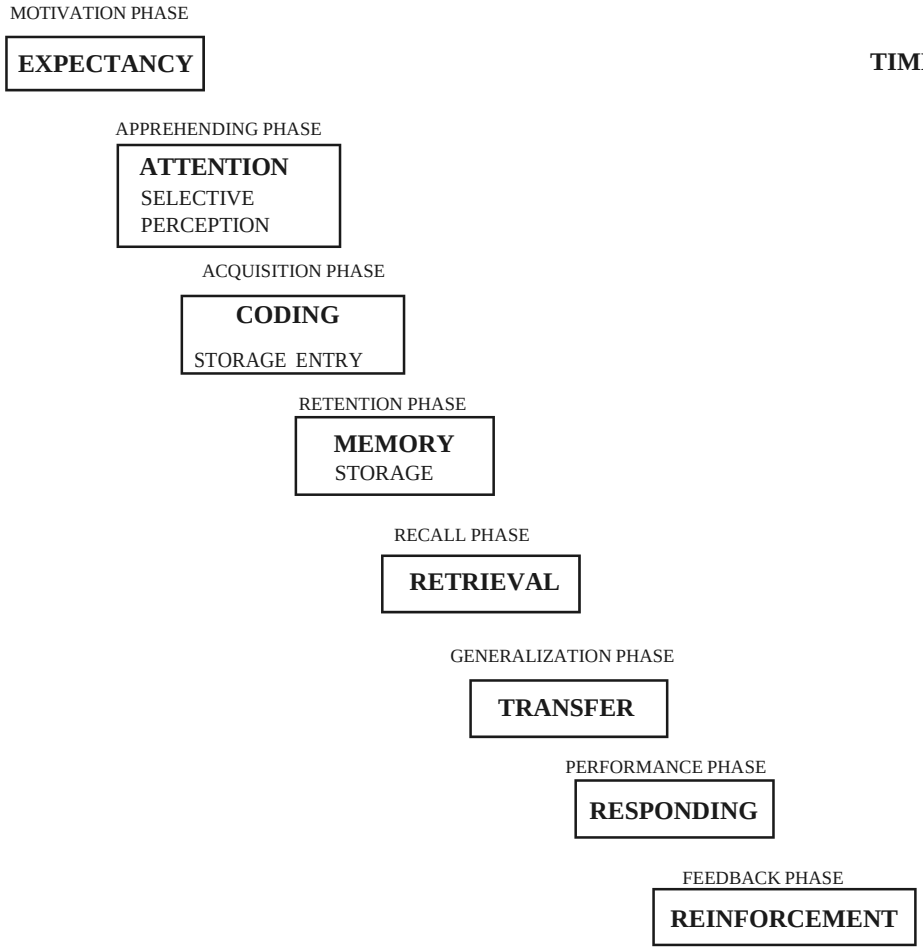

Fig. 4.1 *Phases of an Act of Learning and the Process Associated with Them*

According to Gagne, three aspects of teaching can benefit from such knowledge: first, the planning of courses, curricula and lessons; second, the conduct of instruction; and third, the assessment of what has been learnt. Gagne observed, 'When teachers verify their activities against the standards of learning theory, they are accomplishing two highly desirable things. First, they are avoiding the grossly inappropriate actions which although seemingly desirable on other grounds, nevertheless, fail to promote learning in students. And second, they are adopting and maintaining attitudes which support learning as the central purpose of their activities. In the face of many potential distractions in the practice of teaching, the teacher keeps student's learning as a primary focus of concern.'

LAWS OF LEARNING

What does the procedure of learning comprise? How does learning help an individual through a set of facts and figures, skills, habits, interests, attitudes and similar other things in life? Such questions have always been a subject of enquiry and investigation for psychologists, and as a result, a number of theories have come into existence. These theories may be broadly classified under two major heads:

(i) Connectionist or behaviourist theories

(ii) Cognitive theories

Check Your Progress

8. Mention any five characteristics of learning.
9. What factors affect learning?

Connectionist or behaviourist theories belong to school of behaviourism. They interpret learning in terms of connection or association between stimulus and response. Under this category, we may include theories, such as Thorndike's theory of trial and error learning, Guthrie's continuity theory of learning, Hull's drive reduction theory of learning, classical and operant conditioning, and so on.

Cognitive theories, in a different way, belong to the school of *Gestalt* psychology and cognitive psychology. In place of a purely mechanical or instrumental approach, these theories emphasize the role of purpose, insight, understanding, reasoning, memory and other cognitive factors in the process of learning. Under this category, theories including the theory of insightful learning, Lewin's field theory of learning, Tolman's sign learning, and so on, may be included.

Let us now discuss these behaviourist and cognitive theories of learning.

Theory of Connectionism

E. L. Thorndike (1874–1949) was the first psychologist who introduced the concept of reward in learning. Earlier psychologists had made systematic observations of animals but Thorndike was the first to study the subject of learning systematically, using standardized procedures and apparatus.

He is considered the pioneer of Connectionism theory. In this theory, emphasis is laid on the control of the consequences that follow a response. Responses which are followed by satisfaction or pleasure are reinforced and have a higher probability of being repeated in the future. All learning, according to Thorndike, is the formation of bonds or connections between Stimulus and Response (S-R). The process of forming connections depends on a number of variables which operate in the environment and the organism. To prove his theory, he conducted a series of experiments on a cat confined to a puzzle box. He formulated three basic laws and five supplementary principles of learning on the basis of his study of the cat's behaviour during the puzzle box experiment.

The puzzle box experiment

A hungry cat was confined to a puzzle box and a dish of food was kept outside the puzzle box. The cat needed to pull a lever to come out of the box. The cat, inside the box, made several random movements, such as jumping, clawing and running, to get out of the box. At last, it succeeded in locating the lever and pulling it. The door of the puzzle box opened, the cat came out and ate the food.

Thorndike repeated this experiment with the cat many times. Initially, the cat again displayed frantic behaviour but it soon succeeded in pulling the lever. Over a series of successive trials, the cat became increasingly efficient in getting out of the box. Thorndike's cat showed slow, gradual but continuous improvement in performance over successive trials. He concluded that the learning of the cat in the puzzle box can be explained in terms of formations of direct connection between the stimulus and the response.

Thorndike's Laws of Learning

Thorndike propounded the following laws of learning based on his theoretical notions about the learning process:

(i) The law of readiness

When any unit of transmission is ready for transmitting, it gets its satisfaction by transmitting. When any unit that transmits is not ready to transmit, it will not transmit

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satisfactorily. This law is indicative of the learner's state to participate in the learning process. **Readiness**, according to Thorndike, is preparation for action. It is essential for learning. The learning of a child is rapid if he is prepared to learn. He displays effectiveness along with a high level of satisfaction in comparison to the time when he is not inclined to learn. This shows us not to force the child to learn if he is not ready and not to miss any opportunity of providing learning experiences, if the child is prepared to learn. The right moments concerning the learning situation and the learner's mental condition should be recognized. The teacher should make maximum use of this knowledge. The teacher should also make an attempt to motivate the students by simulating their attention, interest and curiosity.

(ii) The law of effect

In the words of Thorndike,

> 'When modifiable connection between stimulus and response is made and is accompanied or followed by a satisfying state of affairs, that connection's strength is increased. When made and accompanied or followed by an annoying state of attention, its strength is decreased.'

In other words, learning can be referred to as proper, when the outcome is satisfactory and it contains pleasure for the learner. In the situation when the child fails to achieve the objective of learning or is not satisfied, the development of learning is interrupted. Every pleasing occurrence has an impact that lasts long and this impact is retained in the mind for a long time. On the other hand, experiences that are not pleasant are retained only for a short while. Therefore, satisfaction and dissatisfaction, pleasure or displeasure resulting from a learning experience decides the degree of its effectiveness.

This law emphasizes the role of rewards and punishment in the process of learning. Getting a reward in return for some learning motivates and encourages the child to proceed with increased intensity and enthusiasm. On the other hand, punishment of any kind discourages him and creates an aversion for that learning.

(iii) Revised law of effect

Based upon his later researches, Thorndike, after 1930, realized that his law of effect was not correct. He found that while a pleasant or satisfying situation resulted in the strengthening of the connection between stimulus and response, an unpleasant or annoying situation did not necessarily decrease the strength of this connection. From this, he concluded that while reinforcements in the form of reward or incentive increase the strength of the S-R connection, unpleasant experiences in the form of pain or punishment do not necessarily weaken it. Thorndike's view regarding the effectiveness of negative measures like punishment in the breaking of undesirable habits and behaviour modification revolutionized the task of rearing and education of children.

The teacher can use this law in the classroom learning-teaching situation in the following way:

1. The classroom experiences should be satisfactory and pleasant. The student must enjoy the lessons.
2. Learning experiences, including activities, must be meaningful and relevant in terms of the personal life of the learners.
3. Activities must be arranged in increasing order of difficulty to ensure that there are few, if any, fallbacks in the progress of the student.

4. There should be ample provision for guidance, praise and encouragement so that the student derives pleasure and satisfaction from learning.

(iv) The law of exercise

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This law has two sub-parts: the law of use and the law of disuse which may be stated as follows:

As generally observed, the law of use means making a connection strong with the help of practice and the law of disuse means to make a connection weak or forgetting it when its practice stops. It can be said in short, that the law of exercise as a whole emphasizes the need for repetition.

(v) Revised law of exercise

After 1930, Thorndike revised not only the law of effect but also the law of exercise. Further work and experiments on the law of exercise demonstrated that both the laws of use and disuse do not work as effectively as propounded by him earlier. He later held that use in the shape of mere repetition does not result in effective strengthening of the connection, nor does the disuse of lack of practice result in the total weakening of the connection. Mechanical use or disuse, therefore, does not necessarily lead to effective learning or total forgetting. Thorndike may, thus, be said to have discarded the law of use and disuse after 1930.

All these three laws, namely the law of readiness, the law of effect and the law of exercise are significant in many kinds of learning in life. The laws may be applied to the following proverbs and maxims: 'You can lead a horse to the water but you cannot make it drink.' 'Nothing succeeds like success.' 'Practice makes a man perfect'.

Further, Thorndike's idea of connectionism led to the enunciation of the following important laws:

The teacher can use this law in the classroom learning-teaching situation in the following way:

1. More opportunities should be given to the students to apply and repeat the knowledge they get in the classroom.
2. To maintain the connections for a longer period, review of the learning material is necessary.
3. Reinforcement exercises strengthen the bond between S-R. These exercises play an important role in elementary classes in the memorization of multiplication tables, alphabets, and meaning and spellings of words. Thorndike believed firmly in the power of reinforcement exercises and recommended it especially for younger children.

(vi) Law of multiple response or varied reactions

This law implies that when a person comes across new circumstances, he/she exhibits different types of responses. He responds in a variety of ways trying different options before he arrives at the right option.

(vii) Law of attitude

Learning is guided by a total attitude or behaviour of the organism. The learner exhibits correct performance of the task if he has a positive attitude towards the task.

(viii) Law of analogy

An individual's response to a new scenario is based on his/her responses in similar situations during the past, i.e., he makes responses by comparison or analogy.

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The law of analogy propounded by Thorndike led to his famous 'identical elements theory' of the transfer of learning or training, which states that transfer from one situation of learning to another depends upon the extent and number of elements or components that are common to both situations. It also matches the concept of generalization, according to which the similarity of the learning situation or elements increases the likelihood of similar responses.

(ix) Law of associative shifting

This law states that, 'Any response may be elicited from the learner of which he is capable, in associating with any situation to which he is sensitive.' In other words, the possibility of any response can be attributed to any stimulus. Thorndike clarified his stand through an experiment in which he demonstrated how a cat can be trained to stand up on command. To begin a number of trials, a stage would come when it would not be necessary to show the fish. The oral signal or command alone will then evoke the response. The idea, elaborated by this law, created a new theory of learning, which is know as the theory of conditioning.

Thorndike's contribution in the field of learning

Thorndike's theory of trial and error is of great significance in the field of education. It explains the process of learning among animals and human beings on the basis of actual experiments. Not only human learning but animal learning also follows the path of trial and error before arriving at the correct solution. Even discoveries and inventions in the various fields of knowledge are the result of the trial and error process.

For example, Archimedes was confronted with a problem set by his emperor who ordained that he would be beheaded if he failed to find the solution to a problem. He experienced a mental 'block' and could not think of any solution. The problem was difficult. He continued experimenting and underwent numerous attempts (trials) to solve the problem. One day, while having a bath, he accidentally found the solution, which lead to the formulation of the law of floating bodies.

Excessive use of the method of trial and error, without the development of a logical line of thought should not, however, be encouraged under any circumstances. We cannot reduce human learning to a mechanical and random process as advocated by this theory. It must be supported by reason, understanding and insight. Trials and practice coupled with insight will make the process of learning more effective than either of the methods adopted singly.

Thorndike's laws of learning carry some useful implications. These are as follows:

- If one wants to learn something, one should prepare oneself for it by first understanding its importance with the help of an instructor or a teacher. In addition to this, in order teach effectively, one must try to prepare the learner by bringing the mechanism of motivation into play.
- In order to learn or teach, we must first identify the aspects that are to be remembered as well as those that may be forgotten. After this, we may try to strengthen the likes or connections between the stimuli and responses or those

things that are to be remembered through repetition, drill and reward. In order to forget, the connections should be weakened through disuse and unpleasant results.

- Any information being taught or learnt at any one time should be linked with past experiences with learning on the one hand and future learning on the other, in order to benefit from the mechanism of association, connection or bonds in the process of learning.
- The learner should try to see the similarities and dissimilarities between different kinds of responses to stimuli and by comparison and contrast try to apply the learning from one situation to another similar situation.
- The learner should be encouraged to perform the task independently. He must try various solutions of the problem before arriving at the correct one. However, in every, case he/she should be careful not to waste time and energy by proceeding blindly and repeating errors.

In short, Thorndike's theory of trial and error learning and his laws of learning have contributed significantly to the field of learning. It has made learning purposeful and goal-directed and has emphasized the importance of motivation. It has also given an impetus to drill and practice.

Theory of Classical Conditioning

While studying the functioning of the digestive system, a Russian psychologist named Ivan Pavlov (1849–1936) encountered an unforeseen problem: the dogs in his experiment salivated not only upon actually eating but also when they saw the food, noticed the man who usually brought it, or even heard his footsteps. Pavlov began to study the phenomenon, which he termed as 'conditioning'. Due to the type of conditioning emphasized by other psychologists at a later stage, it has been renamed as classical conditioning. To understand the nature of the process of conditioning, let us discuss the type of experiments performed by Pavlov.

In one experiment, Pavlov used a dog, which was made to starve for a few days and he was tied to the experimental table. This table had a certain mechanically controlled device attached to it. The dog was kept in comfort and away from any distraction. The observer also hide himself from the dog and used mirrors to observe the experiment. The dog was fed with the help of an automated mechanism. Pavlov also arranged for a bell to ring every time food was presented to the dog. Whenever the food was put across to the dog and the bell began to ring, the dog automatically began to secrete saliva from his mouth. The action of giving food to the dog along with the ringing of the bell was repeated many times. The amount of secretion of the saliva by the dog was measured.

After a number of repetitions, Pavlov stopped giving food to the dog. However, he continued to ring the bell. Under these circumstances too, the amount of saliva that the dog secreted was measured and a note was made of it. The findings pointed to the fact that even when the food was not present (natural stimulus), the sound of the bell (an artificial stimulus) resulted in the dog secreting saliva (natural response). A diagrammatic representation of the experiment is presented in Figure 4.2.

Natural or unconditional stimulus (presentation of food)

Natural or unconditional response (salivation)

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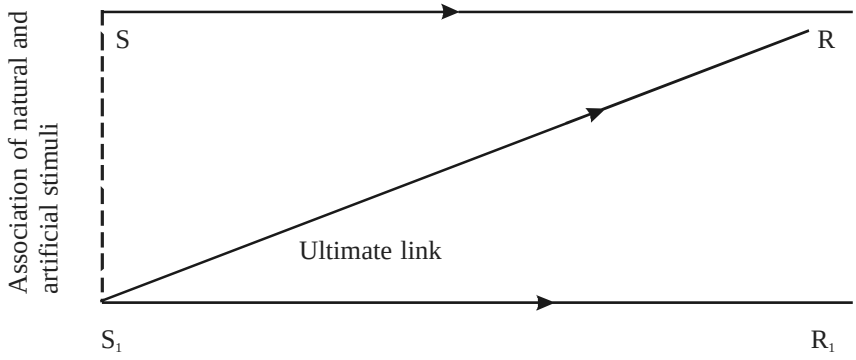

Arterial or conditional Stimulus (Ringing of the bell)

(General alertness)

Fig. 4.2 *Theory of Classical Conditioning*

The above experiment, thus, brings to light four essential elements of the conditioning process. The first element is a natural stimulus, technically known as unconditioned stimulus (US), i.e., food. It results in a natural response called the unconditioned response (UR). This response constitutes the second element.

The third element is the artificial stimulus, i.e., the ringing of the bell, which is technically known as a conditioned stimulus (CS). It is substituted for the natural stimulus (food). To begin with, the conditioned stimulus does not evoke the desired response, i.e., the conditioned response (CR). The fourth element is the chain of the conditioning process. However, as a result of conditioning, one learns to produce behaviour in the form of a conditioned response to a conditioned stimulus.

