

MEANING OF GROWTH AND DEVELOPMENT

Change is the law of nature. Animate or inanimate objects are all subject to change. Animate objects are distinguished from inanimate objects chiefly by their potentiality to maintain the flow and cycle of life. Seeds, after germinating in the soil grow as saplings and then as specific plants or trees which in turn flower and produce seeds or fruits for further germination. Similar is the case with birds, animals and human beings who can reproduce their own kind by the transmission of specific characteristics of the species through sexual union between the male and the female.

As far as the human being is concerned, life starts with the conception in the mother's womb as a result of the process of fertilization of the ovum (egg cell) of the mother by the sperm cell of the father. The mother's womb then becomes the site and the means for the growth and development of the new life and it is only after about nine months that the baby is able to come into the world as a newborn. The period spent in the mother's womb is termed as pre-natal period and is usually not included in the computation of one's chronological age. In all animals, including human beings, the pre-natal period resembles the time taken by a germinating seed to come out of the soil, which then grows and develops into a full-fledged plant or tree. *The processes by which a germinating seed or conceived organism is turned into the mature plant or full-fledged being are collectively termed growth and development.* The processes of growth and development are thus the medium and the means for bringing about changes in the organisms. The terms growth and development are often used interchangeably and regarded as synonymous terms. In general, they refer to the changes produced by the interaction of one's genetic and environmental factors as well as to the changes in the physical, mental, social, emotional and moral aspects involving one's individuality. However, they differ in a sense and are capable of conveying different meanings as will become evident from the following discussion.

Distinction between Growth and Development

The changes in various dimensions of one's personality are mainly of two types—

quantitative and qualitative. While the term 'growth' may be limited to the changes in the quantitative aspect, i.e. increase in size, length, height and weight and expansion of vocabulary etc., the term 'development' implies the overall changes occurring in both the quantitative as well as the qualitative aspects. Therefore, development as a term carries a wider and more comprehensive meaning than the term growth.

Since growth is limited to the description of quantitative changes, its scope is confined to those aspects or dimensions of one's personality in which quantitative changes occur. As a result, in dealing with those aspects or dimensions of personality where both the quantitative and qualitative changes are involved, the term growth is not employed. On the other hand, development as a comprehensive term, related to all types of changes, can be employed to describe the changes in all dimensions of one's personality whether physical, mental, social, moral or any other. That is why whereas we come across descriptions like physical growth and development, mental growth and development in the titles of the texts, we seldom come across these in the case of the social, emotional and moral aspects of personality. Here we usually drop the term growth and refer simply to social, emotional and moral development since the quantitative changes in these aspects are not as directly observable and measurable as in the physical and mental aspects. Therefore, when we talk of development in one or the other dimension of one's personality, it is clear that we are describing and explaining the overall changes in the structure and functioning of that particular aspect. For example, when we study physical development we do not aim to describe the changes in the size and proportions of the physical organs in a solely physical sense but also to point out the impact of these physical changes in terms of improvement in the working or functioning of the physical organs. The term growth, on the other hand, carries a limited and narrower meaning. It is a sub-system of the development as it is concerned merely with the quantitative changes in comparison to the overall changes described and explained by the process of development. This does not continue throughout one's life. It stops when maturity has been attained while development is a continuous process. Starting right from conception it does not end with the attainment of maturity but continues throughout the entire life span of an individual.

Development is said to be a complex process in comparison to the process of growth. The results of growth in terms of quantitative changes are very specific, fairly easy to observe and measurable. The results of development, in comparison, are quite complex and difficult as far as their actual assessment and measurement is concerned.

Thus, the terms growth and development, both imply changes in one's behaviour and personality make-up. Development related to the overall changes, structural as well as functional, carries a comprehensive meaning and consequently we would prefer to describe the trends of changes during the life span of an individual in various dimensions of personality as well as discussing the principles and theories to highlight the pattern and mechanism of these changes.

