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11

DEVELOPMENT: ITS NATURE

*H*ave you ever thought why a child behaves in a different way as compared to an adult or why there is a difference in their physical appearance? We are usually not aware of the fact that we are constantly changing. Some noticeable changes take place when an infant slowly grows into a child and then gradually into an adult. But some changes like intensity in the expression of emotions, or the ability to think and reason better, formation of personal values or the capacity to do work independently, although not seen clearly, do bring about a change in the maturity level and competence of a person. This process of bringing about a series of orderly changes, leading towards maturity, is known as development. This lesson will help you to understand and answer many questions related to development.

OBJECTIVES

After studying this lesson, you will be able to:

- understand the concept and processes of development;
- identify and explain the principles of development and;
- gain an understanding of the main approaches to study development;
- differentiate between growth and development.

11.1 NATURE OF DEVELOPMENT

The two major aspects of development i.e. the meaning and processes of development are explained in this portion.

11.1.1 What is meant by development?

In simple words, development is a process by which an individual grows and changes throughout its life span. This change may defined as: a progressive series of changes which are orderly and coherent and which lead towards the goal of maturity.

The term "progressive" signifies that the changes are directional, leading forward, and not backward.

The terms "orderly" and "coherent" suggest that there is a definite relationship between different stages in the developmental sequence. Each change is dependent upon what preceded it, and it, in turn, will determine what will come after.

Development can therefore be summed up as:

1. Consisting of progressive, coherent and orderly changes;
2. Changes which have a definite direction and leading forward;
3. Changes which are not haphazard but where there exists a definite relationship between what exists and what will come after (next stage).

It should be clear that the development results in new characteristics, and new abilities in an individual. There is a shift from lower stages of functioning to higher levels.

All changes which appear as a result of development, are not of the same kind. For example, changes in size (physical growth), changes in proportion (baby to adult), changes in features (disappearance of baby teeth) and acquiring new features are of different types. Such changes which are clearly definable or which can be identified specifically show growth. It is necessary here to differentiate between the terms growth and 'development'. They are often used interchangeably, however, they are highly interrelated and there is a difference between them too. Growth refers to clearly measureable or specific change which is quantitative in nature such as "growing tall", a girl's hair becoming long and beautiful; and an old man growing a beard etc.

Development, on the other hand, refers to qualitative changes unfolding or increase in capacity. It is not as obvious as growth. Examples of development include remarks such as, "she has become a fine young woman", "he has developed his talent in music very well", "My father enjoys doing social work now because he has retired," etc. All these illustrate changes in personality interests and abilities. Development thus is a broader term and includes ' growth' as one of its aspects.

11.2 HOW DEVELOPMENT OCCURS?

Development occurs through two main processes:

i) maturation, **and**

ii) learning.

(1) Maturation refers to the unfolding or gradual opening-up of traits or potentials present in an individual because of genetic inheritance. It is the net result of what one possesses genetically.

(2) Learning takes place as a result of a child's interaction with the environment which then brings about a change in his behaviour.

For example, when a baby begins to teeth or starts walking it is because of maturation. But, when a child acquires the skill of performing specific dance or singing a particular song, it is an act of learning.

Both maturation and learning occur side by side, each one influencing the other. Infact, environmental learning often promotes maturation. For example, the development of cognitive abilities in a person is dependent on the experience and opportunities provided by the environment as well as maturation.

It may be concluded that maturation provides the raw material for learning, i.e. no amount of effort on the part of the individual can bring desired results if the inherited trait has limited potentialities for development. Thus all persons cannot become international athletes by effort alone, unless the genes in the person contain the potential for outstanding physical abilities.

The main points may be summed up as:

- Maturation and learning are two processes through which development occurs.
- Maturation occurs due to the genetic raw material which an individual has.
- Learning or interactions with the environment in the form of doing various activities result in change in behaviour.
- Maturation and learning are complementary processes.

11.3 GROWTH CURVE

You have already learnt in the earlier section that 'growth' is measurable and can be represented quantitatively. Let us see what the pattern of growth is in the course of the human life span, that is, let us try to answer questions like:

i) are there any stages of rapid growth?

ii) when does maximum growth occur?

iii) does the pattern of growth changes from stage to stage?

The growth curve helps us to answer all these questions. It basically shows the relationship between the percentage of growth and age in years.

The following diagram (Figure 11.1) will make the idea more clear.