The theory of conditioning as advocated by Pavlov, thus, considers learning as a habit that is formed and based on the principle of association and substitution. It is simply a stimulus-response type of learning, where natural stimulus like food, water, sexual contact, and so on, is replaced by an artificial stimulus like the sound of the bell, sight of light of a definite colour, and so on, which can give rise to a natural response. In cases where both, the artificial or natural stimulus (ringing of the bell) and the natural stimulus (food) come together frequently, the dog gets trained or familiar in responding to this situation. A perfect relation is established between the different types of stimuli that work in synchronization. Consequently, after a while, an artificial stimulus replaces or substitutes the natural stimulus. This artificial stimulus has the ability to evoke a natural response.

John Watson and the Theory of Conditioning

John Watson (1878–1958), the father of behaviourism, supported Pavlov's ideas on conditioned responses. Through his experiments, Watson tried to demonstrate the role of conditioning in producing as well as eliminating emotional responses, such as fear.

In one of his experiments, Watson used an 11-month old child named Albert as his subject. He gave the baby a rabbit to play with. The baby started to develop a

liking towards the rabbit and was happy to feel its fur. He carefully observed the pleasant responses of the baby. After a while, whenever the baby touched the rabbit, it emitted a loud sound to scare the baby. The loud noise was repeated every time he tried to touch the rabbit, and this gave rise to a reaction influenced by fear. As a result of this, the rabbit became an object of fear for the baby, even when no loud noise was emitted when it touched the rabbit. This is how the baby became conditioned, developing a feeling of fear towards the rabbit.

In another experiment, a child named Peter who was afraid of rabbits was used as a subject. At first, the rabbit was placed at a distance from the boy so that it would not pose a threat, but gradually on each successive day, the distance was reduced. Eventually, the rabbit was placed on the table where Peter was eating and then on his lap. Having associated the rabbit with the pleasure of eating, the child lost his fear and began to touch its fur and play with it. Thus, through a simple treatment of conditioning, the child learned not to fear the rabbit. It is a learning process, whereby an artificial or conditioned stimulus has the ability to function similar to a natural stimulus, when both natural and artificial stimuli are presented together. This is the type of learning where association has a major role to play because the individual responds to an artificial stimulus as he tends to link it with the natural stimulus.

The **conditioning theory of learning** put forward by Watson and Pavlov actually involves the conditioning of respondent behaviour through a process of stimulus association and substitution. Here the learner's response becomes so conditioned by repeating the same behaviour or responding in the same way to similar situations that he no longer needs the natural stimuli to evoke the related natural response. Consequently, the new substituted stimulus exhibits a behaviour, which is similar to that of the original stimulus and is able to evoke the desired response.

Principles of classical conditioning

The theory of classical conditioning emphasized by Pavlov and Watson gave birth to a number of important concepts and principles in the field of learning that are as follows:

(i) **Extinction:** It was noted by Pavlov that if the conditioned stimulus (ringing of the bell) is presented alone a number of times without the food, the magnitude of the conditioned response of salivation begins to decrease. This process in which conditioned response disappears gradually, or S-R association is disconnected is known as **extinction**.

(ii) **Spontaneous recovery:** It was also discovered by Pavlov that after extinction, when a conditioned response is no longer evident, the behaviour often reappears spontaneously but at a reduced intensity. This phenomenon—the reappearance of an apparently extinguished conditioned response (CR) after an interval in which the pairing of conditioned stimulus (CS) and unconditioned stimulus (US) has not been repeated—is called spontaneous recovery. The process of spontaneous recovery shows that somehow, learning is suppressed rather than forgotten. As time passes, the suppression may become so strong that there would, ultimately be no further possibility of spontaneous recovery.

(iii) **Stimulus generalization:** Pavlov's dog exhibited accustomed reaction (salivation) not when he saw food but when he reacted to every stimulus like the ringing of the bell, emergence of a source of light, sound of the footsteps of the feeder, and so on, anything related to its feeding. Similarly, Watson's boy Albert showed fear not only of touching a rabbit but also of the mere sight of a rabbit, a white fur coat

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and even Santa Class whiskers. Responding to the stimuli in such a generalized way was termed as stimulus generalization with reference to a particular stage of learning behaviour in which an individual is once conditioned to respond to a specific or an instance of similar nature.

(iv) **Stimulus discrimination:** Stimulus discrimination is exactly the reverse of stimulus generalization. Here, in sharp contrast to responding in a usual fashion, the subject learns to react differently in different situations. For example, the dog may be made to salivate only at the sight of the green light and not of the red or any other light. Going further, the salivation might be elicited at the sight of a particular intensity of light or brightness of the green light. In this way, by going through the mechanism of stimulus discrimination one gets to learn how to reach the correct and appropriate stimulus, out of a number of stimuli and to distinguish and differentiate one from the other out of a number of stimuli that are available in our surroundings.

Implications of classical conditioning

In our day to day life, we are usually exposed to simple classical conditioning. Fear, love and hatred towards an object, phenomenon or event are created through conditioning. Let us take the case of a father, who, on coming home from office, always rebukes and punishes his child without caring to know the basic reasons that may condition his child to fear him. The child may further develop anxiety reactions at the time of his return to home. The child may further develop a feeling of hatred towards his father or even discontent and a hostile attitude towards his home. Similarly, a teacher with his defective methods of teaching or improper behaviour may condition a child to develop distaste and hatred toward him, the subject he teaches and even the school environment. On the contrary, affection, a loving attitude and sympathetic treatment given to the child by parents at home or by teachers at school may produce a desirable impact on him through the process of conditioning.

Most of our learning is associated with the process of conditioning from the beginning. A child learns to call his father 'daddy' and his mother 'mummy' through the process of conditioning, i.e., stimulus-response attribute the name of daddy to all adult males and mummy to all adult females. Gradually, he comes to the stage of stimulus discrimination and then learns to discriminate and recognize different names of different persons, animals and objects. This phenomenon of stimulus generalization and discrimination goes on up to quite a later stage in our life. Often we meet a person and dislike him or her at first sight merely because that individual reminds us of someone else we do not like. Similarly, many people do not like to mix with people belonging to another faith, religion or caste and often develop a feeling of hatred and animosity towards them even if they have not directly had any unpleasant experiences.

What is termed as abnormality in one's behaviour may be, to a great extent, taken as learning. This learned pattern of one's behaviour is acquired through conditioning. For example, a child may be conditioned to develop fear or dislike of dogs. He may become so frightened of dogs after being bitten by one that he may become reluctant to venture out alone. In a more complex case, a young woman who has had several unfortunate encounters with adult males may become so conscious in the presence of any adult male that she may be unable to have any normal social relations with them.

Thus, much of our behaviour in the shape of interests, attitudes, habits, sense of application or criticism, moods and temperaments is fashioned through conditioning. The

process of conditioning, not only helps us in learning what is desirable but also helps in eliminating, avoiding or unlearning of undesirable habits, unhealthy attitudes, superstitions, fears and phobias through reconditioning. An individual who hates a particular person or object may be made to seek pleasure in their company. Another individual who thinks it is a bad sign if a black cat crosses his/her path can be made to give up his superstitious belief.

Operant Conditioning

Although identified as and regarded in the category of conditioning operant, this type of conditioning is highly different from the classical conditioning, which Pavlov and Watson advocated. The biggest differing factor lies in the order related to imitations and response, i.e., stimulus-response mechanism. In classical conditioning, the organism is passive. It waits for an action to give a reaction. It is important for a stimulus to be present to evoke a response. The behaviour cannot be initiated when there is no cause present. The child gets scared only when he hears a loud noise; the dog does not salivate before the arrival of food. In these types of cases, the subject cannot influence or change whatever is happening. His/her behaviour is a form of response to the stimulus situations. Thus, the environment initiates the subject's behaviour and the organism simply responds.

There was a revolt from Skinner against the no stimulus—no response mechanism in the evolution of behaviour. He put across an argument that in practicality, it is not always possible to wait for things to happen around us. Man is not victimized by the environment. He may often manipulate the environment. Man is not a victim of the environment. It is likely for him to usually manipulate the environment by using his own initiative. Therefore, the existence of some known stimuli or cause for evoking a response is not always necessary. Generally, a large number of our responses cannot be attributed to the known stimuli. The organism itself initiates the behaviour. A dog, a child, or an individual 'does' something, 'behaves' in some manner, and 'operates' on the environment which in turn responds to the activity. The response of the environment to the activity, whether it is rewarding or otherwise, has a major effect on whether the behaviour will be repeated, maintained or avoided.

A question which may be asked at this stage would be: What source gave Skinner the cues for such ideas? Beyond doubt, the source can be attributed to the studies and observations of an earlier psychologist named Edward Lee Thorndike. His experiments propagated his famous trial and error theory of learning. It was Thorndike's conclusion that the rewards of a response (like getting food after a chance success through the random movements) led an act to be repeated and S-R associations to get stronger. These inferences motivated Skinner to start a series of experiments to get a confirmation of the results in terms of repetition and maintenance of behaviour. On the basis of the outcome of his experiments, he came to decide that its consequences shape and maintain behaviour. An organism operates it and its results maintain it. When this type of behaviour occurred, it was known as operant behaviour and the process of learning that played an important role in learning such behaviour was termed by him as operant conditioning.

For understanding the basis of Skinner's theory of operant conditioning, let us define and explain some of the concepts used by him.

Respondent and operant behaviour

As we have seen, the earlier theories of learning assumed the existence of a known stimulus as a necessary pre-requisite for evoking a response. Skinner, at first, put forward

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the idea that the majority of responses could not be attributed to the known stimuli. He defined two types of responses—the one elicited by a known stimuli, which he called 'respondent behaviour' and the other emitted by an unknown stimuli, which he called operant behaviour. Examples of respondent behaviour may include all reflexes, such as jerking one's hand when jabbed with a pin and the constriction of the pupils on account of bright light or salivation in the presence of food.

In respondent behaviour, the stimulus preceding the response is responsible for causing the behaviour. On the other hand, the stimulus causing operant behaviour is unknown and knowledge of the cause of the behaviour is not important. Here, the consequences of the behaviour are of greater significance and operant behaviour is controlled by the strength of its consequences rather than by the stimuli. Some common examples of such behaviour may include the arbitrary movement of one's hands arms or legs, a child abandoning one toy in favour of another, eating a meal, writing a letter, standing up and walking about and similar other every day activities.

Operant: Skinner considers an operant as an act in which an organism performs an activity, for example, raising the head, walking about, and so on.

Reinforce and reinforcement: The concept of reinforcement is identical to the process of presenting or removing anything that increases the chances of the repetition of a response. Skinner recognizes two types of reinforcements, positive and negative.

A positive reinforcement to behaviour is any stimulus, such as food, water, sexual contact, and so on. In the educational context, praise, grades, medals, and other prizes awarded to students are examples of positive reinforces.

A **negative reinforce** is any stimulus, the removal or withdrawal of which increases the likelihood of a particular behaviour. An electric shock, a loud noise, and so on, can be termed as negative reinforces. In the educational context, one example may be a teacher's saying to the students that whoever does drill work properly in the class would be exempted from homework.

Negative reinforces and punishment: These two terms should not be taken to have the same meaning. Whereas reinforces, positive as well as negative strengthen behaviour, punishment weakness it. Punishment has consequences, which are not reinforcing or, do not strengthen behaviour and aims at reducing behaviour by imposing unwelcome consequences. On the other hand, negative reinforces strengthen desirable behaviour by withdrawing unpleasant experiences. Here it should be noted that for a measure to be called a punisher it should invariably seek to reduce the frequency of a behaviour by the imposition or introduction of an unpleasant consequence. For example, in the case of a student who feels pleased about being outside the class instead of feeling bad, to turn him out of the class would not act as a punisher or a means of behaviour modification.

Schedules of reinforcement

Skinner introduced the idea of planning the schedules of reinforcements for acclimatizing the operant behaviour of an organism. Some important schedules are as follows:

(i) **Continuous reinforcement schedule:** This is a complete reinforcement schedule, where it is provided to reinforce or reward every correct response of the organism during the acquisition of learning. For instance, a student may be rewarded for every correct answer that is given by him to the questions or problems put across by his teacher.

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(ii) **Fixed interval reinforcement schedule:** In this schedule, the organism is rewarded for a response made only after a set interval of time, for example, every 3 minutes or every 5 minutes. The number of times he has given correct responses during this fixed interval of time does not matter; it is only at the expiry of the fixed interval that he is presented with some reinforcement.

(iii) **Fixed ratio reinforcement schedule:** In this schedule, the reinforcement is given after a fixed number of responses. A rat, for instance, may be given a pellet of an eatable after a lever is pressed for a fixed number of times. A student may be rewarded after the answer to a fixed number of questions, say 3 or 5 are correct. The **fixed ratio schedule** is used in some factories and by employers of casual workers or labourers, where wages are paid on a piece-work basis, i.e., the number of garments sewn or the number of baskets or boxes packed.

(iv) **Variable reinforcement schedule:** When reinforcements take place at different intervals of time or after a varying number of responses, the schedule can be termed as variable reinforcement schedule. In such cases, reinforcement is alternative or not constant. The most common example of such a schedule in human behaviour is the reinforcement operation schedules of gambling devices. Here, it is not possible to predict the rewards and keep the level of motivation high in players through occasional returns.

Constructivism

Constructivism is another popular learning theory. It deals with how people learn and assimilate external stimulus. The theory is largely based on scientific experiments and observation. As per this theory, people construct their own learning patterns based on their personal experiences and observations of the world around them. In other words, human beings *create* their own knowledge. We are constantly learning new things, forming connections between old and new knowledge, discarding useless information, questioning our observations, and assessing everything we absorb.

In practical terms, as far as the classroom is concerned, the constructivist theory can be applied to various teaching practices. Under the aegis of the this theory, students are encouraged to experiment and solve real-world problems through discussion and brainstorming. Teachers who apply the constructivist theory understand how important it is to challenge misconceptions and other preconditioning and steer the students to more constructive and positive learning reinforcement through practical teaching. In fact, constructivism tries to reach down into and set off the student's instinctive curiosity about their environment and its workings.

Constructivists have always been criticized by the more conventional or old-fashioned educators because the theory seems to undermine the role of a teacher or a subject-expert in the teaching process. However, constructivism does try to transform that role from that of a figure who encourages memorization of facts to a figure who becomes a mentor in the child's journey and provides tools that develop problem-solving skills, analytical capabilities, and creative problem solving. Using these tools the student can come up with new ideas and test their validity, arrive at their own conclusions and learn to make use of collective knowledge in a collaborative learning environment. Constructivism changes the student from being a passive absorber of facts to a dynamic participant in the teaching-learning process.

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Gestalt Theory of Learning

Gestalt is a German word whose equivalent in English is 'form' or 'pattern' or 'configuration'. Max Wertheimer has explained the term *Gestalt* as the whole is being greater than the parts, for example, a flower is just not a total of sepals, petals, calyx, corolla, colour, honey and fragrance. However, the total of the part is not equal to the whole. This is known as a *Gestalt* viewpoint. According to this view, learning is the organization and reorganization of behaviour that arises from the interaction of a maturing organism and its environment. It is the development through this interaction of new forms of perception, imagination motor coordination and other organic behaviour. The sudden appearance of a solution is an essential characteristic of insight learning. A sudden coherent pattern of a solution appears at once. The individual does not perform random activities, but preserves the situation as a whole, and intuitionally reaches the goal through an awakened insight by continuous, definite and seemingly purposive reactions. Insight is the perception of relationship between at least three factors, an agent, goal and intervening conditions or obstacles. An insight is often termed as the AHA experience, a flash of understanding that comes to us all of sudden. Insight, when it occurs, is characteristically accompanied by statements like 'I got it'.

The *Gestaltians* tend to place great emphasis on the intrinsic organizing capacity in the brain of the individual and emphasize on the dynamic interaction of the elements in the entire perceptual feel. The *Gestalt* theory of learning essentially consists of problem-solving by understanding the relative position of the elements in the entire perspective or situation. When a problem arises, it tends to disturb the equilibrium of the organism who seeks the balance and the organism. We are all now well aware that a moving picture, as in cartoons, is not moving but, a series of still pictures. The focal point of this theory is the fact that when two optical stimuli are perceived by the human eye in quick succession, the reaction is one of simultaneous patterning.

Principles of *Gestalt* theory

The *Gestaltians* have mentioned some laws involved in learning. The age at which memory develops is determined chiefly by the growth of a sufficient number of association fibers to bring about recall. There are different modes of connection or association among percepts and ideas. Suggestive force works according to certain laws that are as follows:

- **Law of similarity:** This makes the individual grasp things that are similar. These similar things are selected from the total context. Thus, similar ideas and experiences get associated together. An object receives another object that resembles it, for example, seeing a man and remembering an intimate friend by some resemblance in his personal appearance. A photo reminds us of the person who it represents.
- **Law of proximity:** According to this law, proximate or things lying close to each other are perceived as together. In other words, perceptual groups are favoured according to the nearness of their respective parts. Items tend to form groups if they are spaced together. For instance, the example of a triangle and a circle is enough to illustrate this point.
- **Law of closure:** The law of closure implies that closed areas are more stable and satisfying than unclosed ones. Closed areas more readily formed in groups. This law also means that when the perception of the situation is incomplete, the

individual is not able to solve the problem. The problem is solved when he is able to bring separate parts of the situation together into a closed perceptual figure, consisting of the goal, and the means of achieving the goal.

- **Law of continuity:** This law makes the individual grasp things that are joined together in a string or a line as opposed to objects that are disconnected, disjoined or scattered. In other words, experiences which occur together either simultaneously or in close succession, tend towards reviving one another, for example, the perception of a ripe mango suggests the idea of its sweet taste and flavour because they are perceived together in the past or the idea of an inkpot suggests the idea of a pen.
- **Law of contrast:** A perception or an idea tends to suggest its contrary opposite. For instance, adversity reminds a person of his days of prosperity. Similarly, the heat of the summer suggests the cold of winter. These laws of learning highlight *Gestalt's* viewpoint that the organizational capacity of the brain grasps the whole in priority to the parts.

