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Human Growth and Development

The growth of education as a profession has been accompanied by the development of "educational psychology" as a separate discipline which is devoted specifically to the study of child in an educational setting. Educational psychologists have been concerned with problems involving the interrelationship of "child development and educational practice," the psychology of learning, motivation, and guidance in the school system and evaluation of school children. The students of child development are concerned with an understanding of the theories and principles of human growth and development, so that they can understand development in terms of the varied heredity, environmental and self influences usually involved in the developmental process. The teachers who understand the psychology of human development can help their students in the development or proper behaviour through organisation of suitable educational activities.

Right from the time of conception to its death at a ripe age, the human organism runs through various stages of growth, each stage being a ladder-step taking him to the final goal of life. An infant and an adult are paradoxically "like and unlike" each other in very many ways: one is erratic, impulsive and playful and the other seasoned, reasoning and thinking and artful; the one is waxing and the other waning; the one is like a rising star and the other a setting star. Biologically it takes a long span of time for a neonate to become an adult, to become big, to grow in height and acquire volume although all the physical organs are already present at birth. Growth is a natural tendency with all organisms.

A child is distinguishable from an adult not only by its physical stature but by its behaviour. Some striking differences between the

two may be helpful in understanding the phenomenon of human growth. First, an intellectual scheme is clearly seen in an adult while the child is unaware of the abstractness of the world and the things around him. Second, the behaviour of child is mostly instinctive and guided by the inner forces of the organism; fulfilment of the biological needs is the primary concern of all the activities of the child; on the other hand the adult has learnt to be socio-cultural being (socio-centric) and a greater part of his natural tendencies has been modified by the environmental forces and he has acquired a number of behavioural patterns which characterize him as an adult. Third, the child is dependent on his parents for the fulfilment of his biological needs while the adult has become more or less independent in this regard. Fourth, a child lives in the world of his make-believe while an adult is aware of the harsh realities of life and the world around him. Finally, both differ on the variable of sexual-maturity. Psycho-analysis believe that even the child has potential sex urges and he finds sexual satisfaction through auto-eroticism but the point is that the child is not capable of reproduction. The adult is fully mature in physical as well as mental aspects of sexuality. These vital differences clearly demarcate the boundaries between a child and an adult. It is here that we cannot consider a child to be a 'miniature' of man. The anatomical, physiological and psychological differences between the two demand that both be treated differently. The behaviour of the child is malleable while that of an adult is hard to twist. However, childhood experiences set the mould for future development.

The study of the processes of growth and development enables the educators to put the educational policies and practices in proper perspective so that a child could be helped to achieve the biological ends for which the life exists and to become an acceptable member of the society. In fact, the structural changes bring about inevitable functional changes. Teachers unfamiliar with growth processes and patterns, would not do justice with the child's education. Children are destined to become adults. Without the knowledge of the growth patterns the physical education teachers would never be able to check out the correct learning programmes for children. Policies and practices which are formulated without taking into account the facts regarding child-growth and development end in better failure. Education, in general, helps all children to grow up in their natural ways and to develop their innate potentialities. In fact, growth-and-development is the most vital aspect of human life which has not only to be properly looked after but also guided by

parents and teachers alike. Processes of humanisation and socialisation must synchronise with the processes of growth and development.

Meaning of Growth and Development

Most of us use the two terms growth and development interchangeably and accept them as synonymous terms. Both these terms relate to the measurement of changes occurred in the individual after conception in the womb of the mother. Change is accepted as the law of nature. An individual starting from a fertilized egg, turns into a full fledged human adult. In this turn-over process he undergoes a cycle of changes brought about by the process of growth and development in various dimensions - physical, mental, social, emotional etc. Therefore in the wider sense, both the terms growth and development can be used for any change brought about by maturation and learning (formal as well as informal education) and essentially is the product of both heredity and environment.

In reality this two terms have different meanings. Let us now discuss under the following heads how this two terms differ from each other.

Meaning of Growth

Growth is a sign of take. All living animals, irrespective of their status in the biological hierarchy, have to grow. The following points can clarify the meaning of growth from psychological point of view.

- (1) The term growth is used in purely physical sense. It generally refers to an increase in size, length, height and weight, changes in the quantitative aspects come into the domain of growth.
- (2) Growth is one of the part of developmental process, in strict sense development in its quantitative aspect is termed as growth.
- (3) Growth may be referred to describe the changes which take place in particular aspects of the body and behaviour of an organism.
- (4) ✓ Growth does not continue throughout the life. It stops when maturity has been attained.
- (5) The changes produced by growth are the subject of measurement. They may be quantified and the observable in nature.
- (6) Growth may or may not bring development - A child may grow (in terms of weight) by becoming fat but this growth may not

bring any functional improvement (qualitative change) or development.