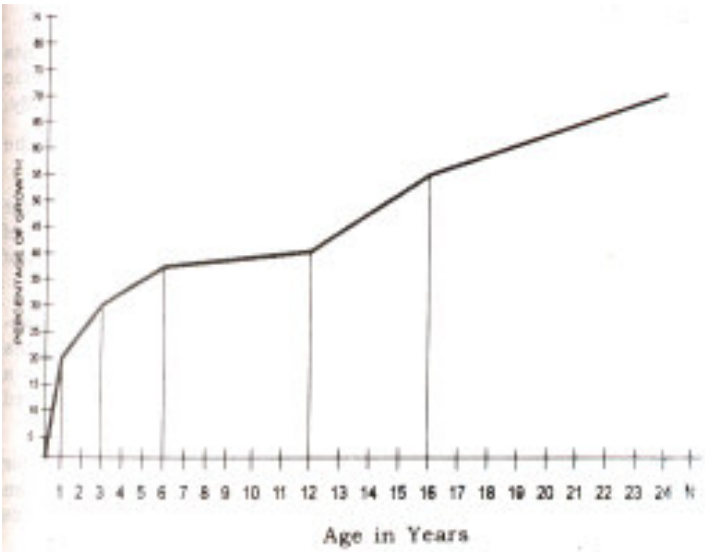

Fig. 11.1: *Growth Curve*

In this diagram, age in years is shown on the X axis and percentage of growth on the Y axis. The slope of the curve indicates the nature and level of growth.

It is clear form this diagram that growth is very rapid in the first three years and in the first year it is more rapid. Thereafter, from 5years to approximately 12 years, the pace of growth slows down. This is called the plateau stage in which the child is probably assimilating and making sense of the growth experiences in the earlier years.

The period following this from 12 to 18 is once again a growth spurt stage in which rapid growth takes place. This is the stage of adolescence and all through continues to take place, but the pace is slow. The growth curve is also important in that it indicates that growth is a continuous process with no breaks or discontinuities and that there are no sudden changes. Secondly, it also shows that growth is an ongoing process throughout life.

From the growth curve you have thus identified the following descriptions of the different development stages:

Stage	Age	Rate of growth
Infancy	Birth to 1 year	Very rapid
Early Childhood	1-3 year	Rapid
Middle Childhood	3-5 year	Somewhat rapid
Late Childhood	5-12 year	Plateau Stage
Adolescence	12-18 year	Very rapid
Adulthood	18 and above	(growth spurt stage gradual increase in growth)

Infancy, Early Childhood and Adolescence are the three stages of maximum growth. This is evident from the nature of skills acquired during these stages.

In infancy and early childhood there is considerable psycho-motor development, language acquistion, and improvement in cognitive skills.

During adolescence, there are rapid body changes, the sex drive begins to operate, cognitive and social skills improve and there is gradual increase of all human capacities.

To sum up, it may be said that the growth curve helps us to understand and anticipate the changes which are likely to take place at different stages of development. We can thus adjust and adapt better to them.

INTEXT QUESTIONS 11.1

1. Write True/False against each statement:
   (i) Maturation and learning are two separate processes and have no connection with each other.
   (ii) Genes decide the upper-limit of attaining development.
   (iii) All changes which occur as a result of development are of the same kind.
   (iv) According to the growth curve, growth is an ongoing process.
   (v) The two period of maximum growth are early childhood and adolescence.
   (vi) Growth stops during the adult years.
2. Why is the growth curve important? Give two reasons

11.4 PRINCIPLES OF DEVELOPMENT

Although all individuals grow and develop in their own unique way and in their own contexts, there are some basic principles which underlie the process of development and can be observed in all human beings. These are called the principles of development. Let us now illustrate them.

1. Development follows a pattern

In human beings, development takes place in an organised, orderly and patterned fashion. Every species has a specific pattern which all its members follow. The sequence of development is also the same. For example, all babies learn to turn over, crawl, stand, and then walk. They may skip a particular stage, but the order or pattern will remain the same.

While studying grammar, nouns are always learnt before verbs. In some children they may be learnt simultaneously but verbs cannot be learnt without knowing nouns. Further development, at each stage is a result of the one which precedes it and the one which follows it. For example, a child first learns to stand, then walk and has baby teeth before permanent teeth appear.

Whether it is physical, behavioral or speech related aspect, development takes place in an orderly manner. For example, early development proceeds cephalocaudally, i.e. from the cephalic or head region to the caudal or tail region. A second principle is that growth proceeds form the centre axis of the body to the extremities or more distal regions. The general pattern is not altered by the speed or development; all children pass through the same fundamental forms at approximately the same time.

2. Development proceeds from general to specific (global to analytical)

The child's responses in all phases of development, whether motor or mental, are first of a general sort before they become specific or differentiated. For example, the new born first moves his whole body at one time then learns to move a specific part of it. Thus if a toy is kept near an infant he will use his entire body to move close to it, and catch it. An older child will merely stretch out his hand knowing that this specific movement will serve the purpose.

In speech the child takes out sounds called babbles first, before saying words. Similarly, all playthings are "toys" before specific names are learnt and a vocabulary is acquired. Observation of children in our daily lives will show that they do simpler things first and the more complex ones later.