Stages of Growth and Development

As pointed out earlier, Life's journey begins with conception in the womb of the mother. The approximate nine month period spent in mother's womb is known as the pre-natal period. A child is said to be born when it (fetus) emerges from the internal environment (womb) and has its first contact with the external environment. It is called the post-natal period—and is in fact the beginning of computation of chronological age. The period between the birth and two years—is called the infancy period followed by the phase of childhood lasting for about 10 to 12 years. This is followed by the period of adolescence when one attains puberty (sexual maturity) and is capable of reproduction. In true sense it is the transition period between childhood and adulthood. On attaining maturity in all aspects, viz., physical, mental, emotional and social, one attains the status of an adult, lasting for a long period before one becomes senescent or begins to show signs of ageing.

The above-mentioned specific titles of infant, child, adolescent, adult, or old person are specifically related to distinct stages of growth and development into which the human life span is hypothetically divided. Each of these stages is said to extend over a somewhat definite period in years. This division, though arbitrary, gives an idea of the age-linked developmental stages (see Table 9.1).

Table 9.1 Age Span for the Human Developmental Stages

<i>Period or stages of development</i>	<i>Approximate age</i>
1. Infancy	From birth to 2 years
2. Childhood	From 3rd year to 12 years
(a) Pre-childhood	From 3rd year to 6 years
(b) Later childhood	From 7th year to 12 years or in a strict sense up to the onset of puberty
3. Adolescence	From 13th year to 19 years or in a strict sense from onset of puberty till the attainment of maturity
4. Adulthood	From 20th year to 60 years or in a strict sense from attaining maturity to the age one ceases to produce one's own kind
5. Old age or ageing	From 61 years or in a strict sense from the end of the reproduction capability till death

During all these developmental stages, human beings exhibit typical behavioural characteristics in all dimensions of behaviour and personality make-up which are specific to each stage. There are, however, individual variations, and no one is similar to others in all aspects of behaviour and dimensions of personality. A study of the pattern of growth and development exhibited by individuals while passing through the above-mentioned stages provides very useful data for parents and teachers to plan the development and education of children. In the pages that follow, we shall discuss the salient features of this pattern.

Principles of Development

Development, although an individual phenomenon, has been found to follow a logical and sequential pattern from conception onward. It seems that it is operated by some general rules or principles. These rules or principles may be named as the principles of development. Let us now discuss these principles briefly.

1. **Principle of continuity.** Development follows the principle of continuity which means that in one's life it is a never-ending process. It starts with conception and ends with death. The changes, however small and gradual, continue to take place in all dimensions of one's personality throughout one's life.

2. **Principle of lack of uniformity in the developmental rate.** Development, though continuous, does not exhibit steadiness and uniformity in terms of the rate of development in various dimensions of personality or in the developmental periods and stages of life. In passing through the developmental stages, the changes are often so silent and gradual as to be almost invisible over a long duration but sometimes they are as fast as to be noticed quite easily. Thus, instead of steadiness, development usually takes place in fits and starts showing almost no change at one time and a sudden spurt at another, as for example, shooting up in height and sudden change in social interest, intellectual curiosity and emotional make-up.

3. **Principle of individual difference.** Every organism is a distinct creation in itself. Therefore, the development which it undergoes in terms of the rate and outcome in various dimensions is quite unique and specific.

4. **Principle of uniformity of pattern.** Although there seems to be a clear lack of uniformity in terms of the rate of development and also there are distinct individual differences with regard to the process and outcome of the various stages of development, yet it follows a definite pattern in one or the other dimension which is uniform and universal with respect to the individuals of a species. For instance, the development of language follows a somewhat definite sequence quite common to all human beings. This is true of other cognitive abilities, and physical and psycho-social development follows a somewhat uniform sequence spread over different developmental stages and periods of one's life.

5. **The principle of proceeding from general to specific responses.** While developing in relation to any aspect of personality, the child first picks up or exhibits general responses and learns to show specific and goal-directed responses afterwards. For example, a baby starts by waving his arms in a general random movement and afterwards these general motor responses are converted into specific responses like grasping or reaching out. Similarly, when a newborn infant cries, his whole body is involved in doing so but as he develops, it is limited to the vocal cords, facial expressions and eyes etc. In the development of language, the child begins with generalized responses, such as by calling all men daddy and all women mummy but as he grows and develops, he begins to use these names only for his father and mother.