Keeping in view these principles for learning, the teacher should present all curricular material to students in the form of simple, concrete and patterned units of experience that constitute a whole. Children should be taught a tune or a melody rather than separate notes, whole dance patterns rather than separate steps and simple meaningful sentences, rather than discreet words and meaningful words than separate letters for alphabets.

Educational Significance

Gestalt psychology's contribution to education lies in its concepts of the organization of stimuli and of insight. The world of the classroom in which the child is living and learning is not just a body of discrete stimuli nor is his responses to it those of trial and error adoptions. The world is organized; it has meaning. The child can react with understanding, he has insight. Arithmetic is not isolated fact but a system of numbers. History is not names and dates but a sweep of events through time, with one thing leading to or following another. The child can respond to 3 and 4 because he can add three and four. Learning is meaningful. So say the educators and so says *Gestalt* psychology.

Gestalt psychologists suggest educators to conceive the problem of learning in more comprehensive terms. The teacher should organize the learning situations so that significant relations emerge resulting in advanced levels of understanding. The learning experiences should be so arranged that the learner discovers and generalizes the relationship for himself. The subject matter should be organized into larger units or in meaningful wholes. The concept of unit planning is based on the same.

In most classrooms, the daily lesson plan is fragmentary. It may encourage mere accumulation of facts, principles, concepts and skills and the student fails to get a clear picture of the whole. A lesson of prose may be taught in four or five steps or periods. However, if the matter taught on the first day and the last day fail to connect in the mind of students they tend to get confused. It is thus said that the whole is not equal to its parts. Whenever students appreciate the beauty of a poem, the sip of a soft drink or the beauty of a song or picture, they appreciate as a whole. A flower is not merely equal to its various parts. Similarly, the taste of lemonade cannot be analysed based on coldness, yellowness and taste. Thus, it has been seen that for a more complete aesthetic appreciation, poetry should not be taught in the same manner as prose. It should be taught, as far as possible, as a whole, not merely as an amalgamation of meaning, grammar

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or translation. There is no clarity of connection between an activity and a goal, when the parts are offered one at a time, so that a view of the whole is not possible, when the level of performance is not in congruence with a student's equipment and experience, blunders occur and consume a lot of time and effort. However, the use of proper and graded steps and sufficient preparing of expectancy from one stage to another can reduce this to a bare minimum. The presence of blundering is thus a barometer that measures the intelligence of the teacher and not merely of the performer.

There are two important stresses with regard to the presentation of material. Firstly, where possible, visual presentations, outlines, maps, charts and graphs may be used. In short, devices that permit a survey of the whole problem, which bring out configurational and relational factors—simultaneously presenting what otherwise would remain discrete—have special value. A child who is learning about colours finds it difficult to dissociate the colour from the object itself. To overcome this difficulty, the teacher will have to discover the gaps that exist between the student's perceptual tendencies and that which appears to be clear and definite the experienced and intelligent. Secondly, there is an obvious difference between a 'psychological' and a 'logical' way of presenting. The logical process will begin from the smallest unit and from there the whole frame work of the object has to be elaborated, for example, in teaching 'matter' one will proceed as, sub electronic particles—electrons—atoms molecules—matter. However, satisfying this might look to an expert, who can appreciate the significance of each step of the process, the *Gestaltists* insist that it is not pedagogically sound.

The abstract conceptual items that govern the working of science are really the last items to result in knowledge. If this is correct, one should begin with the living totality and reach the last of all abstract formulations, the unitary process. We can further make this point clear by taking an example from geography. A teacher begins teaching geography by comparing the world map with an orange and explaining the relation between the sun and the earth. Now, on one hand, this represents one way where the whole is considered before its parts, on the other hand, it represents the worst possible use of the method. An orange has some meaning, but it fails to have the remotest connection with the problems of geography.

It would sound more meaningful to consider the world of the child, for instance, his own house and the houses around him or his school, home and surrounding area of the locality. These are complete units too and make sense to the child. These can be used to establish a basic foundation of geography.

A major point in this learning is that initial insight is only instinctive and automatic. This insight can be brought about through maturation, experience and good arrangement of the environmental forces. The teacher must postpone the task until circumstances are more propitious. If, for example, a child is unable to appreciate a poem, no amount of analysis into rhymes, schemes, grammatical constructions and similes will supply the want. Details must always follow general grasp or vague emotional insight. Further, since it is required for perceptual fields to take shape and relationships to appear, motivation is very critical. However, in this case, motivation is more important than just interest more than some impelling stimulation. It is more of the nature of expectancy, a goal orientation, an awareness of all but complete relationships.

Briefly speaking, this type of learning is very important in education because it discards the memorizer type of learning, it does not consume much time and emphasizes upon meaningfulness, organization and interpretation of the lesson. Here, the individual is engaged in a problem-solving environment that encourages reasoning, develops thinking

and trains imagination and creative activity of the child. Learning by insight can be cultivated. Thus, the teacher should emphasize it by encouraging, helping and guiding the child. This aspect of teaching is also called the Dalton plan or the project method by John Dewey and those who advocate creative activity.

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SUMMARY

- Educational psychology consists of two words—psychology and education.
- Educational psychology attempts to define, describe and explain the changes that take place in the learner through his various stages of development. It is the study of the human mind as it bears upon learning and teaching activities.
- Educational psychology provides to the teacher information on certain problems regarding the development of children. The teacher's effectiveness will depend on his own experience and approach towards educational problems.
- Educational psychology deals with the nature of the children and the environment, and both of these are unstable. A child may not behave the same way even in the same environment at different times. Educational psychology provides only the guidelines. Its generalizations are not as exact as the generalizations of natural sciences.
- Educational psychology employs various methods to improve the teaching-learning process in the classroom. It uses these methods to gather facts about the nature of children; how they learn and how they develop. It employs methods to know how any aspect of a child's personality, such as learning, social adjustment or skills, develop from the elementary stage to a complex one.
- Introspection is composed of two words, *intro* and *aspection. Intro* means *within* or *inward* and *aspection* means *looking.* Hence, the word implies self-observation or looking *within* or looking *inward* to experience 'one's' mental state. It is a process of examining one's mental process of thought, feelings and motives. An individual looks within, observes, analyses and reports his feelings.
- According to John Dollard, 'The primary research instrument would seem to be the observing human intelligence trying to make sense out of human experience.' Observation has been defined as 'measurement without instruments'. In education, observation is the most commonly employed method among all measurement techniques.
- A clinical study is the in-depth study of an individual in all its details. It helps to reveal the underlying causes of misbehaviour by careful observation of an individual. It provides insights into adjustment problems.
- The experimental method is generally regarded as the most sophisticated research method for testing hypotheses. In the words of W S Manro and M D Engelhast, 'Experimentation is the name given to the type of educational research in which the investigator controls the educative factors to which a group of children is subjected during the period of inquiry and observes the resulting achievement.'
- Learning is defined as a process that brings relatively permanent changes in the behaviour of a learner through experiences or practice. It can be classified into specific categories like trial and error, conditioning, insightful learning, serial learning,

Check Your Progress

10. Which are the four elements of the conditioning process?
11. Who is known as the father of behaviourism?
12. Name the two kinds of responses which Skinner defined?

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associate learning, chain learning, verbal learning of motor skills, effective learning, cognitive learning, and so on.

- Connectionist or behaviourist theories belong to the school of behaviourism. They interpret learning in terms of connection or association between stimulus and response. This category includes theories including Thorndike's theory of trial and error learning, Guthrie's continuity theory of learning, Hull's drive reduction theory of learning, classical and operant conditioning, and so on.
- Cognitive theories, on the contrary, belong to the school of *Gestalt* psychology and cognitive psychology. In place of a purely mechanical or instrumental approach, these theories emphasize the role of purpose, insight, understanding, reasoning, memory and other cognitive factors in the process of learning. Under this category, theories including the theory of insightful learning, Lewin's field theory of learning, Tolman's sign learning, and so on, may be included.
- Thorndike's theory of trail and error is of great significance in the field of education. It explains the process of learning among animals and human beings on the basis of actual experiments. Not only human learning but animal learning also follows the path of trial and error, before he arrives at the correct solution. Even discoveries and inventions in the various fields of knowledge are the result of the trial and error process.

KEY TERMS

- **Introspection:** The word implies self-observation or looking *within* or looking *inward* to experience 'one's' mental state. It is a process of examining one's mental process of thought, feelings and motives.
- **Cognitive theories:** These theories emphasize the role of purpose, insight, understanding, reasoning, memory and other cognitive factors in the process of learning.
- **Conditioning theory of learning:** It involves the conditioning of respondent behaviour through a process of stimulus association and substitution.
- **Extinction:** It is a process in which conditioned response disappears gradually or S-R association is disconnected.
- **Negative reinforce:** It is any stimulus, the removal or withdrawal of which increases the likelihood of a particular behaviour.
- **Gestalt:** It is a German word whose equivalent in English is 'form' or 'pattern' or 'configuration'.

ANSWERS TO 'CHECK YOUR PROGRESS'

1. Educational psychology deals with the conditions that promote or retard the development of the learner. Educational psychology attempts to define, describe and explain the changes that take place in the learner through various stages of development. Educational psychology investigates the methods and techniques of imparting education to the learner, discovers a number of general rules and applies these to the practical problems of learning.

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2. The three important characteristics of educational psychology are as follows:
   - It combines two fields, i.e., education and psychology.
   - It is the scientific study of human behaviour in educational situations.
   - It is one of the many branches of applied psychology.
3. Some of the ways how educational psychology helps are as follows:
   - It caters to individual differences.
   - Helps to understand the learners.
   - Helps to understand the developmental characteristics.
   - Helps to understand group dynamics.
4. The four methods of collecting data are as follows:
   - Introspection
   - Observation
   - Clinical
   - Scientific or experimental
5. Introspection is composed of two words, *intro* and *aspection. Intro* means *within* or *inward* and *aspection* means *looking*. It is a process of examining one's mental process of thought, feelings and motives. An individual looks within, observes, analyses and reports his feelings.
6. The different types of observation are as follows:
   - Participant observation
   - Non-participant observation
   - Structured observation
   - Unstructured observation
7. Clinical method is employed to an individual in cases when he/she has a problem. A clinical study is the in-depth study of an individual in all its details. It helps to reveal the underlying causes of misbehaviour by careful observation of an individual. It provides insights into adjustment problems.
8. The five characteristics of learning as follows:
   - Learning is growth.
   - Learning is adjustment.
   - Learning is experience.
   - Learning is purposeful.
   - Learning is intelligence.
9. The factors that affect learning are as follows:
   - Psyche of the student
   - School atmosphere
   - Home atmosphere
   - Socio-economic factor

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10. The four elements of the conditioning process are as follows: The first element is a natural stimulus, the second element is the unconditioned response, the third element is the artificial stimulus and the fourth element is the chain of the conditioning process.
11. John Watson (1878–1958) is known as the father of behaviourism.
12. Skinner defined two types of responses—the one elicited by known stimuli which he called 'respondent behaviour' and the other emitted by the unknown stimuli, which he called 'operant behaviour'.

QUESTIONS AND EXERCISES

Short-Answer Questions

1. State the importance of educational psychology.
2. What are the limitations of educational psychology?
3. List the different methods and techniques of collecting data.
4. What is learning?
5. Write a short note on the different factors that affect learning.
6. What are the different types of learning?
7. Which method of learning did Kohler draw attention of the people to?
8. Briefly mention the contribution of Pavlov in learning.

Long-Answer Questions

1. Discuss the focal areas and scope of educational psychology.
2. Explain the relevance of educational psychology for the people involved in teaching.
3. Write in detail any two methods of educational psychology.
4. Why is learning important for us?
5. Clarify Kohler's method of learning.
6. Mention the experiments of Pavlov in the field of conditioned response.
7. Summarize the contribution of Watson in learning.
8. Explain the laws of learning in the light of historical background.

FURTHER READING

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INTRODUCTION

Education aims at the all-round harmonious development of an individual. The development of a nation depends upon the development of its children and there is no doubt that childhood is the foundation upon which the development of an individual depends. Development of proper attitudes, habits and patterns of behaviour formed during the early years determine to a great extent how successfully an individual will adjust as he grows older. It is, therefore, imperative that the people who are responsible for the development of the child should be acquainted with the meaning and characteristics of development. Every child is unique. There are individual differences in children due to differences in development. In this unit you will learn about the different stages of human development.

UNIT OBJECTIVES

After going through this unit, you will be able to:

- Paraphrase the principles of heredity
- Explain prenatal development
- Explain the concept of infant development

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- Discuss emotional development in different stages of growth
- Discuss the different stages of motor development
- Identify different stages in transition from infancy to childhood
- Discuss intellectual and social development in adolescents

HEREDITY AND ENVIRONMENT

Development is not a random process. It is steady and a regular progression of a process. It follows a sequence in which development progresses from head to toe. In this pattern of proximodistal sequence, the process of development starts from the centre and gradually moves to the peripheries.

Growth is the cause of certain changes in an organism. However, these changes are not sudden occurrences. It is an ongoing process. Every part of the body keeps growing until it reaches its maximum limit of growth. This process goes on through infancy, early childhood, later childhood and so on. In the beginning years, the growth rate is more rapid and not uniform. However, as age increases, growth becomes slower.

During early years, brisk growth is more evident and as life progresses towards later stages, it becomes sluggish. Similar is the case of development, which is general in the beginning and later, it becomes specific. In its initial stage, a child's overall responses are general. Gradually the responses are reactions to specific stimuli.

Development of a child is greatly influenced by heredity and surroundings. Every child has some gift from his/her genes which are polished by interaction with the environment. Neither heredity, nor environment alone affects the development of a child.

Majority of the traits, like physical and mental development, are linked to each other. Achild who is physically healthy also has a healthy intelligence. Similarly, a healthy child will also have a positive sociability, attitude and aptitude. Nevertheless, this is only true in normal cases. Different parts of a body have different growth rates. When a child is born, its head is proportionally bigger than its body. Later, other parts of the body continue to grow rapidly till maturity.

This section discusses the development conception to birth in detail.

Conception to Birth

The conception process is very complex and important for understanding human development. Conception, also known as fertilization, begins with the fusion of an egg cell and a sperm cell, or gametes. At birth, a female has all the immature eggs that she will use throughout the course of her life. A male human being starts producing sperm when he reaches puberty (around 1,000 sperm in a second, but this rate slows as the male ages).

From 200 to 600 million sperm are released in the average ejaculation but a rare few make it to the actual egg, and only one sperm is needed to form a zygote (or a fertilized single-celled egg, the earliest form of human beings). As soon as that one lucky sperm begins to penetrate the jellylike outer coating of the egg cell, the egg becomes defensive and the surface of the egg cell hardens to block out any other sperm cell from penetration. The sperm uses digestive enzymes to work its way through the egg's surface.

Though a female is born with all her eggs, not all these eggs will reach maturity. Approximately only 1 in 5,000 of a female's eggs reach maturity. When an egg reaches maturity, that egg is then able to produce offspring.

Cell division

Once the zygote is formed, the cell goes into the division process. The first division is called mitosis. In mitosis, the zygote divides to form two identical daughter cells. Later, the cell begins another form of division called meiosis. Meiosis produces four daughter cells, each daughter cell containing half the chromosomes of each original parent cell. Meiosis is necessary to keep the chromosome number constant from generation to generation. The divisions will continue, until a human being is formed. The cells move, or migrate, in relation to other cells, forming the first shape of the embryo; this migration is called morphogenesis.

Gene codes

Each gamete (egg and sperm) has 23 chromosomes, and when the human is completely developed, she will have 46 chromosomes. Your genes are located on your chromosomes. A gene is a small piece of one chromosome; it is a code for a specific sequence of amino acids in a protein. Each code is different and very complex, which brings about many different traits.

Most people are familiar with genes as a transportation of hereditary traits. Genes can affect whether or not you will be born with attached earlobes, freckles, or a widow's peak. Genes are the hereditary codes that are passed on to an offspring. Traits, which are caused by your genotype (or genes for a particular trait), can be dominant or recessive. Dependent upon the alleles carried on the chromosomes you received from your parents, your appearance will develop accordingly.

Principles of Heredity

Scholars have viewed the influence of heredity and environment on the development of an individual differently. There are extreme views also. However, the fact remains that the functioning of heredity and environment is similar to that of two eyes, two hands, two feet, two legs, and so on, on the development of a person. Each one is complementary and supplementary to the other. Sometimes one plays a more dominant role and the other a relatively less dominant role. For the balanced and harmonious development of an individual, a balanced and harmonious interaction between heredity and environment is very essential. Of course, each has its limitations. Each can influence the development of the individual to a limit. The role of the home and the school is to ensure that optimum use is made of these limits.

Some basic principles of heredity are:

1. *Like tends to beget like:* Black-coloured parents generally have black children, tall parents tall children, bright parents bright children, and so on. This holds good of all other characteristics and racial differences. 'Nature sees to it that each species or genus breeds true to type, save where there are laws governing occasional deviations.'
2. *Principle of variance:* Only certain traits follow hereditary laws. Common observation shows that although like tends to beget like, yet the resemblances of

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parents and their offsprings are never perfect. Black-eyed children may be born to brown-eyed parents. Even the two twins are not exactly alike.