3. Development leads to integration

Once the child learns specific or differentiated responses, then, as development continues, she can synthesise or integrate these specific responses to form a whole. For example, the young child learns to speak single, discrete words in the beginning. Later, he can join together these sentences in the form of language. Similarly, a young child may have a specific concept of a car. Later, as she grows, her concept expands as she is able to synthesise new aspects into it.

4. Development is continuous

No development whether physical, mental or speech, occurs suddenly. It takes place at a slow, regular pace. Growth starts from the time of conception of the baby and continues till maturity. Physical and mental traits continue to develop until they reach their maximum level of growth. Growth occurs at a continuous rate and does not take place in "jerks and stops". It is the continuous nature of development which accounts for one stage of growth and development influencing the next. For example, if a child has not mastered a particular task at a specific age then this will affect his mastery over the developmental task of the next stage. The emotional tensions due to unhealthy environment in early childhood can affect the personality of a child in later years. Similarly, lack of proper nutrition in early childhood can result in physical and psychological damage which can impede development in later years.

5. Individuals differ with respect to the rate of development

Although all development is sequential and orderly, yet the pace at which development takes place may vary from person to person. For example, a 3 year old child may be able to recognise the English alphabets, whereas the another 5 year old may not be able to do so. This does however mean that the 3 year old is exceptionally bright or the 5 year old is backward. It just simply that the rate of acquistion or mastery of a skill may vary from child to child. In order to establish this fact, the concept of a 'range of development' has been introduced. The range for learning alphabets, for example, implies that children are expected to learn them anytime between 3 to 5½ years. All children falling within this limit are treated as normal. Differences in the rate of development can be seen in many areas-the acquisition of teeth, age at which the child sits, stands, walks, becomes pubescent, etc.

6. Development occurs at different rates for different parts of the body

Neither the growth of different parts of the body, nor the mental growth takes place at the same rate. The different aspects of physical or mental growth take place at different rates and reach maturity at different times. In some areas, the body growth maybe rapid, while in others relatively slow. Thus, the size of the

organs of the body keep changing from time to time and because of these inequalities in growth the body attains adult proportions.

Do you Know that

Height, weight, and development of different organs gain full maturity at different times. For example, research studies have shown that:

- the brain attains mature size around six to eight years of age;
- the feet, hands and nose reach their maximum development during early adolescence.
- the heart, liver, digestive system etc. grow during adolescence.

All areas of development are initially interrelated. A child whose intellectual development is above average is generally above average in size, sociability and special aptitudes. This shows that there is interrelatedness in the mental, physical, social and emotional development of the child. A shy child will not be able to participate in school activities. A physically handicapped child may have difficulties in making friends. These examples show how one aspect of development influences another.

After adolescence, any one area of development may take precedence over another and develop independently. In the case of scientists, for example, cognitive development takes precedence over other areas. In the case of an athlete physical development will take precedence over the other areas.

7. Development proceeds from ego-centricism to allocentricism

This means that intially a child is very self-centred and does not think of others. His needs and wishes are the only reality he knows. He is not receptive to what even his parents think or feel. For example, a two year old child will throw a tantrum and cry for a bar of chocolate at midnight if he wishes to eat one. He is unable to understand that his demand cannot be fulfilled as the market is closed at this time. As he grows older, however, this ego centricism gives way to allocentricism or being 'others oriented' or considerate to others. A ten year old child having the same desire as the two year old will thus not make this impossible demand since he will wish not to trouble his parents.

8. Development proceeds from heteronomy to autonomy

Heteronomy means dependence on others, while autonomy means self reliance. Young children are dependent on others for their care and welfare, but adolescents are capable of taking care of themselves. This shows the movement from heteronomy to autonomy.

A young child, when hungry, will wait for his mother to give him food. An adolescent, on the other hand, can serve a meal for herself/himself.

9. Development is Predictable

As was discussed in an earlier principle of development, the rate of development is fairly constant for each child. This shows that it is possible to predict the future level of development of the child and to what degree he will exhibit particularly so for height, weight, cognitive ability etc.

11.4.1 How is the knowledge of the principles of development important?

1. It helps us to know what to expect and when to expect it. This provides an accurate picture of the child's capability at a particular age.
2. It gives information on when to stimulate and when not to stimulate growth in the child i.e., provide opportunities or wait for maturation.
3. It helps parents, teachers and others who work with children, to prepare them before hand for the bodily changes. interests and behaviours that are to take place. It tells teachers what to teach, when to teach and how to teach.

The principles of development thus provide the base to understand the different stages of development which an individual grows through. However, the rate and pattern of development can be changed by certain conditions inside and outside the body. Certain factors like nutrition, sex. intelligence, injuries and diseases, race, culture etc. also contribute to these differences.