6. **Principle of integration.** By observing the principle of proceeding from the

general to the specific or from the whole to the parts, it does not mean that only the specific responses are aimed for the ultimate consequences of one's development. Rather, it is a sort of integration that is ultimately desired. Throwing light on this principle Kuppuswami (1963) observes—"Development thus involves a movement from the whole to parts and from the parts to the whole" and in this way it is the integration of the whole and its parts as well as the specific and general responses that enables a child to develop satisfactorily in relation to various aspects or dimensions of his personality.

7. Principle of interrelation. The various aspects or dimensions of one's growth and development are interrelated. What is achieved or not achieved in one or the other dimension in the course of the gradual and continuous process of development surely affects the development in other dimensions. A healthy body tends to develop a healthy mind and an emotionally stable and socially conscious personality. Inadequate physical or mental development may, on the other hand, result in a socially or emotionally maladjusted personality. This is why all efforts in education are always directed towards achieving harmonious growth and development in all aspects and dimensions of one's personality.

8. Principle of interaction. The process of development involves active interaction between the forces within the individual and the forces belonging to his environment. What is inherited by the organism at the time of conception is first influenced by the stimulation received in the womb of the mother and after birth, by the forces of the physical and socio-psychological environment for its development. Therefore, at any stage of growth and development, the individual's behaviour or personality make-up is nothing but an end-product of the constant interaction between his hereditary endowment and environmental set-up.

9. Principle of cephalocaudal and proximodistal tendencies. Cephalocaudal and proximodistal tendencies are found to be followed in maintaining the orderly sequence and direction of development.

According to the cephalocaudal tendency, development proceeds in the direction of the longitudinal axis (head to foot). That is why, before it becomes able to stand, the child first gains control over his head and arms and then on his legs. In terms of the proximodistal tendency, development proceeds from the near to the distant and the parts of the body near the centre develop before the extremities. That is why, in the beginning the child is seen to exercise control over the large fundamental muscles of the arm and the hand and only afterwards over the smaller muscles of the fingers.

10. Principle of predictability. Development is predictable, which means that with the help of the uniformity of the pattern and sequence of development, we can, to a great extent, forecast the general nature and behaviour of a child in one or more aspects or dimensions at any particular stage of its growth and development. That is why we can discuss in developmental psychology the general nature of the development at different stages such as infancy, childhood, and adolescence. Not only is such prediction possible along general lines but it is also possible to predict the range within which the future development of an

individual child is going to fall. For example, with the knowledge of the development of the bones of a child it is possible to predict his adult structure and size. Similarly, the appraisal of one's mental ability, emotionality and sociability can tell us a lot about the future trends of one's development.

11. Principle of spiral versus linear advancement. The path followed in development by the child is not straight and linear and development at any stage never takes place with a constant or steady pace. At a particular stage of his development, after the child had developed to a certain level, there is likely to be a period of rest for consolidation of the developmental progress achieved till then. In advancing further, therefore, development turns back and then moves forward again in a spiral pattern as illustrated in Figure 9.1.

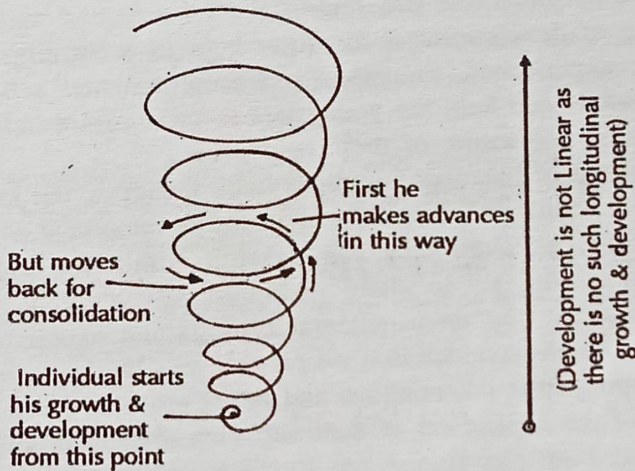


Figure 9.1 Spiral pattern of movement in development (as opposed to linear).