3. *Principle of convergence of two-life streams:* A portion of inheritance comes from the maternal side and the remaining portion is contributed by the paternal side, i.e. the child's maternal and paternal lines, both contribute about 50 per cent each of his inheritance. More specifically, it is generally assumed that 1/2 comes from parents, 1/4 from his grand-parents, 1/8 from his great grand-parents and so on from all the other more remote ancestors.
4. *Principle of chance:* Chance plays an important role, making any absolute prediction almost impossible. This is on account of several reasons:
   (i) Pairing of the chromosomes in the state of flux
   (ii) Cell to which the set of maternal or paternal chromosomes goes during the reduction division
   (iii) Particular cell which unites with another in the maternal and paternal lines
   (iv) Pattern of genes in any chromosome
   (v) Genes carried in any particular chromosome
   (vi) Crossing over of genes from one paired chromosome to another
   (vii) How dominant and recessive traits will be distributed according to the three to one ratio
   (viii) Determination of sex
5. *Principle of dominant and recessive traits:* Some traits are dominant while other are recessive causing apparent exceptions to the principle of like produces like. The union of the best traits of the father with the best traits of the mother produces talented children. Therefore, a talented father or mother must be the offspring of the best combination of the determiners in the germ cells of his or her parents. But such gifted parents may carry on the determiners of genes which are average. There are many chances that when they produce a child, their average traits combine and a child of average calibre may be the result.

The reasons of variation' are still a mystery. All that can be said about variations is that it is a fact.

Hereditary Traits

Hereditary traits may be divided into two categories: physical traits and mental traits.

Physical traits include eye-colour, white forelock of hair, colour-blindness, blood type, skin colour, height and several other bodily features. Mental traits include intelligence and musical talents.

It must be remembered that each parent is the inheritor in equal parts from both parents who in turn, inherit equally from their parents. The stream of life flows on and the child inherits his capital not from his parents but through his parents. This fact explains why a child has the chin of his mother, the forehead of his father, the blue colour of eyes from his grandfather, the hair from his uncle, the nose from his aunt and so on. Why no two individuals of the same family are perfectly identical!

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A good number of observations have shown the presence of some sort of determiners in the human life-producing cell, which determine, even before birth, certain traits of the individual. It, however, does not mean that a child must always be exactly like his parents—father or mother. Actually, we observe often that the children do not inherit some of the most distinguishing traits of their parents. For example, the parents are of black colour while the child is white. The parents are extraordinary genius while the child is an idiot. The child does not resemble his brothers and sisters. Why is it so? The answer according to one view is that the characteristics of the child depend not only upon the parents alone but also grandparents and even great grandparents. Variations are also on account of the chance factor.

It is purely by chance that a particular sperm fuses with a particular ovum to form a zygote. Moreover, in zygote there are 23 pairs of chromosomes, 23 of which are contributed by the sperm of the father and 23 by the ovum of the mother. Which chromosomes from the ovum will pair with which chromosomes from sperm is sheer chance. Millions of permutations and combinations are possible for the union of chromosomes, which contain genes. That explains why no two individuals are perfectly identical.

The traits of the ancestors besides those of immediate parents are also transmitted to the offspring through these genes. Therefore, it is possible that the child will possess certain traits that are traceable to one or more of the ancestors, even though they may not be found in either of the parents.

Recent researches

Revolutionary discoveries in genetics have been made in recent years. Even artificial or synthetic genes have been produced under laboratory conditions. After the test tube baby, there has occurred a phenomenal advancement in genetic surgery. The task of controlling production of future human beings involves the control of two genetic chemicals—DNA (deoxyribonucleic acid which molecule is the throbbing centre of life) and the RNA (ribonucleic acid). DNA molecule governs our past, our present and our future and controls all aspects of body formation. It is like a computer containing in its arrangement of atoms, the key to heredity, ageing, disease, mind and memory. Any control of the genetic material in DNA will involve the synthesis in the laboratory of artificial DNA with the atoms arranged in a specific order to produce a particular type of individual the new man.

Determination of the Sex of the Child

Of the 23 pairs of chromosomes, one pair is responsible for determining the sex of the child. This pair is called the sex chromosome. In the male, one member of the pair is an X chromosome, while the second member, which is smaller in size, is called a Y chromosome. Females have two X chromosomes. At the time of conception, mother has no alternative but to contribute X sex chromosome; while the father may contribute X or Y chromosome. If a child receives the same chromosomes X from the parents, she will be female child, if father's contribution is in the form of Y chromosome, it will be a male child. From this, we may easily conclude that it is totally incorrect to blame either of the parents for the sex of the child. If at all there is some role, which may be considered dominating, it is of the father not of the mother as she is neutral in providing the X chromosome always for the conception.

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Identical and fraternal twins

Normally at the time of fertilization, a sperm of the male fertilizes a single ovum. It results in the birth of a single offspring at one time. But sometime this normal function is disturbed and there are cases of multiple births—the birth of two or more off-springs at a time. There are two distinctly different types of twins, namely, identical twins and fraternal twins.

Identical twins: Usually the fertilization of one ovum by one sperm produces the offspring. Sometimes, however, it so happens that when the ovum splits, because of fertilization the two parts fail to unite. The result is that each part develops into a complete individual. The twins formed thus are called identical because they carry the same genes. They possess almost the same characteristics and are definitely of the same sex.

Fraternal twins: Normally in the ovary of the human female during each menstrual period, only one ovum is matured but it may happen that two or more ova may mature simultaneously and be fertilized at the same time by two different sperms. The result is that two different zygotes are produced. The individuals thus, produced are known as the fraternal twins. They have different combination of chromosomes and genes as both ova are fertilized by different sperms. Fraternal twins, therefore, are sure to differ in many traits. Like the identical twins, they need not belong to the same sex. They may belong to the same or opposite sex.

Prenatal Development

Over a relatively brief nine-month period, a single-celled zygote transforms into a fully formed foetus made up of around 1 trillion cells. This period of astonishing growth consists of three distinct phases: the germinal stage, the embryonic stage, and the foetal stage.

The entire zygote is contained within the zona pellucida, a delicate envelope that forms its boundaries.

1. Germinal stage

The germinal stage is sometimes referred to as the zygotic period and represents the first two weeks of development from the time of conception through the development of the cluster of cells known as the embryo. First, the zygote begins to divide and become a blastocyst, which will attach itself to the uterine wall during a process known as implantation. This process takes place over 8 to 10 days to 2 weeks and ends with egg attachment to uterine wall. Cleavage—the mitotic division of the zygote into several cells; begins at 24 hours after conception. Division rates are different and this yields heterogeneity—variability in the rate of change of different parts.

1. As cleavage occurs, a cluster of cells called the morula take shape in the zona pellucida. After the 5th day post-conception, the cells begin taking in nutrients; this is the first interaction with the environment (the fallopian tube).
2. A fluid filled cavity forms in the morula thus facilitating the change into a blastocyst—hollow sphere of cells. The blastocyst has two kinds of cells. One set of small cells are the inner cell mass, which gives rise to the organisms; whereas the other set of flat cells surrounding the inner cell mass called the trophoblast, form a protective barrier between the inner cell mass and the environment.

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3. As the blastocyst moves further into the uterus, the trophoblast cells branch out into the mother's uterus to the blood vessels. This begins implantation, the process by which the blastocyst becomes attached to the uterus. This action marks the transition to the embryonic period.

2. Embryonic period

The embryonic period lasts from fertilization to the beginning of the third month. The human being begins to develop very distinctly after morphogenesis. Cells begin to take on specific functions and structures in a process called differentiation. For the first time, the actual size of the daughter cells begins to grow. Up until this point, the cells that were divided were no larger than the parent cells, causing no growth in size.

The cells begin to develop into layers. The upper layer is the ectoderm, which later becomes the skin and nervous system; the middle layer is the mesoderm, which becomes the muscles, circulatory system, and connective tissue; and the lower is the endoderm, which becomes the linings of the digestive and respiratory tracts.

At this point, the foetus also has developed a circulatory system; however, it is slightly different from adults in that it shunts blood away from its unused lungs. Organs like the spinal cord and heart have developed.The effect of the embryonic period on the mother is significant. This is the period when the mother may experience 'morning sickness' symptoms such as nausea, fatigue, and loss of appetite. The uterus at this time develops from the size of a hen's egg to bigger than an orange and can be felt above the pubic bone up to 8 weeks; ends when all major organs have formed. The embryo is surrounded by the amnion, a thin, tough, transparent membrane that holds the amniotic fluid, which protects the embryo from damaging movements.

(i) Surrounding the amnion is the chorion, the precursor to the placenta, a complex organ of tissue from the mother and embryo that acts as a filter allowing oxygen, nutrients, and waste to be exchanged. Waste is filtered through the mother's kidneys and excreted.

(ii) While the trophoblast is forming the placenta and other membranes, the inner cell mass is busy evolving into organs. Then the inner cell mass separates into two layers:

   (a) **Ectoderm –** outer; skin, nails, teeth, eye lens, inner ear, and nervous system

   (b) **Endoderm –** inner; digestive system and lungs

   Then a third layer develops between these two:

   (c) **Mesoderm –** Middle; muscles, circulatory system and inner skin

(iii) **Organogenesis –** Process of organ formation that takes place during first two prenatal months

(iv) Human growth follows two patterns from now until adolescence:

   (a) **Cephalocaudal –** Head to toe (arms then legs)

   (b) **Proximodistal –** Inside to out (shoulder before wrists)

3. Foetal period

The foetal period lasts from the third to the ninth month of pregnancy. From 9 weeks to birth (30 weeks); bones harden and infant is able to survive outside mother. At 17 to 18 weeks, foetal activity declines as the higher regions of the brain develop. This period of inhibited activity persists until six months. Then activity increases. At this point, the

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foetus experiences endogenous (internal to foetus) and exogenous (external) movement. Movement is essential for limb development.

The foetus is now looking more humanlike and grows to resemble a baby more every day. The growth of the body begins to speed up to catch up with the large size of the already developed head (from the embryonic period). The epidermis (outer layer of skin) begins to be polished, developing eyelashes, eyebrows, head hair, and fingernails.

Postnatal Development

Postnatal is the period beginning immediately after the birth of a child and extending for about six weeks. Another term would be postpartum period, as it refers to the mother (whereas postnatal refers to the infant). Less frequently used is puerperium.

It is the time after birth, a time in which the mother's body, including hormone levels and uterus size, returns to a non-pregnant state. Lochia is postpartum vaginal discharge, containing blood, mucus and placental tissue.

In scientific literature, the term is commonly abbreviated to P*X*. So that 'day P5' should be read as 'the fifth day after birth'. This is not to be confused with medical nomenclature that uses G P to stand for number of pregnancy and outcome of pregnancy.

Health, Actions and Reactions of the Neonate

Upon its entry to the air-breathing world, without the nutrition and oxygenation from the umbilical cord, the newborn must begin to adjust to life outside the uterus. Also starts his/her adaptation to extra uterine life, the most significant physiological transition until death.

Measures of Neonatal Health

One's infant might look deformed at first. Average weight of newborn in the US = 7–7.5 lbs.

1. Infant's viability – after birth, hospital staff assess infant's vital signs: heart rate, lung capacity, startle response, and other reactions.
2. Physical state – **Apgar scale –** is used throughout USA: heart rate, respiratory effort, muscle tone, reflex responsiveness and color; used at 1 and 5 minutes after birth; rating scale = 0–2; higher scores (7–10) indicate good health.
3. Behavioural state – **Brazelton neonatal assessment scale –** assesses physical, psychological and neurological functioning; 20 reflexes are assessed; 27 items making 4 subscales: physiological, motoric, state and interaction. Low scores can reflect brain damage.

Neonate Reflexes

The infant is born with basic reflexes survival mechanisms, that are genetically carried, Some reflexes—coughing, blinking and yawning—persist through life.

There are four primary reflexes (disappear around 3–4 months):

1. **Sucking reflex** – Aids with nutrition before associations are learned
2. **Rooting reflex** – Touch cheek; will turn towards touch to suck
3. **Moro reflex** – Startle response to intense or quick movements; stretches out all limbs; alerts parent infant is uncomfortable
4. **Grasping reflex** – Touch infant's palm and it will grasp finger; aids in attachment

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Postpartum Period in Mothers

Birth marks the beginning of the parent–child relationship.

1. **Appearance:** How the infant is shaped and looks can determine the parents' response to it.
2. **Attachment**: Primary bond between infant and primary caregiver (usually mother) that is thought to need to take place immediately after birth; it is physical, emotional, and psychological bond. This is another example of a critical period of development.
3. The postpartum period is the adjustment period after delivery. Varies but on average, lasts 6 weeks, when return to pre-pregnancy state (more like 9 months). Changes occur very quickly.

A woman in the Western world delivering in a hospital may leave the hospital as soon as she is medically stable and chooses to leave, which can be as early as a few hours postpartum, though the average for spontaneous vaginal delivery (SVD) is 1–2 days, and the average caesarean section postnatal stay is 3–4 days. During this time, the mother is monitored for bleeding, bowel and bladder function, and baby care. The infant's health is also monitored.

Physical Adjustments

(a) Involution: Process by which the uterus returns to its pre-pregnancy size 5–6 weeks after birth. Nursing helps to contract the uterus at a fast rate.

(b) Sudden and dramatic hormone production changes; if not nursing, will mense 4–8 weeks after birth. If nursing, menses are delayed (but one still can conceive).

(c) On average, no sexual intercourse for 6 weeks (for many, it is a lot longer).

The mother is assessed for tears, and is sutured if necessary. Also, she may suffer from constipation or hemorrhoids, both of which would be managed. The bladder is also assessed for infection, retention, and any problems in the muscles.

The major focus of postpartum care is ensuring that the mother is healthy and capable of taking care of her newborn, equipped with all the information she needs about breastfeeding, reproductive health and contraception, and the imminent life adjustment.

Some medical conditions may occur in the postpartum period, such as Sheehan's syndrome and peripartum cardiomyopathy.

In some cases, this adjustment is not made easily, and women may suffer from postpartum depression, posttraumatic stress disorder or even puerperal psychosis.

Postpartum urinary incontinence is experienced by 23.4 per cent to 38.4 per cent, likely higher during pregnancy.

Emotional and Psychological Adjustment

Due to all the changes involved with a newborn, many women experience anxiety, depression, and/or difficulty coping with stress. Postpartum depression affects as many as 70 per cent of women; less, often long-term, with working mother who return to work.

Early detection and adequate treatment is required. Approximately 25 – 85 per cent of postpartum women will experience the 'blues' for a few days. Between 7

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per cent and 17 per cent may experience clinical depression, with a higher risk among those women with a history of clinical depression. Rarely, in 1 in 1,000 cases, women experience a psychotic episode, again with a higher risk among those women with pre-existing mental illness. Despite the wide spread myth of hormonal involvement, repeated studies have not linked hormonal changes with postpartum psychological symptoms. Rather, these are symptoms of a pre-existing mental illness, exacerbated by fatigue, changes in schedule and other common parenting stressors.

Postpartum psychosis (also known as puerperal psychosis), is a more severe form of mental illness than postpartum depression, with an incidence of approximately

per cent.

INFANCY

Infancy is the period that follows the neonatal period and includes the first two years of life. During this time tremendous growth, coordination and mental development occur. The developmental process during infancy occurs in the first 24 months of living and is the beginning foundation to an individual's physiological and psychological development. Humans experience rapid growth during this period in which many physical changes often occur. Newborns are essentially immobile and have very little voluntary control over many behaviours.

The infant's motors skills continue to evolve as muscles develop in the body. Psychologists believe the motor skill of an infant is a developmental process supported by the elements of nature and nurture (Santrock, 2004). They also theorize that infants who are constantly encouraged and stimulated by their caregiver are likely to achieve certain milestones at a much more expedient rate. Infants are born with certain reflexes such as grasping, sucking, coughing, yawning and blinking. In the first three months, the infant is unable to roll over and support or control head movement. The infant's ability to stretch and kick is also more vigorous at this time. At four to six months, the baby should be able to roll over and hold its chest and head up. By seven to nine months, they should be able to sit and possibly stand. Walking capabilities should develop between twelve or thirteen months.

Brain development is also part of the physical process. Infants are not born with all the interconnections formed in their brains. 'At birth and in early infancy, the brain's 100 billion neurons have minimal connections' (Santrock, 2004). The synaptic connections within the brain begin to increase as the infant develops and responds to its environment. The infant's brain dramatically changes each time it learns a new skill or encounters a new experience. 'Infants are born not only with a brain ready to respond to critical features of the environment, but that the brain can react to particular features of the particular, individual environment' (Keller, 2007).

Within a few weeks of birth, the infant is able to respond to loud noises by blinking, or waking from sleep. The newborn can focus on objects 12 inches in distance and by three months, the infant should be able to examine visuals that are more complex as well as a variety of colours, sizes and shapes. By the end of three months, they may even be able to mimic facial expressions. Infants are born with the ability to cry in order to communicate discomfort. Babbling, squealing, cooing, gurgling and laughing become their added means of communication around four months of age. As their attention span increases, they will begin to decipher certain sounds and also recognize his or her name.

Check Your Progress

1. What are the two categories of hereditary traits?
2. What is the postnatal period?

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Piaget's theory of cognitive development suggests that humans have an innate concept or framework that already exists at a given moment in order to organize and interpret information through the construction of schemas, which involves the two processes of assimilation and accommodation. From this standpoint, an individual can incorporate new information into existing knowledge and accommodate their schemas to new information. It is also through this theory that the human cognitive process is separated into gradually evolving stages. The time frame between birth and two years is known as the sensorimotor stage. In this stage, the infant begins to construct an understanding of the world by correlating sensory experiences with physical actions. This theory also suggests that infants have a limited ability to understand that objects and events continue to exist even when they cannot be seen, heard or touched directly (object permanence).