INTEXT QUESTIONS 11.2

Put a mark (T/F) and check your answer. In case of more than five wrong answers, revise the unit again and recheck.

1. Growth takes place in an erratic or whimsical manner.
2. A child with below average intellectual development has superior health, sociability and physical structures.
3. A child who is above average in one trait will be below average in others, because compensation is the general rule of development.
4. The sequence of development in a child is fairly constant.
5. Traits are age-specific and therefore develop accordingly.
6. Children show specific skills before they develop general ones

7. As children grow, they become more self reliant.
8. The basic difference between children and adults is that while the former are ego centric, the latter are allocentric.
9. The baby can see large objects before he can focus on small ones.
10. Because development is continuous, what happens at one stage carries over and influences the subsequent stages.
11. Every individual normally passes through each major stage of development.

11.5 APPROACHES TO STUDY DEVELOPMENT

After discussing the nature of development and the underlying principles, we will now examine some approaches which are employed by researchers to study the development of human beings. The two main approaches to the study of human development are discussed alongwith their limitations and strengths. These approaches may use a variety of tools like interview schedules, questionnaires, rating scales, anecdotal records, bio-graphic records, etc. The two main approaches to studying development are:-

1) Cross-sectional Approach.

2) Longitudinal Approach.

1) Cross-Sectional Approach

It implies studying several representative children of different ages at the same point of time. There is usually only one observation for each child and developmental changes are identified by including children of different ages in the study. For example, changes in intellectual ability may be investigated by comparing the performance of representative samples of one year, two-year, three-year olds, and so on. The advantages of this approach are:

* It prevents the loss of sample strength which occurs in studies of long duration.
* It is cost-effective, saves time and facilitates record keeping.
* It is practicable

However certain disavantages too accompany this approach. They are as follows:

* The totality and the individuality of the person is lost.
* There is a loss of developmental continuity in studying the persons in the sample.

2) Longitudinal Approach

It is a length-wise study of development, as the name sugests, in contrast to the earlier approach. This approach emphasizes on the study of the same person over a period of time noting the stability and changes taking place during that time span. Thus if a set of new born babies constitute the sample, they are seen through infancy, early childhood, late childhood, etc. To understand the process of development, several methods are used. Case-Study is an example of one such method used for the study of behaviour over a long period of time. Piaget's study of eye-hand coordination on his daughter is one famous example of the longitudinal approach.

Inspite of the longitudinal approach being the best way to actually "see" how growth occurs, it has some disadvantages. These are:

* Difficulties are encountered in keeping contact with a large sample over a long period of time.
* It is time consuming and expensive.
* Repeated testing makes the subjects test-wise which affects the scores.

INTEXT QUESTIONS 11.3

Read the problems given and mention the approach suitable for their study:

1. Will characteristics observed in infancy like aggression, and mistrust persist till childhood?
2. Do children at different ages show the same emotional response to viewing films on ghosts?
3. Do children of 5 years of age belonging to different cultures show the same intellectual ability?
4. At what age children should be observed to examine the pattern of eye-hand coordination.
5. Studying the effect of early parental deprivation on adjustment during pre-adolescence.
6. Study of children's social response from birth to five years of age

WHAT YOU HAVE LEARNT

- Development consists of progressive, coherant and orderly changes. The changes have a definite direction and lead forward. Changes which occur are not haphazard in nature.
- Development occurs through two main processes maturation and learning.
- The growth curve helps us to find changes in the course of development, the period of maximum growth, and change in the pattern of growth.
- The principles of development are:
  - it follows a pattern
  - proceeds from general to specific
  - development is continous
- individuals differ with respect to the rate of development
- development leads to integration
- development occurs at different rates for different persons
- The approaches to the of study of development are:

  (i) cross sectional

  (ii) longitudinal

TERMINAL EXERCISE

1. Explain the term development.
2. What are the two main processes which bring about development?
3. State briefly the main principles of development. Give examples to illustrate any three of them.
4. How does knowledge of the principles of development help?
5. Differentiate between the following:

   (i) Maturation and Learning.

   (ii) Longitudinal and Cross-sectional approach.

   (iii) Ego centricism and allocentricism.

   (iv) Heteronomy and autonomy

ANSWER TO INTEXT QUESTIONS

11.1

(i) False (ii) True (iii) False (iv) True

(v) True (vi) False

11.2

1. False 2. False 3. False 4. True

5. True 6. False 7. True 8. True

9. True 10. True 11. True

11.3

1. Long 2. Cross 3. Cross 4. Cross

5. Long 6. Long

HINTS TO TERMINAL EXERCISE

1. Refer section 11.1.1
2. Refer section 11.1
3. Refer section 11.4
4. Refer section 11.4.1
5. i) Refer section 11.2
   ii) Refer section 11.5
   iii) Refer section 11.4. (5)
   iv) Refer section 11.4 (7)