EDUCATIONAL IMPLICATION OF THE PRINCIPLES OF GROWTH AND DEVELOPMENT

The knowledge of the above-mentioned principles of growth and development may prove beneficial to us in a number of ways described below.

1. Development is a continuous and non-stop process at all periods and stages of human life. Therefore, we should never give up our efforts to achieve perfection in terms of development in the different dimensions of our personality.
2. The principle and knowledge of individual differences reminds us to understand the wide individual differences that surface at all periods of growth and development among children. Each child should be helped along the developmental process within the sphere of his own strengths and limitations.
3. The principles related to growth and development suggest a pattern or trend for the advancement of children on the developmental path. This knowledge can help us know as to what can be expected in terms of the proper growth and development at a particular developmental stage.

and we can then plan accordingly to achieve it by organising the environmental experiences.

4. Principles like "proceeding from general to specific responses", and the principle of "integration" help us to plan the learning processes and arrange suitable learning experiences so as to achieve maximum gains in terms of growth and development.
5. The principle of interrelation and interdependence directs us to strive from the very beginning for the all round harmonious growth and development of the personalities of our children and cautions us not to encourage the development of a particular aspect at the cost of another.
6. The principle of spiral advancement of development helps us to make adequate arrangement for the subsequent progress and consolidation of the progress achieved during specific developmental stages.
7. The cephalocaudal and proximodistal tendencies as suggested by the principle of developmental direction help us to arrange the suitable learning experiences, processes and environmental set-up so as to accommodate and help the youngsters to grow and develop according to the trend and nature of these tendencies.
8. The principle of interaction reminds us to recognise the joint responsibility of heredity and environment in the development of personality. Accordingly, although they can develop within the limits of their genetic make-up, yet to attain maximum development, we have to arrange for the best environmental settings and experiences for our children. The environment that we provide should always be conducive to developing their potentialities and never prove to be an obstacle in the way of the adjustment of their self with their environment.

FACTORS INFLUENCING GROWTH AND DEVELOPMENT

Right from conception, the beginning of life in a mother's womb, the growth and development of human beings is influenced by a variety of factors categorized broadly as internal and external. Let us try to throw some light on these factors.

Internal Factors

All those factors which lie within the individual are called *internal factors*. These factors include:

1. Heredity factors
2. Biological or Constitutional factors
3. Intelligence
4. Emotional factors
5. Social nature

Let us discuss the influence of these internal factors on the growth and development of children.

1. Heredity factors. Heredity factors play their part at the time of conception in the mother's womb. What is transferred to the offspring from its immediate parents in the form of genes and chromosomes at this time, constitutes the hereditary contribution. This contribution is the real starting point and basis for all the growth and development that take place later in the life of the child. The height, weight, colour of the eyes and the skin, the characteristics of the hair, are all decided by these hereditary influences. The physical structure, nervous system and other things related to one's constitutional make-up, body chemistry and physical development are, to a great extent, decided by hereditary factors. Hereditary factors, in fact, as emphasized earlier, lay the foundation and it is the quality of this foundation that is helpful in the future growth and development. If hereditary contributions are satisfactory, then with minimum efforts of the environmental forces, we get satisfactory results. However, in case the hereditary contribution is quite meagre, then we have to make tremendous efforts for achieving desired success in terms of a child's satisfactory growth and development.

2. Biological and constitutional factors. A child's constitutional make-up somatic structure, physique and body chemistry influence his growth and development throughout his life. This can be substantiated in the following manner:

- (a) A child who is physically weak or have internal deformities cannot be expected to achieve satisfactory results in terms of his normal physical growth and development. He usually suffers from illness which not only hamper his physical growth but also affect his development in other spheres—mental, social and emotional.
- (b) The nervous system which controls the body movement, affects the growth and development of a child in cognitive spheres.
- (c) The endocrine or ductless glands are potent factors affecting the growth and development of an individual from his birth. The chemistry of the body is governed by these glands. Each of these glands secretes its own chemicals known as *hormones*. These hormones reach the blood stream, and get circulated throughout the body. They influence all those tissues on which depend the function of body system, emotional actions and even thoughts and, therefore, the functioning of the ductless glands exercises a great influence on various aspects—physical, social, mental, emotional and moral—of a person's growth and development. For a balanced growth and development, the normal functioning of these glands is essential. In case there is over activity (hyperactivity) or under activity (hypoactivity) of these glands, it results in serious abnormality in growth and development. For example, imbalance in pituitary gland may lead to an abnormal increase or decrease in height.
- (d) Defective constitutional make-up like ugly face, short stature and any other deformity of the body may give birth to feelings of inferiority in a child. Moreover, he may face adjustment problems in the social environment and, consequently, may lag behind in the race of growth and development pertaining to various aspects of his personality.