The socio-emotional process of infants begins to develop from the responsiveness and sensitivity of their caregivers. It is during this process that the infant formulates an attachment to their caregiver from the establishment of trust. Since the infant's first experience is usually with its mother, it can distinguish the mother's voice because of its abstract memory of being inside the womb 'based on prenatal experiences that newborns prefer their mother's voices to the voice of another woman'. Thus, a nurturing and trusting relationship with the mother is vital to this process of development and helps to establish good temperament in childhood. A loving environment also promotes a sense of well-being within the infant, which makes them more tolerant to having new experiences with other strangers. The learning of other relationships in the future 'is based on infant's inherent curiosity and motivation to learn'.

Baby's exposure to experiences affects its development

Every experience an infant is exposed to impacts its developmental process. The elements of nature and nurture intertwine and shape the outcome of each experience. It is also the result from these early experiences that influence the later stages of human development. Ultimately it is safe to conclude that heredity, nutrition, health, stimulation and environment are the sustaining factors, which determine whether or not an infant can achieve optimal physical, cognitive and socio-emotional growth, which will be carried over into the next stage of human development.

Most infants learn to walk, manipulate objects and can form basic words by the end of infancy. Another characteristic of infancy is the development of deciduous teeth.

During this period, the behaviour of the infant is activated by innate needs which create tension and in order to reduce tension, the infant is motivated for action which gratify its needs. The infant's behaviour operates purely on an altruistic level unrelated to any social world but gradually social events become the prime motivator of behaviour, for example, hunger motivates the infant for action (crying) and it requires the bottle or breast for the gratification of its need and its actions become more learned and goal-directed. It strives to imitate previously successful actions and thus socialization begins.

The child depends on someone for the fulfilment of his basic needs. Dependency is a type of operant behaviour that has as its required environmental events affectionate and nurturant behaviour performed by another person.

In early infancy, the behaviour of the child is controlled by the principle of operant conditioning. Social environment in which an infant is born has a great influence on its later development. The sex of the child, ordinal position in the family and socio-economic

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condition of the parents have bearing on the development of personality. In India, a male child is preferred to a female and discriminative treatment is given right from the birth of the child.

According to Sears, 'A child is allocated to one sex or the other, and society begins to implant in him motives, interests, skills and attitudes appropriate to such membership.'

The first phase, as a matter of fact, interlinks the biological endowment of the child with his/her social environment where through the process of constant interaction his/her personality develops. Conducive social environment is very essentially required for the development of a harmonious personality.

Deciduous teeth

Deciduous teeth, otherwise known as milk teeth, baby teeth, or primary teeth, are the first set of teeth in the growth development of humans and many other animals. They develop during the embryonic stage of development and erupt—become visible in the mouth—during infancy. They are usually lost and replaced by permanent teeth, but in the absence of permanent replacements, they can remain functional for many years.

Deciduous teeth start to form during the embryo phase of pregnancy. The development of deciduous teeth starts at the sixth week of development as the dental lamina. This process starts at the midline and then spreads back into the posterior region. By the time the embryo is eight weeks old, there are ten areas on the upper and lower arches that will eventually become the deciduous dentition. These teeth will continue to form until they erupt in the mouth. In the deciduous dentition, there are a total of 20 teeth: 5 per quadrant and 10 per arch. In most babies, the eruption of these teeth begins at the age of six months and continues until 25 to 33 months of age. The first teeth seen in the mouth are the mandibular centrals and the last are the maxillary second molars. However, it is not unheard of for a baby to be born with teeth.

Developmental Aspects

'Healthy mind in a healthy body' is an old adage and is true to the core. The physical development of the child is very important for a number of reasons. Appropriate physical development makes valuable contribution to the all-round development of an individual. When a child is involved in some physical activity, he/she is emotionally as well mentally busy. Physical development of the individual is important both for the individual and social development. It is also important for ethical, moral and spiritual development. A physically unhealthy person, other things being equal, is unable to perform his/her duties to himself/herself, and to the community.

By not giving proper attention and care to the physical development of the child, we may be guilty of causing serious handicaps to the total development of the child, including his/her emotional, intellectual and social, even ethical and spiritual well-being. Knowledge of the process of the physical growth of the child and development will equip the teacher to set curricula according to the needs of the children.

Meaning and dimensions of physical growth and development

Physical growth and development refers to a process which brings about bodily and physiological changes—internal as well as external—in an organism from the conception till his death. Generally, these changes take place in the following dimensions:

(i) **Gross physical structure or physique:** It involves changes in height, weight, body proportions and general physical appearance.

(ii) **Internal organs:** It involves changes in the functioning of glands, nervous system and other body systems—circulatory, respiratory, digestive, muscular, lymphatic and reproductive.

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CHILDHOOD

Childhood is the age span ranging from birth to adolescence. According to Piaget's theory of cognitive development, childhood consists of two stages: preoperational stage and concrete operational stage. The early years of a child's life present a unique opportunity to lay the foundation for healthy development. It is a time of great growth and of vulnerability. Research confirms that negative early experiences can impair children's mental health and effect their cognitive, behavioural, social-emotional development (both as a child and as an adult).

This section explains the different physical and emotional development during the childhood period of a child.

Visual Perception of Patterns and Forms

1. **Early pattern perception (0 to 2 months)**
   (a) Very young infants prefer to look at high-contrast patters with many sharp boundaries between light and dark areas, and at moderately complex patterns that have curvilinear features.
   (b) Babies prefer to look at whatever they see well (Banks & Ginsburg, 1985), and the things they see best are moderately complex, high-contrast targets, particularly those that capture their attention by moving.
2. **Later form perception (2 months to 1 year)**
   (a) Between 2 and 12 months of age, the infant's visual system rapidly matures.
   (b) The infant now sees better and is capable of making increasingly complex visual discriminations.
   (c) The infant also organizes what he or she sees to perceive visual forms.
   (d) Kellman and Spelke (1983) were among the first to explore these issues. Infants were presented with a display consisting of a rod partially hidden by a block in front of it. The observations they made were as follows:
      - Newborns exposed to a partially screened moving rod see two separate objects rather than a continuous form
      - The impressive ability to use object movement to perceive form is already present by 2 months of age
      - By age 3 to 4 months, infants can perceive form in some stationary scenes that capture their attention
   (e) Even 12-month-old infants are better at constructing form from limited information. After seeing a single point of light move so as to trace a complex shape such as a star, 12-month-olds (but not 8-or 10-month-olds) prefer to look at actual objects with different shapes.

Check Your Progress

3. What is infancy?
4. What are 'deciduous teeth'?

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3. Face perception

(a) Most studies report that, for the first 8 weeks, infants lock on to high-contrast outer boundaries of facial stimuli and spend little time looking at the internal features (eyes, mouth, and lips) that might define a face as a coherent and meaningful form.

(b) As 9- to 12-week-old infants begin to scan intricate details, they also come to prefer faces to scrambled faces.

(c) Three-month-olds know what faces are supposed to look like, for they clearly prefer a normal face to an otherwise identical stimulus with its patterns of visual contrast reversed.

(d) Three-month-olds also recognize and prefer to look at their own mothers' face than those of other women who are similar in appearance.

Perception of Three-Dimensional Space

- Infants younger than 2 to 3 months of age do not exhibit any stereopsis—a convergence of the visual images of the two eyes to produce a singular, non-overlapping image that has depth
- Nativists would argue that several cues to depth and distance are monocular—that is, detectable with only one eye

1. Early use of kinetic (motion) cues
   (a) As a moving object approaches, its retinal image becomes larger and larger and may expand to occupy the entire visual field (this is, loom) as it draws near the face.
   (b) We might infer that they can use kinetic cues to perceive movement. By 3–4 weeks of age, many infants blink in response to looming objects, thus displaying a 'defensive' reaction that becomes much stronger over the next 3 months.
2. Development of size constancy
   (a) Size constancy is the ability to infer that the dimensions of an object remain constant over a change in distance.
   (b) Until recently, researchers claimed that size constancy could not emerge until 3 to 5 months of age, after infants had developed good binocular vision (stereopsis) that enabled them to make accurate spatial inferences. But even newborns know something about an object's real size.
3. Use of pictorial cues
   (a) Albert Yonas (1987) and his associates have studied infants' reactions to monocular depth cues, which are the tricks artists and photographers use to portray depth and distance o a two-dimensional surface across the third dimension.
   (b) Yonas found that 7-month olds reliably reached toward the windows that appeared nearest, whereas 5-month olds displayed no such reaching preferences.
4. Development of depth perception
   (a) In the early 1960s, Eleanor Gibson and Richard Walk developed an apparatus they called the visual cliff to determine whether infants can perceive depth.

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Perception Developing during Childhood

In order to make sense of the world, the brain gathers and processes information it receives from the five senses. Visual perception is a critical part of this process and should not be considered as simply a passive recording of visible material. We do not always see things the way they are or as they relate to their environment. Only a part of what is perceived derives straight from our visual system, while the rest is the result of our interpretation, let us say the intellect.

Visual Perception: Visible and Intellectual

1. **The visual brain:** As far as the visual system is concerned, perception is purposeful and selective. The selectivity of our visual perception is greatly dependent upon our distinct 'attention' and 'visual search'. The former involves a kind of focalization on important aspects of the visual field and the periphery of the visual field, whereas the latter includes the process of linking several fixations on the same visual scene to allow more detailed exploration. The integration of all these fixations is an immediate and instinctive process that creates what we call our vision of an image.

   But what are the main elements that we visually perceive?

   - **Luminosity:** The response of the visual system to the actual quantity (intensity) of light sent out by an object
   - **Colour vision:** The response of the visual system to the wavelength of light rays sent out or reflected by objects
   - **Visual edges:** The response of the visual system to the spatial distribution of light, meaning the spatial limits of objects, their visual edges, outlines
   - **Contrast:** The response of the visual system to the interaction of luminosity and edges

   These elements are never perceived in isolation but always in relation to each other, they are produced simultaneously and, therefore, the perception of each has an effect on the perception of the others.

   The major visual pathway from the retina to the brain is known as the optic pathway. It carries signals to the primary visual cortex situated at the back of the brain. In the primary visual cortex, cells that receive signals for the features of vision outlined above are neatly grouped together into different, anatomically identifiable compartments. The specialized compartments of the primary visual cortex send their signals to further visual areas. These further visual areas are located in a large area of the cortex that surrounds the primary visual cortex, which until recently was referred as the 'visual association' cortex. They are themselves functionally specialized, but collectively they work to create the visual scene. So, the visual brain consists of many operationally distinct areas that work symphonically to produce an image, with the primary visual cortex serving as the royal gateway, providing a link to the retina. Each visual area works as a specialized processing system, devoted to a particular feature of the visual scene, which allows the brain to 'collect' different attributes of the visual scene simultaneously and in parallel. But the specialized areas do not all connect with a master area, which can then 'interpret' or understand what they have processed; there is no single master area to which all the visual areas uniquely project.

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So how exactly do the operations performed by the different visual areas integrate to give us our unitary image of the visual world? Functional specialization suggests a temporal hierarchy in vision, suggesting in turn that the processing systems are also perceptual systems. But, by definition, perception is a conscious act. Are 'seeing' and 'understanding' then indeed two separate processes, with separate seats in the cortex? Kant had put forward the view that the mind could be divided in two faculties, the passive one of sensibility, concerned with the collection of raw data, and the active one of understanding, or in other words intellect, which made sense of the raw data.

2. **The intellect:** The intellect relates to a series of mental operations, which occur to manufacture the perception of an image. These involve receiving, storing and identifying the visual information, and therefore are significantly linked to memory, thinking and learning. Such processes include active exploration, selection, grasping of essentials, simplification, abstraction, analysis and synthesis, completion, correction, comparison, problem solving, combining, as well as separating and putting in context (Arnheim, 1969). These procedures may be carried out instinctively or intentionally and they construct the ways in which we filter, translate and understand what it is that we see.

The co-relation

The connection between the material and the mental in vision is uncertain; our mental image of what we see is importantly different from its retinal projection. The eye focuses an image of the object upon the retina, then messages are carried to the brain and certain physical and chemical effects vibrate the muscles and the nerves. From our early years upwards, these functions are increasingly subordinated to higher order cognitive processes taking place at other levels of our cortex. And there appears consciousness: what we understand of what we see is a mixture of complex visual judgments that are then passed into more complex intellectual judgments. Undoubtedly, the simple perceptual processes do still function to provide sensory data on which the operation of the more complex processes depends. But it is the more complex processes, which normally determine our understanding of and response to the environment.

Here lays an interesting example of how these complex processes work: When we move through an environment, we perceive an accordingly continuous change of the projective sizes of all the objects that surround us. The setting as a whole is subjected to a unified and constant adjustment in size; each part of the visual field is in constant relation, and hence, variability to every other part, and any particular entity is evaluated in relation to its complex content. In terms of vision, we are receiving full information on these contextual changes, but the intellect consciously ignores this rich information in favour of constancy. What we actually see and what we understand of seeing are two different things but are visually perceived as one and the same in terms of our need for continuity and stability.

An answer to the co-relation of vision and the visible can be found in the 'synthetic approach' of visual perception, which proposes that we find equivalents for the visual world in stimuli alone. In other words, it suggests that our perception mechanism is sophisticated enough to recognize objects in space simply from an optical image on the retina. Although the optical image projected upon the retina is a mechanically complete recording of an image, the equivalent visual perception is not. The perception of a shape is the understanding of structural characteristics found in, or imposed upon, the stimulus material.

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The Gestalt Theory rests on this approach emphasizing the natural competence of the brain to organize visual information according to universal and unchanging laws, such as proximity/contiguity, similarity, closure/good continuation, simplicity, area/smallness, figure and ground. The intellectual judgments will organize the stimulus material according to the simplest pattern compatible with it, based on its essential structural characteristics. Perception consists in fitting the stimulus material with templates of relatively similar shapes, which can be called visual concepts or visual categories. The simplicity of these visual concepts is relative, in that a complex stimulus pattern viewed by refined vision may produce a rather intricate shape, which is the simplest attainable under the circumstances. What matters is that an object at which someone is looking can be said to be truly perceived only to the extent to which it is fitted to some organized shape (Arnheim, 1969). Simple form and movement perception are integrated with and supported by processes of identification, classification and coding through the operation of perceptual schemata which depend to a considerable extend on learning, memory, attention, reasoning and language.

Auditory Perception

It is commonly thought that in the normal individual the auditory sense is the only one to function perfectly from the moment of birth, whereas other senses take some time to develop completely. However, unless an individual can make sense out of what is heard, hearing is, for all practical purposes, nonfunctional. Recently, we have come to realize that certain types of brain injury or dysfunction make it difficult, or impossible, for an individual to make sense naturally of the auditory stimuli received by the brain. It should be pointed out that hearing and listening are not synonymous in the auditory process. Whereas hearing is basically a physiological process, listening is an intellectual one, requiring interpretation, analysis, integration and evaluation.

Some children have yet to learn that sounds have meaning. The ability to pinpoint the source of a sound and identify its unique characteristics requires that the child be able to focus attention long enough to learn these things. Outside noises and subtle classroom sounds, such as the hum of fluorescent lights and radiator noises, can distract the child who has a problem focusing attention. In addition, the ability to store auditory information and retrieve it in proper sequence is basic to the learning process. Without these skills it is virtually impossible to learn spoken or written language. Without language, one is extremely limited in the ability to communicate with others or to understand the world.

Children with auditory perception problems may have some of the following characteristics. It is seldom, however, that we would see all these behaviours in one individual.

Children with auditory perception problems may have an inability to:

- Locate the source of a sound (localization)
- Identify specific characteristics of sound (intensity, duration, pitch, timbre)
- Relate a sound to its symbol
- Repeat what was said without visual clues
- Follow directions without visual clues
- Recognize when a sound changes
- Identify same and different sounds
- Distinguish a specific sound from among others (figure-ground)

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- Recognize previously learned auditory material when presented in a different medium
- Integrate auditory information with other sensory data
- Comprehend words in a song

Training in listening and interpreting sound develops auditory perception. It is obvious that music learning depends on one's ability to perceive aurally. Conversely, music training can enhance auditory perception. When planned with specific aural skills in mind, music activities can help a child:

- Improve the ability to attend to aural stimuli
- Interpret both verbal and nonverbal information
- Remember auditory learning from one experience to the next
- Integrate auditory information with that received through other sensory channels

Sound Discrimination

The characteristics of a sound (i.e., intensity, duration, pitch and timbre) are presented as subdivisions in the activities for developing auditory discrimination skills. Music education goals and objectives generate sequential music experiences leading to a thorough understanding of these characteristics and the ways in which they are combined in music composition. Children with auditory perception problems frequently have difficulty in processing speech sounds. It is interesting to note that speech, singing and music all have the following common elements; tempo, rhythm, pitch, stress (accent) and dynamics. Auditory discrimination skills, then, are equally important for general learning and for music learning.

Intensity: Of all music elements, dynamics is most easily comprehended. In the average child it is the first to develop, and we usually find that young children can easily discriminate between loud and soft by the time they enter preschool or kindergarten. With these children our task is mainly to refine their skills to include discrimination of more subtle differences in dynamic levels. Children who lack gross loud-soft discrimination are likely to include the hearing impaired.

Duration: Duration is the element in music that deals with time concepts. Time concepts are tempo (the speed of the music), meter (the organization of beats, usually into measure), and rhythm (the organization of longer and shorter sounds and silences within a time framework). Rhythm is basic to body function and speech as well as music. Recently, much attention has been focused on biorhythms, and educators, too, are beginning to be concerned with how an individual's natural inner rhythm relates to learning style and needs. Classroom activities (and/or tempo in music) are often paced too fast to enable all learners to grasp the objective.

Pitch: Pitch concepts, such as high/low and up/down, are necessary for understanding the melodic structure of music. Seriation and sequencing skills, characteristically lacking in many learning-disabled children, are utilized in understanding scales, modes, and harmonic structure in music. In some countries of the orient and Africa, languages are tonally based; therefore, pitch discrimination is a prerequisite to speech. The same word spoken with different pitch inflections has multiple meanings. It is often said that there are no tone-deaf individuals in those countries. Whether or not this is true, one can certainly appreciate why a poor sense of pitch would serve as a barrier when learning the language. The importance of pitch inflection in the English language is probably

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underestimated until one experiences listening to speech without inflection or with misplaced inflections. In addition to speech and language development, the ability to recognize, identify, and reproduce pitches of varying frequencies is necessary in perceiving and reacting to one's environment.

Timbre: Timbre refers to the 'colour' characteristics of a sound that give it a unique quality. It is the awareness of timbre that allows a person to aurally distinguish a clarinet from an oboe or a car horn from a train whistle. Without timbre discrimination skills, the environment could be a hostile place in which to live. Again, timbre discrimination is an important skill in the development of speech and language. Comprehending vowel and consonant sounds depends largely on the ability to discriminate differing timbres. When children are screened for auditory discrimination problems, the measure used tests for discrimination of speech sounds only. It is not unusual, however, for children who have been identified as having auditory discrimination problems to perform as well as their peers in nonverbal discrimination tasks. Discrimination of musical sounds involves a more gross discrimination. Often the child's problem will be more obvious in the inability to learn and remember words to songs.

In all discrimination tasks, the lowest level of competency is that of recognition of same and different, followed by identification of specific characteristics and, finally, by integration and synthesis. Discrimination tasks should begin with two greatly contrasting sounds and gradually move to finer discrimination of sound among more dimensions. Subsequent goals should facilitate generalization and transfer.

The long-range goals for auditory discrimination skills are found in all music education curriculums and are equally valid for developing auditory skills for general learning. Each child demonstrates:

- The ability to perceive and identify (label) each characteristic of sound
- An understanding of the characteristics of sound through musical performance
- The ability to creatively apply understanding of the characteristics of music

For the child who has difficulty processing sound, auditory learning is facilitated by pairing the auditory stimulus with another sensory mode such as visual (pictures, diagrams), kinesthetic (body movement), or tactile (manipulative materials). At some point, however, these extra auditory clues must be withdrawn lest the child become dependent on them. It is recommended that the distance between the sound source and the child be increased gradually to as much as thirty feet for those activities in which it would be appropriate.

Depth Perception

Humans have two eyes, and each eye receive different images. Humans perceive depth by coordinating the images of their left and right eyes to perceive stereoscopic depth, which is important for the visual perception of three-dimensional space. Thus, depth perception is actually considered to be the visual ability to perceive the world in three dimensions. It is believed that all animals who are moving have a sensation of depth. This depth perception helps all the moving animals including human beings to move accurately and to make a response based on the distances of objects in the environment.

Depth perception occurs because of depth cues. These cues are either binocular, which means the input from the environment is from both the eyes and monocular cues that require the input from just one eye. Monocular cues helps in judging the relative distance and depth of the objects. The problem emerge from the fact that how the image

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of three dimensional world is projected on the two dimensional retina. The retina directly reflects height and width, but depth information is lost and reconstructed on the brain of depth cues, different kind of visual information that logically provide information about some object's depth. There are various cues for perceiving depth in the world, some are as follows:

Monocular cues: It is known as a pictorial depth cue because they include the kind of depth information found in the photographs and painting. These are extensively used by the artists in their painting. Their cues are as follows:

(a) **Aerial perspective:** Distant mountains often look fuzzy and a building far in the distance is more blurred than those that are close. However, the further away an object is, the hazier the object will appear. This is called aerial perspective.

(b) **Linear perceptive:** When parallel lines appear to be converging at a distance, it is called linear perspective. The converging line means a great distance away from where they start.

(c) **Relative size:** When objects that people expect to be of certain size appear to be small and are, therefore assumed to be much farther away.

(d) **Light and shadow:** We are often aware of the source and direction of light. It is generally from above, as sunlight. The shadow cast by one object on another can indicate which object is farther away.

(e) **Interposition:** If one object seems to be blocking another, people assume that the blocked object is behind the first one and therefore farther away. This is also known as overlap.

(f) **Texture gradient:** The object lying on a surface that look fine and smooth is texture are perceived at a greater distance than those objects on a rough surface. The pebbles or bricks that textured, but as you look farther off into distance, their texture become smaller and finer.

(g) **Motion parallax:** The discrepancy in motion of near-far objects is called motion parallax.

(h) **Accommodation:** Accommodation makes use of something that happens inside the eye. The brain can use this information about accommodation as a cue for distance. Accommodation is also called muscular cue.

Cognitive Development: The Piagetian System

Jean Piaget and his co-workers conducted research on cognitive development and the processes that lie under the adaptive behaviour from birth to adolescence and enormous literature was produced on cognitive development and other aspects of a child's development. Piaget has studied the developmental process of understanding knowledge and the working of the child's mind. His system though, did not express any definite opinion on educational practices but was nevertheless of great value to assess teaching, the structure and sequencing of subject matter in the curriculum and in the organization of various activities in and outside the classroom.

Before we describe the cognitive system as developed by Piaget, we shall first consider some of the concepts which are very essential to understand his system.

Basic Concepts

Schema: Piaget was interested in the developmental process and the change in behaviour. The concept of the schema or scheme applies to the sensorimotor behaviour of the

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infant. The infant sucks the breast of the mother; it looks at the objects of its environment; listens to different voices in its environment; and finally it tries to comprehend, conceptualize the articles, animals, space and many other cognitive structures. The process of conceptualization is closely dependent upon the sequences of behaviour employed by the infant to adapt to its environment. Although a particular scheme derives its name from the behaviour sequence it describes, it implies some internal organizational disposition that enables the sequence to adopt itself to a variety of conditions.

According to Piaget, sensorimotor sequence and cognitive structures are of the same class because they are continuous processes. As the development proceeds, each scheme enlarges and changes, and is coordinated with other schemes to form more complex schemes.

The sensorimotor schemes develop out of reflex behaviour of the infant. They are reduced and internalized as they continue to function and are gradually converted into cognitive schemes. As the sensorimotor schemas are converted to the more covert and symbolic structures, they become generally synonymous with the processes we call concepts, generalizations, principles, constructs and plans.

Piaget believed that schemas (cognitive structures) exist in primitive form as conception and progressively develop during the lifetime in certain systematic ways. According to him, cognitive structures contain all the necessary energy for their emergence and development without requiring some motivating force.

Assimilation and Accommodation

The schemas, which are acquired in infancy, are exercised and changed in later life. The process of change is accounted for by the psychological processes constantly at work called assimilation and accommodation.

At the sensorimotor level, when the infant acquires grasping schema, its picks up things and objects and grasps them. This scheme of grasping objects is called assimilation. Suppose, the grasping schema is inadequate, the object is too small, it must change in order to manage the new situation. This is accommodation at work. The play activities of infants are the examples of the process of assimilation. The infant will take a stick and assimilate it to its available schema, making it into a horse, cow or man. The example of accommodation is imitation of others. In the process of imitation, the child suppresses its available scheme and strives to establish a new schema. The structures or the schemes change from one stage to another by the process of equilibration. Through the processes of assimilation and accommodation the organism attempts to adapt to it environment to maintain balance between itself and its changing environment.

Piaget's Developmental Stages

Jean Piaget advanced a quite new theory of development of cognitive abilities. He proposed that cognitive development proceeds through an orderly sequence of stages. The important concept of his theory of cognitive development is not the age at which the child moves from preferred mode of response to another but the fixed progression from one stage to another. The child cannot adopt the strategies of a later stage at an early stage of development without having first acquired and exercised the strategies of the earlier stage.

The stages of cognitive development are related in that they represent forms of adoption but these forms are qualitatively different; that is the adaptive functions are

transformed as the child moves from one stage to the next. This theory of development is quite different from the theory of associationists which emphasizes the gradual accumulation of responses.

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Stages of cognitive development

Jean Piaget divides the stages of cognitive development in the following categories:

1. **The period of sensorimotor adaptation (since birth to 2 years):** The period from birth to two years is marked by an extraordinary development of the mind. The infant starts from reflex domination and reaches the stage of sensorimotor schemas. The development of this period is very important for future life.

   The intellectual development at this age is marked by four fundamental characteristics: (i) object concept formation, (ii) coordinated space, (iii) objectified causality, and (iv) objectification of time.

   The objects exist in the psychological world of an adult irrespective of their physical presence before the adult, but in the world of the child they only exist when they are physically present and the child looks at them, grasps them and acts with them. As soon as they move out of his/her range of acting, grasping and listening, they stop existing for the child. In the first year of life, the child develops the concept of permanence of objects and then then attempts to retrieve an object that disappears from his/her range of action. When the child acquires the scheme of object permanence, he/she is likely to exercise it at every opportunity; he/she will drop objects of his/her play and then try to find out them.

   The second characteristic of coordinated space is integrated with the formation of the object concept. The spatial world at first is totally uncoordinated. Each sensory modality has its own space and is centred on the child's current activities. By the end of two years, the child develops the concept which is characterized by relationship among objects and between objects and his/her own body.

   The concept of causality depends on the activity of the child. Any action of the child which brings about an effect is taken as the cause of that event. The child, by a number of activities, develops the concept of causality by the end of two years of age.

   The infant does not have any real sense of duration at the beginning of life. By the middle of first year of life, a rudimentary sense of duration is present, but it is entirely a subjective phenomenon. By the end of the first year, the infant frees himself/herself from this personal concept of time and the beginning of objective existence of time takes place. The infant can establish temporal relations between events in which he/she does not directly participate. Appearance of representations during the second year of life gives a considerable boost to the time concept. The infant can now recall events of long ago as well as those that occurred in the immediate past. Time is conceived as a dimension in which events occur, not just as a by-product of behaviour.

2. **Development of symbolic and pre-conceptual thought (2 to 4 years):** At the end of the sensorimotor period, the child starts dealing with the world by means of ideational representations. By imitation and other forms of behaviour, the child demonstrates that he/she is capable of extending his world beyond here and now. These actions of the child indicate the use of symbols. By the age of 4,

the child develops ways of representing the environment in the absence of perceptual cues and build a set of symbolic schemes.

3. **Period of intuitive thought (4 to 8 years):** At this stage, the child is able to use concepts as stable generalization of past and present experiences. His reasoning is not logical and is based on intuition rather than on systematic logic. The intuitive thought of the child is mainly concerned with stages or static configurations and neglects transformation. The child talks about this or that momentary static conditions but is unable to adequately link a whole set of successive conditions into an integrated totality by taking into account the transformations which unify them and render them logically coherent.
4. **Period of concrete operations (8 to 12 years):** Concrete operation means that stage of cognitive development when the child is able to direct attention away from the static conditions and can focus on the whole set of successive changes that occur in the process of transformation. At this stage, the child can reason well. Piaget has given a long list of operations which make possible the handling of numbers in various relations to each other, the arrangement of objects into classes and sub-classes and the ordering of objects according to one or more attributes. He has coined a term 'grouping' to describe a set of operations.

   The starting point of concrete operations is always the real father than potential. The child of 7–11 years acts as though the primary task were to organize and order what is immediately present. During the period of concrete operations, there are some logical inconsistencies in the child's thinking. Piaget calls this efficiency 'syncretism'.
5. **Period of formal operations (from 12 years to adolescence):** At this stage the child's thought process becomes quite systematic and reasonably well-integrated. These qualities of the child's thought process are evident when events are present. Reality guides his/her contemplation of possibility. The child starts to form hypothetico-deductive reasoning. The use of formal operations is what is called the controlling aspects of comprehending.

The child at this stage in his/her formal thinking can free himself/herself of the here and now in a lawful and systematic way. The child's wisdom lies in the masterful administration of the unforeseen. When an adolescent is faced with a problem, he/she uses formal operations to identify the variables that seem relevant to the solutions, and then considers all the possible combinations of these variables.

The formal thought of adolescent is of propositional nature. The adolescents using formal operations view the concrete data as inducing a set of propositions and he/she then applies operations to these propositions which are themselves primary operations. Formal thinking is thus inter-propositional and inter-operational and entails working out propositions on propositions or applying second-order operations to primary ones.

The development of formal operations enables the adolescents to transfer understanding from one situation to another.

The adolescents show a particular orientation to problem solving. They analyse and organize their approach before attempting a specific empirical test.

The hallmark of formal operations period is the development of the ability to think in symbolic terms and comprehend content meaningfully without requiring physical objects or even visual or other imagery based on past experience with such objects. Formal

operations are the logical and mathematical concepts which are used in advanced conceptualization and reasoning, etc., that is difficult to represent concretely.

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ADOLESCENCE

Adolescence is the period of life between childhood and adulthood, usually the age group of 11–19 year olds. This period starts with the beginnings of sexual maturity and terminates with being an independent adult. Many developmental issues occur during an adolescent's route to adulthood. We can also say that adolescence is that phase of life when an individual starts separating from parents with the goal of being independent (adult). Adolescence is usually marked with less parental influence and greater peer influence.

Physiological Growth

Physiological growth refers to the growth and development of physical as well as mental features. Development of the cognitive, emotional, intellectual and social skills is as important as the development of different body parts. The simultaneous growths of physical attributes along with mental abilities are both signifiers of physiological development.

Adolescence starts with puberty. Usually, puberty starts between ages 10–13 in girls and 12–15 in boys. During puberty, your body will grow faster than at any other time in your life, except when you were a baby. A boy or a girl at birth and before puberty can be distinguished from the sex organs. Sex organs are necessary for reproduction, therefore, they are called the primary sexual characteristics. At the onset of puberty, physical changes and development that are not directly part of the reproductive system, but distinguish the male from the female are called secondary sexual characteristics. The changes at puberty can be studied under three headings:

- Development of secondary sexual characteristics
- Development of sex organs
- Intellectual, emotional and psychological development

1. Development of secondary sexual characteristics

The development of secondary sexual characteristics can be discussed under the following headings:

- **Increase in height:** The height increases from birth to the end of puberty. During adolescence, the height increases by 15–20 per cent. The height depends on the genes that you have inherited from parents. Right kind of diet, exercise and general health during these years also contribute to height.
- **Increase in weight:** During adolescence, the weight of a teenager almost doubles as the amount of muscles, fat and bones in their bodies change.
- **Development of shoulders and chest:** During this stage, boys develop broad shoulders and wider chests due to development of bones and muscles. This growth spurt might cause stretch marks in these areas.
- **Development of muscles:** During puberty, the muscles of the body increase in mass and strength, in both boys and girls.

Check Your Progress

5. What is motor development?
6. What is depth perception?

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- **Body hair pattern:** Both, boys and girls, grow a body hair pattern in the armpits (under the arms), in the pubic area (region above the thighs) and on the arms and legs. Boys also begin to grow facial hair, that is, moustache and beard and hair on chest.
- **Voice change:** Both girls and boys are affected by voice changes during their adolescence. In girls, the change in their voice is hardly noticeable because it becomes only slightly deeper. Boys develop high-pitched voice. In boys, changes that occur in the larynx cause their voices to deepen. The vocal cords of the larynx grow thicker and longer and when they vibrate the voices sound lower and deep. The larynx sticks out as a prominent Adam's apple in males.
- **Distribution of fat tissue:** The distribution of fat in the body changes during adolescence. Boys add more fat to their trunks than to their limbs, whereas in adolescent girls there is increased distribution of fat in both. Among the limbs there is more fat added to their legs than to their arms as a result their waist becomes thin and the hips become more rounded. Adequate physical exercise should, therefore, be a part of daily life of an adolescent.
- **Increased activity of sweat and sebaceous glands:** During puberty, the sweat glands of both boys and girls become more active, especially those present in the armpits and groin and on the palms of the hands and soles of the feet. When sweat comes in contact with bacteria on the skin, it can produce an odour. The body odour (or BO as people call it) may be stronger in some people than others. Taking bath or shower daily and looking after one's personal hygiene is absolutely essential.

  Sebaceous glands secrete an oily substance called 'sebum' onto the surface of the skin. These are especially common on the face, back and chest. During puberty, the secretion of sebaceous glands increases due to which the skin of these body regions tends to be oily.
- **Acne:** Acne is a common problem among adolescents. It appears in boys and girls around the beginning of puberty. The hormonal changes that are happening inside your body cause the sebaceous (oil) glands to become more active. When the oil glands get infected with bacteria an outbreak of acne takes place. Most teenagers get acne on the face, neck, upper back, upper chest, shoulders and back.
- **Breast development:** The beginning of breast development is one of the earliest signs of puberty in girls. Breast is made up of fatty tissue and milk glands with ducts. The milk glands produce milk for the newborn child. Some adolescent boys also have breast development which is temporary. The swelling usually goes down within a year or so. In overweight boys, fat may also give the breasts an enlarged appearance.

2. Development of sex organs

During puberty in boys, the penis, the testes and the scrotum continue to grow and develop completely. Testes begin to produce sperms. In girls, the ovaries enlarge, eggs begin to mature and menstruation begins. Menstruation is a major stage of puberty in girls. It marks the stage when ovulation begins, that is, the ovaries begin to release mature egg cells.