3. Intelligence. Intelligence, as the ability to learn, adjust and take right decision at right time, has a significant role in the overall growth and development of a child. It affects his social behaviour, moral judgement and emotional growth. An intelligent person is said to exercise reasonable control over his emotions, and is found to carry on well with his personal and social adjustment. Thus, the physical, social, emotional, moral and language development of a child is greatly influenced and controlled by the level of his intelligence. We cannot expect problem-solving behaviour, creative, imaginative and inventive ability from a child having subnormal intelligence.

4. Emotional factors. Emotional factors, e.g. emotional adjustability and maturity, play a big role in influencing a person's overall growth and development. A child who is found to be overwhelmed by negative emotions like fear, anger, jealousy, etc. is adversely affected in his physical, mental, social, moral and language development. If a person cannot exercise a reasonable control over his emotions, he is sure to suffer in terms of his growth and development. He will have to face difficulty in his social adjustment. He may find himself a failure in doing some serious mental activity. Ultimately, he may spoil his physical and mental health.

5. Social nature. A person's socialization helps him in achieving adjustment and advancement in other aspects of his growth and development. He may learn from his environment, more by means of his social nature, which may prove to be a boon to him for his proper growth and development.

External Factors

The factors lying outside the individual in his environment are said to be the external factors influencing his growth and development. These factors begin their role of influencing the growth and development just immediately after a baby is conceived. These may include the following.

1. Environment in the womb of the mother. What is available to the child for his nourishment in its mother's womb from the time of conception till his birth is quite important from the angle of his growth and development. A few factors associated with this period may be cited as below:

- (a) The physical and mental health of the mother during pregnancy.
- (b) Single child or multiple children getting nourished in the womb.
- (c) The quality and quantity of nutrition received by the embryo within the womb of the mother.
- (d) Whether or not the embryo has been subjected to harmful radiation or rays, etc.
- (e) Normal or abnormal delivery.
- (f) Any damage or accident to the baby in the womb.

2. Environment available after birth. Whatever a child gets from different conditions and forces of his environment after his birth, influence his growth and development in many ways. These may be described as follows:

- (a) *Accidents and incidents in life.* The growth and development of an individual is greatly influenced by the good and bad incidents and accidents which he happens to meet in his life time. Sometimes, a small injury or an incident may change the entire development course of his life. For example if a child's nervous system is damaged in an accident, it will hamper his mental development and in turn it will affect his development in other spheres—social, emotional, moral and physical.
- (b) *The quality of physical environment, medical care and nourishment.* A child's growth and development is greatly influenced by the quality of his physical environment and medical care and nourishment available to him for his living and working. These include open space, balanced diet, good living and working conditions and proper medical care. He will achieve the heights of his growth and development based on the proper availability of these things.
- (c) *The quality of the facilities and opportunities provided by the social and cultural forces.* What a child gets from his social and cultural environment for the growth and development of his potentials, influences the entire course of his development. In a true sense, he develops and becomes what he is permitted to and desired by these social and cultural forces. A few of such conditions are pointed out below:

1. Parental and family care received by a child.
2. Economic and social status of the parents and the family.
3. The quality of the neighbourhood and surrounding environment.
4. The quality of schooling received by a child.
5. The quality of peer group relationships and company of a child.
6. The quality of treatment made available to a child and his family with regard to his caste, religion, nationality or citizenship.
7. The quality of educational and vocational facilities and opportunities available to a child.
8. The quality of the government, laws and organization of the society to which a child belongs.
9. The quality of the power and status enjoyed by the country to which a child belongs.