What triggers the changes during adolescence?

The changes that occur during adolescence are initiated by hormones. You have read about the two hormones—estrogen, produced by the ovaries and testosterone, produced by the testes. At the onset of puberty, these hormones stimulate the growth and function of various organs like the bones, muscles, skin, breasts, brain and the reproductive organs and cause physiological changes. The secretion of these hormones is controlled by another hormone secreted into the bloodstream by the pituitary gland located in the brain. When this hormone from the pituitary gland stimulates the gonads (the ovaries and testes), they in turn secrete hormones that trigger off the changes in the body.

Hormones are chemical substances that are secreted by glands. Exocrine glands or duct glands secrete their products into ducts that open on to a surface. Examples include the sweat glands, sebaceous glands, salivary glands, digestive glands such as pancreas and mammary glands. Endocrine glands or ductless glands secrete their hormones directly into the bloodstream rather than through a duct. Examples include the pituitary gland, ovaries and testes.

The endocrine system is a system of glands that involves the release of specific chemical messengers called hormones into the bloodstream. The figure shows the position of some other endocrine glands which produce hormones other than sex hormones.

Let us learn about one hormone each, secreted by these endocrine glands and the diseases caused by an imbalance in the hormone levels. A hormonal imbalance occurs when secretion levels are not what they need to be.

Some Glands of the Endocrine System

S.No.	Name of the hormone and the endocrine gland which secretes it	Function of the hormone	Disease caused by imbalance in the hormone levels
1.	Growth hormone by pituitary gland	Promotes normal growth of bones, muscles and other organs	Decreased levels of growth hormone cause decrease in height in children and adolescents. Increased levels may cause a condition called gigantism.
2.	Thyroxine by thyroid gland	Controls the rate of metabolism. Iodine is necessary for the synthesis of thyroxine.	Deficiency of iodine in the diet causes goitre which is a swelling of the thyroid gland.
3.	Adrenalin by adrenal glands	Released in the body to cope up with anxiety, vigorous exercise or fear.	The body is unable to adjust to stress caused due to anger, worry, embarrassment or vigorous activity.
4.	Insulin by pancreas	Controls the level of the glucose in the blood. Insulin moves glucose into the cells to produce energy.	When there is insufficiency of insulin, glucose cannot get into the cells to produce energy. This leads to build up of excess glucose in the bloodstream. Such a condition is known as diabetes.

3. Intellectual, emotional and psychological development

Another area of physical development is in the brain, especially the frontal lobe, which is the area for impulse control, judgment, and the ability to plan. The frontal lobe develops during the teens and early 20s. An undeveloped frontal lope helps explain impulsiveness, risky behaviours, and moodiness among adolescents. In mid to late adolescence, young people often feel the need to establish their sexual identity by becoming comfortable with their body and sexual feelings. Through romantic friendships, dating, and experimenting, adolescents learn to express and receive intimate or sexual advances.

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As an adolescent boy/girl grows, they develop problem-solving skills and become capable to take part in decision-making in school or at home. Adolescents are able to analyse information and experiences by critical thinking and handle new situations through creative thinking. The adolescents indulge in planning and goal setting for long-term and short-term tasks. Yet, the same hormones that cause changes in the appearance and intellect can also affect their emotions. One may feel awkward and self-conscious at times, confused and insecure at other times. All these are normal feelings and the adolescents gradually gets used to such emotions and eventually gets over them.

Mental Development

Mental development or intellectual development is the development of mental abilities and capacities which help individuals to adjust their behaviour to the ever changing environmental conditions. It enables them to achieve complex tasks that require complex cognitive abilities. According to Bruner (1964): 'Intellectual development is the capacity to deal with several choices at the same time.'

All studies on mental growth have reported that mental abilities increase with age. Mental development during adolescence accelerates on many intellectual fronts. The following are the characteristics of mental development in adolescence:

1. **Increased ability to generalize facts:** One noticeable characteristic of mental operation in adolescence is the increased ability to generalize facts. Children usually generalize in relation to concrete objects. The intellectual development in children operates on a perceptual level, but in adolescence the ability to generalize on conceptual level develops. The adolescent can generalize in an abstract way.

   The acquisition of the ability to generalize accurately enhances the adolescent's self-concept and gives him/her the confidence to face situations different from those encountered before.

2. **Increased ability to understanding:** There is an elevation in the ability to understand relationships and to solve problems of greater complexity and difficulty. The depth of understanding also develops. The adolescents can think of solutions to more difficult problems.

3. **Increased ability to deal with abstraction:** The adolescents can think not only in general terms but in abstract terms as well. They can think in terms of symbols in addition to concrete things. The ability to carry on abstract thinking is not something that suddenly develops in adolescence. It is relative. This ability to comprehend and to communicate meanings in abstract qualitative concepts is an important aspect of intellectual maturity in adolescents.

   The process of manipulating abstractions involves conceptualization, which means the process of forming a mental picture of something which can or cannot be pictured in concrete form.

4. **Development of memory and imagination:** The memory in adolescents develop tremendously with the growth in vocabulary. They can imagine a situation which is not physically present before them. Their long-term memory increases. They can retain facts for a longer period of time. They can anticipate future needs and can plan for it. The idea of historical past can be grasped by adolescents. The idea of time concepts becomes clear to them.

5. **Growth away from trial and error method:** Trial and error is the primitive method to solve problems. During adolescence, an individual develops the capacity

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to cope with situations through manipulation of pertinent factors. Teachers should encourage adolescents to develop the habit of substituting thought for trial and error method of solving problems.

6. **Ability of problem solving:** The ability to solve problems increases in adolescence. Adolescents can solve problems with the help of symbols. They can deal with ideas that do not represent something in which a person is directly involved. The adolescents solve and talk about national and international problems. They are able to mentally deal with events in a world that extends far beyond their own immediate sphere of activity.
7. **Increased ability to communicate with other persons:** The adolescents on roads, in coffee houses, and tea stalls can be seen arguing for hours on topics of their interest.
8. **Identification with conditions and characters in the larger world:** Another important change in intellectual orientation that takes place at adolescence is the ability to identify with circumstances and people outside one's immediate environment.
9. **Ability to make decisions:** Individuals have to make many decisions in their daily life. Decision-making ability is necessary for successful adjustment in life. During adolescence, we expect the growing child to gain confidence and help in developing opinions. Thinking involves a certain amount of freedom as well as independence that comes from maturity and wisdom. Adolescents have the ability to think about their future. They can differentiate between the ideal and the actual. They are reasonably objective in taking note of some of their weaknesses.
10. **Understanding of moral concepts:** Children, without questioning the validity of moral training, obey the moral code framed by parents, but as they enter adolescence they critically examine the moral code and ask questions. The moral consent becomes internalized and the adolescent is able to differentiate between what is good and what is bad.
11. **Self-criticism and evaluation:** Adolescents begin to evaluate their performance objectively but the majority of adolescents do not achieve the mental maturity to do so. They either overestimate or under-evaluate their performance.
12. **Increased rational self-control:** Generally children do what they want to do. They do not take into consideration the logic or rationale of doing a thing. Adolescents show more intellectual maturity in performing an act. They achieve rational self-control which is promoted by a good mastery over developmental tasks which develop a sense of achievement and duty in them.

Emotions in Adolescence

The characteristics of emotions in adolescence are as follows:

- **Complexity:** By the age a child steps into adolescence, he/she experiences a number of emotional upheavals and storms. Emotional development becomes complex due to various experiences with the environment. We cannot understand adolescents by the overt emotional expression, but we have to fathom deep to understand them. The adolescents learn to conceal their true emotional experience.
- **Development of abstract emotion:** Generally children show emotional expression in relation to concrete objects but adolescents can express their

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emotional feelings in relation to objects which are abstract or which are not present in concrete form.

- **Emotional feelings are widened:** As the child grows he/she starts taking into account the past and imagines the future. Thus, we can expect the adolescents to become more patient and tolerant. There is great shift in their social sphere.
- **Bearing of tensions:** Adolescents develop competencies to bear the tensions in different social situations. The emphasis is on self-control. They feel a kind of inner freedom—freedom to feel and experience in an intimate personal way.
- **Capacity of sharing emotions:** The adolescents develop concern about the feelings of others and an increased capacity for sharing emotional experiences with others. In childhood, children are not able to control their emotions. Sharing of emotional experiences reaches the peak of development when adolescents are able to relate themselves to other persons in such a way that the satisfaction of the person is just as important as their own. It means the adolescents begin to love their neighbours as much as themselves.
- **Loyalties expand:** Emotional development begins from the home environment of the infant and during adolescence it is expanded beyond home and neighbourhood. These loyalties are identified with peers and leaders of various fields.
- **Realism in emotional experiences:** Now the child enters the period of reality. An adolescent can perceive and appreciate people around him. They recognize the importance of weakness and strength of one's character.
- **Reviewing of hopes and aspirations:** Adolescence is the period of life when one has high hopes and aspirations for the future. Some adolescents work realistically to achieve their expectations and others do little to realize their hopes; they remain in illusion, and in the world of day-dreams and flights of fancy which make them unrealistic.
- **Toleration of aloneness:** The adolescents develop a feeling of aloneness. Sometimes they like to be alone in their home.
- **Externalization of feelings:** The adolescents learn to externalize their feelings in various situations of their external environment. They can project their feelings to others.
- **Increased compassion:** Compassion is the single quality which enables a man to achieve highest peak and the deepest reach in the search for self-fulfillment. Adolescents at this stage also develop the feeling of compassion.

Common Emotional Patterns in Adolescence

Emotions develop out of feelings of excitement in two channels from early childhood: delight and distress as love, affection and fear, anger and hostility. We will examine development of emotions during adolescence.

- **Love and affection:** The emotion of love is very important in adolescents and is related to sexual impulse. It is due to the physiological disturbances. The emotion of love and affection develops from the very infancy in the life of the organism. In infancy, love and affection develop in concrete objects of the environment, inanimate and animate, but in adolescence emotion of love and affection is associated with people and only occasionally with pets. Adolescents are able to

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discriminate people with whom they like to associate and build up affectionate associations. Gilliland reports that childhood loves are not sexual in nature but adolescence love becomes a source of pleasure. The circle of people becomes limited. The adolescents become very closely attached to one another because of intense feeling of love. The associations made in this period are lasting. The maturation of sex is the chief source of newness in the lives of the adolescents. Most of their conversation centres round sex and its problems. Commenting on the importance of love, Wenkart remarked, 'Adolescents who are able to love possess a priceless gift. When they are loved in return they taste one of life's greatest joys.'

- **Joy, pleasure and delight:** During adolescence, physical condition is one of the sources of joy and pleasure. The first cause of joy is one in which individuals fit, or to which, by virtue of capacity and ability gets well-adjusted.

  The second situation which calls forth joy in the adolescents are the release of pent-up energy. The more intense the pent-up energy and the longer it has been bottled up in the individual, the stronger will be the release when it finally does take place.

  The third common cause of happiness in adolescents is the feeling of superiority. Every adolescent feels insecure and uncertain in life. Any situation that is opposite to these feelings, give happiness. Passing the examination in first division, being elected to students union, and being declared first in athletics, or other contests, give feelings of superiority to adolescents.

- **Worry:** Worry is an imaginary fear. It is caused by a repeated rehearsal of the situation that is feared. It is referred by some psychologists as 'anxiety', an emotional state in which the disturbing situation does not accompany the state, but is anticipated in the future. The adolescents have the following types of worries:
  - o School work
  - o Examination and test
  - o School problems such as favouritism by the teacher, unreasonable homework, lack of ability to concentrate, not knowing how to study, worry of failure, and inadequacies related to their sex role.
  - o Home worries, i.e., lack of understanding between adolescents and parents, illness of parents, difficulty in marriage, friends' health, financial problems, personality weakness.

- **Fear:** Fear is an important negative emotion. No systematic work has been done on fears of adolescents in Indian conditions. Fear is learned from the environment in which a child moves. No generalized conclusions can be drawn about the objects of fear during adolescence. Some categories of objects are listed below which may cause fear:

  Fear of material objects: Fear of snakes, dogs, strange noise, lions, elephants, aeroplanes and so on.

  Social relationship: (i) Meeting with people in high offices (ii) being with elders (iii) being alone in a room (iv) reciting in the class or speaking from the platform (v) meeting members of the opposite sex.

  Adolescents are capable of disguising fear. A frightened person may show anger. Fears decrease with the advancing age of the child in number and intensity.

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- **Anger:** Anger is also a learned response to environmental stimuli. It is social in nature. Hebb, writing about the nature and source of anger and fear, says: 'The fundamental source of either emotion is of the same kind, a disruption of coordinated cerebral activity'. Fight and aggression are two different modes of reaction tending to restore the dynamic equilibrium, or stability, of cerebral process. Each of these modes of response tends to restore integrated cerebral action.
  (a) Failure of material object
  (b) Teasing by teacher, parents, elders and peers
  (c) Being unfairly treated
  (d) Sarcastic remarks, encroachment of his/her rights by brothers or sisters
  (e) Thwarting of self-assertions, insulting remarks, unwelcome advice, not being invited to a party and failure in activities undertaken

Causes of Heightened Emotionality

Causes of heightened emotionality are as follows:

1. **Change of roles in home, school and society:** As soon as children enter adolescence, their social roles and responsibilities change. Change of roles require adjustment to new situations in a different way. The adolescents have to change their old habits of childhood at home, in school and in the society. The change-over to new pattern of habits create emotional tensions in adolescents. The process of weaning from total dependence to independent role with greater responsibility disturbs the adolescents.
2. **Unfavourable relations in home:** Parents in most cases are responsible for heightened emotional quotient in adolescents because they do not prepare their sons and daughter to meet the problems of adolescence. They do not change their own attitudes towards adolescents. They still treat them as children which creates rebelliousness in adolescents against their parents. There are quarrels with parents and siblings on trivial matters.

   Adolescents need money to meet their demands of recreation andclothes, under peer pressure. They become emotionally disturbed when they fail to meet these demands.

   Adolescents have to face new social situations which disturb them, for example, talking with members of the opposite sex and meeting officers or elders.
3. **Social expectations:** When children become adolescents, society and parents expect them to think and act like an adults for which they are not physically and intellectually mature. Adolescents fail to decide their status in social settings and the failure to meet social expectations results in emotional disturbances and failure to adjust to new environment. The adolescents, due to shift in roles, have to make new adjustment in different social situations. They have to leave the accustomed patterns of childhood and make new adjustment in a short period of time.
4. **Difficulty in adjustment to the member of opposite sex:** We observe that in later childhood, there is little interaction between boys and girls. In adolescence there is attraction towards the member of the opposite sex but the adolescents are not able to understand the correct social behaviour, of how to make friendship with members of the opposite sex. These problems create emotional tensions in them.

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5. **Religious conflicts:** Every child is trained in a special setting of religious beliefs and values. The child without questioning the authenticity of the teachings of his/her parents obeys them but with advancing age, is able to critically examine the beliefs and starts to question the teachings of the parents. This leads to conflicts in their mind.
6. **School failures:** School failures cause heightened emotions so much so that many adolescents commit suicide, run away from home and sometimes give up studies.
7. **Conflicts with friends and family members:** Adolescents come in conflict with their friends and family members who fail to understand them. Too much discipline, restriction on movements and lack of understanding of their interests or point of views are the chief sources of emotional disturbances.
8. **Vocational problems:** The most pressing problem for Indian adolescents is the future vocation after schooling. When the adolescents find many adults without any means of livelihood, they get disturbed and a permanent anxiety sets in their minds. Particularly those adolescents coming from poor families and who are the only supports of their families are more disturbed.

Social Development during Adolescence

Man is basically a social animal. His existence without the social set-up can hardly be imagined. He is born in society, and develops, works and progresses in society. Social development is essential for proper adjustment in the society. Social adjustment of the child starts from early infancy. The foundation of social development is laid by parents in the family. The success in future social adjustment depends on parents and other members of the family who lay the foundation of social development. In adolescence the child enters quite a new field of social responsibilities. The society and parents place upon the child new demands which sometimes bewilder the child and he/she fails to adjust successfully in the new role.

The most characteristic social development is the increased influence of peer group. With advancing age, the child remains most of the time with his friends. The friends and type of peer group the adolescent joins, shape his behaviour to a great extent. His interests, attitudes and values are influenced by peers. Studies show that adolescents in urban areas are more guided by their peer group and adolescents in rural areas are guided by their parents and elder family members.

Adolescents become self-conscious of their place in the society and desires that their peers should accept them and should be respected. Therefore, the adolescents conform to the norms of the peer group. Adolescents can do anything for the sake of pleasing their peers.

Changes in Social Behaviour

The most marked change in adolescents is their place in their family. Attitudes of the parents change and they assign social responsibilities to them. Adolescents are taken into confidence on important family matters. The circle of the adolescents tends to become small and their interests become specialized. They start identifying themselves with adults and tries to imitate them.

The most marked and important development appears in their relation with the members of the opposite sex. In childhood, boys play with boys and girls with girls, while in adolescence there is heterosexual trend in companionship.

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The adolescent boys and girls form their groups based on their common interests and goals. The social group of boys are larger than girls because boys in our society have more freedom than girls. But very recently in big cities, a new trend toward giving more freedom to girls is emerging as a new social pattern among adolescent girls.

Adolescents make friendship with those who conform to their standard and possess the personality traits they like. The number of friends decrease but the affiliation becomes more permanent. There is interest to make friendship with the members of the opposite sex. The adolescents do not tolerate the interference of the parents and other members in selecting friends. Sometimes because of immature decisions, they can be unwise in selecting friends. The friendship of this period tends to be permanent.

Social interests

- **Parties, celebration:** There is an increasing interest in adolescent boys and girls to attend parties, celebrations and fairs where members of both sex meet.
- **Conversation:** Adolescents take interest in talking about various types of problems. They show interest in social problems of wide variety. Talking plays a cathartic role for adolescents.

School and Social Development

Adolescents need guidance in the development of healthy social relations and for this purpose school is the most appropriate place where a variety of activities can be organized to foster social development. The following activities can help in the development of proper social attitudes:

- **Organize social functions:** The teacher should organize informal social functions in which students may come closer to each other and have an opportunity to understand interests and aspirations of each other. The students may be divided into smaller groups to discuss their problems informally. Social functions should be organized in such a way that must cater to the needs of all types of students.
- **Arrange excursions and trips:** Excursions and outings provide more opportunity for informal conversations and close contact with each other.
- **Arrange games, debates and seminars:** Teachers should organize group-games, debates and seminars to train adolescents to participate in social activities.
- **Appraise social interests:** The teacher should make an appraisal of student's social interests, social acceptance in classroom, socio-economic conditions and organize activities to foster socialization.

Interests of Adolescents

Interest means to make a difference. It describes why the organism tends to favour some situation and reacts to them in a very selective manner. Interest and attention are closely related. Interests of adolescents play an important role in the development of their behaviour and personality. Interest is any activity that drives or motivates individuals to act upon. Interests are very important to understand an individual and to guide future activities.

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Characteristics of Adolescents' Interests

1. **Instability:** In early adolescence boys and girls have a variety of interests. Everything which is new draws their attention. But by the end of adolescence, interests stabilize. They concentrate on selected interests.
2. **Interests in adolescence expand:** Many of the childhood interests are carried over and some are new ones. The field of interests expands with the development of intellectual and social development. An adolescent starts taking interest in national and international affairs. With the advancing age, by the end of adolescence, the interests become stable and specialized.
3. **Interests of adolescents shift in values:** Another characteristic of adolescent interest is the shift in values of different interests. The major interests of childhood may become minor and some new interests may become major interests.

Factors affecting interests

Interests are highly individual actions. The variations in the interests are influenced by a number of factors which are listed below:

1. **Physical development:** Physical development is very important in deciding the development of interest. If the adolescent is physically sound and strong, he/she can participate in sports and games which require strength. But if the adolescent is physically handicapped then his/her interests will be confined to different kinds of activities, mostly indoor.
2. **Sex differences:** There is a great difference between the interests of adolescent boys and girls. The differences may be attributed to the physiological differences and cultural influences. Girls participate in those games and sports which need less vigour. Boys like competitive games of muscular dexterity. The differences among the play interests of boys and girls are not only caused by sex differences but by cultural conditions. Educational level and environmental conditions are also important factors.
3. **Environment:** Environment plays an important role in deciding the interests of adolescents. It influences in giving the opportunity to come in contact with various items of interest. The geographical conditions and climatic conditions influence the interests of adolescents. There is a great difference in the interests of boys and girls from rural and urban areas. Culture also influences the interests of adolescents.
4. **Socio-economic status:** Socio-economic condition of the family also plays an important role in deciding the interests of adolescents. Adolescents belonging to lower socio-economic condition remain busy in the work. They do not have money to purchase articles of games or books, magazines, etc.
5. **Intelligence and play interest:** Lehman and Witty conducted a survey of interest in play activities as shown by gifted and dull adolescents. They concluded that gifted adolescents participate in solitary types of play. They prefer games which involve rules and well-organized system. They do not like those activities which require muscular strength, but on the other hand they like problem-solving activities. Dull boys participate in social games requiring muscular strength.

Types of Interests

The four types of interests are social, recreational, personal and vocational.

1. Social interests

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The social sphere of adolescents increases outside the home and neighbourhood. They now comes in contact with more people. They develop an urge to communicate with others. The adolescents remain in the company of their friends outside their home most of the time. The adolescents identify themselves with a group with whom they discuss different types of problems. Their talks generally centre round the following themes:

- **Chit-chat:** The adolescents love to meet in groups and do small talks.
- **Discussion:** Adolescents discuss many problems facing the society from every possible angle. Discussions are serious in nature and cover a wide range of subjects and topics. Discussion is more satisfying because it gives them an opportunity to freedom of expression.
- **Arguments:** Arguments grow out of discussion. A discussion starts out to be a friendly exchange of views in which each adolescent contributes his/her knowledge of the subject. When the point of view in a discussion differs, it becomes an argument.
- **Parties, celebration:** There is an increasing interest in adolescent boys and girls to attend parties, celebrations and fairs where members of both sexes meet.
- **Conversation:** Adolescents take interest in talking about various types of problems. They show interest in social problems of wide variety. Talking plays a cathartic role for adolescents.

  Studies have been conducted by psychologists to survey the topics of conversation of adolescents. It has been invariably reported by all the investigators that conversation of adolescents centres mainly on sex, clothes, shady stories, vocations and criticism of home, school, adults and teachers among others.

2. Recreational Interests

Recreation contributes to mental health of adolescents by providing them opportunity to express their pent-up emotional feelings and ease their tensions which develop in classroom teaching. In addition to recreation develops creativity and engages adolescent's mind in constructive activities.

Unfortunately there are many Indian adolescents who are deprived of recreational activities. Rural adolescents coming from low socio-economic status have fewer opportunities for constructive recreational activities. Girls in rural areas have even lesser opportunities than girls in urban areas. In the last two decades, recreational activities have tremendously increased with the socio-economic development and technological development in the country.

Types of Recreations

From 12 years to 17 years, all types of games and sports are played by boys and girls but sports requiring physical strength are more popular with boys. Boys who are physically stronger engage in games requiring muscular strength and competition. Weak boys engage in games of individualistic sort with little competition. Girls with strong physique engage in competitive games.

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Hobbies: Hobby is an activity in which something is created or constructed for the purpose of fun. In our country, adolescents in rural areas hardly get time to engage in a hobby. Their hobby is to help their parents in their occupation but in urban areas adolescents develop some hobby to utilize their time and to get the pleasure from their own creation. Adolescents in cities engage in hobbies like free-drawing, gardening, writing, collection and photographing, etc.

Adolescence is a period of life which is full of physical vigour. Adolescents take interest in adventurous activities as climbing mountain peak, exploring unfamiliar places, fishing, etc. These activities give pleasure to adolescents because they are undertaken free from supervision of adults and full freedom is given to meet the challenge.

Reading interests: Reading in adolescence is very important for various reasons. One reason is that reading gives an opportunity for identification with the characters of the reading material. It gives knowledge and entertains the individual. Reading interest reaches its climax in adolescence. They develop a mania for reading novels, short stories, adventure stories and light poetry. Reading interest in adolescence is influenced by a number of factors such as intelligence, socio-economic condition, availability of the reading material and urban-rural factors, and sex. Adolescents read books, magazines, comics, newspapers, etc.

Adolescents like light music, sports news, serial plays, detective, mysterious and crime stories, humorous sketches and dramas. Preferences of radio programme listening is influenced by sex, age and intelligence of adolescents. Nowadays TV, in India, has become a very popular media of entertainment and education. The socio-cultural climate of our country is influenced by multi-channel television programmes. Television has a great impact on the interests of adolescents.

3. Personal interests

Adolescents are more interested in show off than any other thing. They want to attract the attention of others by their muscular body and facial beauty, coloured clothes, hair styles and gait. Social success in adolescence depends on physical appearance. The areas of personal appearance are the body size, hair style, face and nails in girls. Adolescents take interest in developing their body size according to the standard of the culture they live in.

Interest in clothes also becomes prominent in the life of adolescents. They wear multi-coloured and clothes of latest fashion. An adolescent girl who wears extreme in styles draws more attention from people and arouses feelings of admiration and becomes an envy for other girls.

Adolescents are also interested and conscious of physical health and its importance in society. They know the value and influence of good health on their general well-being in the society. They become interested to know as to how to avoid diseases and how to develop good health.

4. Vocational interests

Child up to 12 years of age does not bother much about their future career but as they reach 16 years of age they start thinking about their future career. The choice of future career by an adolescent significantly affects his/her future social relationship in the society and indirect progress of the country. In our country great revolution is taking place in socio-economic and educational fields. These revolutionary changes make it imperative to provide proper guidance to adolescents to help make career decisions.

Factors affecting vocational interests

Several factors affect the choice of future career in adolescence. The most important factors are given below:

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- **Urban-rural factor:** The community residence of an adolescent affects his/her vocational interest. Adolescents who come from rural areas generally aspire for low paid and lower prestige jobs than adolescents from urban areas. It may be because of poor educational facilities and experiences of rural adolescents. Even in the rural areas, there are differences in adolescents on the basis of intelligence, sex, socio-economic condition and parental education.

  An interesting study was conducted by Sewell and Ovenstein in 1965 to study the relationship between socio-economic status and community size. They have reported in their study that adolescents coming from lower socio-economic conditions are exposed to poor stimulation in the sense that they have contact with people of low status who do not provide good models for inspiring adolescents for higher vocations. They are exposed to less number of vocations. The rural adolescents do not have opportunities of coming into contact with people of high vocations who can guide, inspire and provide proper information to them. But it does not mean that adolescents from rural areas do not aspire for higher vocation. There are many examples in which rural adolescents have excelled their counterparts from urban areas.

- **Sex differences:** Sex differences make great differences in the choice of vocation. Formerly in our country education of women was completely neglected; very few women studied who never thought of joining the service industry. Acceleration of women education and their aspirations for equal access in vocation has created problems. Earlier women were thought to be fit for limited vocations but recently women have entered almost all professions with success.

- **Father's occupation:** Generally adolescent boys identify themselves with the career of their fathers. Werts, 1968, who studied fathers' occupation and career choice of 76,000 boys, found that the sons of physical scientists, social scientists, and medical men tended to choose the careers of their fathers. In addition, the encouragement and inspiration of low socio-economic status parents to their sons plays an important role to select a profession.

- **Occupational attractiveness:** Adolescents are led to make their vocational choice by the prestige, income, and social recognition of the profession by the society. Socio-economic class and intellectual level and availability of vocation are important factors which affect the choice of career in adolescents.

Problems of Adolescents

Any period of change is likely to be accompanied by many potential difficulties. Adolescence is a period of transition from childhood which implies many developmental changes. G. S. Hall has called this period as a period of strain and stress fraught with many problems but other psychologists have laid emphasis on the cultural conditions as the causes of problems in adolescence. Problems of adolescence have been studied by psychologists since a long time but systematic studies were conducted for the first time by Hall in 1904.

NOTES

Laycock (2009) grouped the problems of adolescents under the following major tasks:

- Adjustment in home, school, society and to opposite sex
- Freedom from home
- Adjustment in suitable vocation
- Developing a sound philosophy of life

Charlotte Pope made an extensive study of the problems of adolescent boys and girls and reported the following areas of problems:

1. **Teaching-learning relationship in school:** Most of the adolescents face problem in adjustment with teachers. Teachers are rigid, conservative and do not change their attitude. Some adolescents reported the problem of favouritism by teachers. Students also resent the amount of homework given to them.

   It is unfortunate that our curriculum is purely theoretical and there is hardly any active participation on the part of the students. Sitting passive in the class creates annoyance in adolescent boys and girls.
2. **Occupational adjustments:** The greatest single problem which bothers the mind of adolescent boys in India is uncertainty of the future. The problem of what to do after the studies are over haunts the minds of unemployed adolescents. There is another black side of the picture when adolescents come across scores of unemployed adolescents. The mind of an adolescent agitates against the social order, and he/she becomes rebellious. It is further unfortunate that most of our adolescents study without future planning. When they finish their study they find themselves incapable of taking up any independent means of livelihood.
3. **Financial problem:** If we recollect the problems of adolescents of pre-Independence period in India, we find that at that time problems were limited. The problems of adolescents have multiplied with the socio-economic development of the country. The problem of money is a big issue. There are many activities of adolescents which involve money. The adolescents need money. They feel ashamed of asking for money from their parents. Parents in turn are conservative in handing out money for extra activities to their adolescent children.
4. **Home life relationship and social adjustment:** Adolescents want more freedom to attend social functions but parents do not permit them to move outside the home. This is particularly more so in case of girls from rural areas.

   The second important problem is regarding high aspirations of parents regarding achievement of their wards and when they do not come up to their expectations there is constant quarrelling among parents and adolescents. Sometimes these quarrels result in dire consequences. Adolescents run from their home and may even commit suicide.

   There is lack of understanding between parents and adolescents, regarding freedom and money. The parents treat the adolescent like a child. They never discuss problems freely with them.
5. **Health adjustment:** Physical health is a very important factor for adequate social adjustment. Both boys and girls are very particular regarding their

physical appearance. Those adolescents who are either underdeveloped or overdeveloped have great problem in adjustment.

Sex Education and Adolescents

NOTES

Adolescents have to live in the society; their development depends on proper type of social interactions. We cannot isolate our adolescents from the social set-up. Social environment has many occasions when adolescents come to know about sex and its problems. The child comes to know about sex from the early age of six. Surveys made by Ramsey and Hamilton prove that children cannot be kept ignorant of sex knowledge. The following are the important sources which provide sex knowledge to children:

- Friends
- Literature
- Old people
- Movies
- Drawings
- Reproduction in animal life
- Physiological development

These sources and a number of other sources are responsible for providing knowledge of sex. Many boys and girls worry and suffer from venereal diseases because of wrong information about sex and due to lack of proper guidance. All teachers, social workers and psychologists agree that sex education should be provided to children.

SUMMARY

- Hereditary traits may be divided into two categories: physical traits and mental traits.
- Over a relatively brief nine-month period, a single-celled zygote transforms into a fully formed foetus made up of around 1 trillion cells. This period of astonishing growth consists of three distinct phases: the germinal stage, the embryonic stage, and the foetal stage.
- Postnatal is the period beginning immediately after the birth of a child and extending for about six weeks. Another term would be postpartum period, as it refers to the mother (whereas postnatal refers to the infant).
- The major focus of postpartum care is ensuring that the mother is healthy and capable of taking care of her newborn, equipped with all the information she needs about breastfeeding, reproductive health and contraception, and the imminent life adjustment.
- The actions and reactions of neonates are generally known as reflexes. Reflexes are instinctive movements or actions. A few of the movements are impulsive and occur as part of the baby's natural actions, whereas others are in response to certain actions. Reflexes help in identification of normal brain and nerve activities. A few of the reflexes take place only at certain stages of development.
- Emotional development begins at an early age, as soon as children start kindergarten and preschool. They interact with other children, which helps them develop both, socially and intellectually.

Check Your Progress

7. What is physiological growth?
8. Mention any four factors that affect intellectual development?
9. State any one characteristic of intellectual development.

NOTES

- Both the types of development, emotional and intellectual, ideally take place in synchronization resulting in the social development of the child. This is due to the fact that when children interact with other children as well as adults, they develop healthy emotions.
- Motor development is the process of growth in which a child acquires and gains expertise in skills required to move different parts of the body and control them. These are carried out by a combination of the brain, nervous system, and muscles.
- Infancy is the earliest period of childhood, which is the first state of development. On the other hand, childhood is the age span ranging from birth to adolescence.
- Cognitive development focuses on a child's development, referring to his capability to process information, abstract resources, perceptual abilities, language learning and other characteristics of brain development and cognitive psychology, as compared to an adult's approach.
- Language development helps a child communicate and convey and comprehend feelings. It also supports thought processes and the ability to solve problems and develop and maintain relations. The abilities to understand, use and take pleasure in language are the crucial first steps.
- Intellectual development refers to the development of an individual's intellectual faculties which includes comprehension, cognition as well as reasoning based on abstractions. Essentially, intellectual development is the pursuit of activities that involves a higher degree of mental functioning.
- The extent of intellectual development is indicative of an individual's mental health.
- Physiological growth refers to the growth and development of physical as well as mental features. Development of the cognitive, emotional, intellectual and social skills is as important as the development of different body parts.
- Intellectual development is the development of mental abilities and capacities which helps individuals to adjust behaviour to the ever changing environmental conditions.
- Mental health is very important for efficient learning and proper development of personality.

KEY TERMS

- **Adolescent:** It is the period through which a child develops into an adult.
- **Genetic:** It is related to genes or heredity.
- **Cognitive development:** It is the development of the ability to think and reason.
- **Depth perception:** It is the visual ability to perceive the world in three dimensions.

ANSWERS TO 'CHECK YOUR PROGRESS'

1. Two categories of hereditary traits are physical and mental traits.
2. Postnatal is the period beginning immediately after the birth of a child and extending for about six weeks.

3. Infancy is the period that follows the neonatal period and includes the first two years of life. During this time tremendous growth, coordination and mental development occur.
4. Deciduous teeth, otherwise known as milk teeth, baby teeth, or primary teeth, are the first set of teeth in the growth development of humans and many other animals.
5. Motor development may be defined as the development of strength, speed and accuracy in the use of muscular parts of the body such as arms, eyes, legs and neck muscles.
6. Depth perception is considered to be the visual ability to perceive the world in three dimensions.
7. Physiological growth refers to the growth and development of physical as well as mental features.
8. The factors that affect intellectual development are:
   - Heredity
   - Physical growth
   - Physical environment
   - Family environment
9. 'Intellectual development' is the pursuit of activities that involves a higher degree of mental functioning. An increased ability to generalize facts is one factor that characterizes intellectual development. Children usually generalize in relation to concrete objects. The intellectual development in children operates on a perceptual level but in adolescence the ability to generalize on conceptual level develops.

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