Meaning of Development

Development, by contrast; refers to qualitative and quantitative changes, it may be defined as a progressive series of orderly coherent changes. Webster's Dictionary defines 'development' as the series of changes which an organism undergoes in passing from an embryonic state of maturity'. These changes refer to physical, emotional, intellectual changes which we shall discuss under the following points.

- (i) Development implies over all changes in shape, form or structure resulting in improved working or functioning. It indicates the changes in the quality or character rather than in quantitative aspects.
- (ii) Development is a wider and comprehensive term. It refers to overall changes in the individual growth is one of its parts.
- (iii) Development describes the changes in the organism as a whole and does not list the changes in parts.
- (iv) Development is a continuous process. It goes from womb to tomb. It does end with the attainment of maturity. The changes, however small they may be, continue throughout the life span of an individual.
- (v) Development, as said earlier, implies improvement in functioning and behaviour and hence brings qualitative changes which are difficult to be measure directly. They are assessed through keen observation in behavioural situations.
- (vi) Development is also possible without growth as we see in the cases of some children that they do not gain in terms of height, weight or size but they do experience functional improvement or development in physical, social, emotional or intellectual aspects. Hence observed in minute details, both growth and development show differentiation. But in wider and practical sense both terms are used to denote the changes in the organism's physical as well as intellectual and social aspect of human life are roughly divided into four major classes by Mrs. Hurlock :
 - (i) Changes in size.
 - (ii) changes in proportion
 - (iii) Disappearance of old features
 - (iv) Acquisition of new features.

All these types of changes have qualitative as well as quantitative aspects and hence generally growth and development go hand in hand and it is in this sense, that the two terms are to be used collectively. Both, taken together, explain the total changes -functional as well as constitutional changes in the body and behaviour of the individual with the lapse of time after the conception. In this text, in the following pages these terms will be used in synonymous sense for convenience.

Difference Between Growth and Development

Ordinarily the term growth refers to the 'increase' caused by the biological process in which the organism becomes bigger in size, in volume and heavier in weight. Starting his life almost from an invisible dot the human organism grows to be more than five feet in height and more than 150 pounds in weight. Growth indicates the enlargement of cells, fibres and muscles, elongation of the skeleton and increase in the general volume of the body-parts and organ-systems. Growth brings about perceptible changes in one's structure and form: it is quantitative in the sense that it can be measured in inches points and dynes; marked structural changes are noticed as the organism advances in age. Day after day and year after year, as the child looks different in appearance, we conclude that the child is growing.

'Development' is a wider term indicating advancement, more unfoldment, a progressive change a sort of growing forward to a greater maturity. It is a process of qualitative transformation which brings about maturity and functional improvement Gessel stresses: "Development is more than a concept. It can be observed, appraised and to some extent even 'measured' in three major manifestations: (a) anatomic (b) physiologic and (c) behavioural. Behaviour signs, however, constitute a most comprehensive index of developmental states and developmental potential." Development is growing up characteristically. It is related to growth in as much as that it denotes more specifically the changes in the character and efficiency of the organs and organ-systems. For example, the bones grow, they become larger but changes also take place in their ossification, hardness and the ability to bear weight and shocks; elasticity gives way to solidity which gives strength. Similarly the heart grows, becomes bigger and it also undergoes qualitative transformations when it becomes capable of pumping out more blood and thus stand the rigours of vigorous exercise. Fitting up of the soft parts of the brain, elongation of the axons and dendrites of the nerve cells are instances of development. Benedek considers development to

be a "Process in which the internal physiological changes and the psychological processes stimulated by them are integrated (or responded to) in a way which enables the individual to master further and a new, environmental stimulations". The better the child develops, the stronger he becomes to fight the environmental hazards like diseases. Precisely, development is an integrative process causing the organism to acquire physiological capabilities and psychological capabilities.

However, growth and development are so linked with each other that at times it is hardly possible to clearly distinguish between the two. Nature has set limits to the extent of growth of every animal and hence no animal would grow beyond those limits. Macy and Kelly declare that "physical development does not necessarily mean increase in size. There are modifications of the body composition taking place constantly. In the body, for example, gain in weight comes partly from increase in neural, glandular and muscle tissue; in childhood the gain comes principally from bone and muscle tissue, while in adult years, the gain is from an accumulation of fat tissue. No boundaries are set for development. Normally the growth may stop by the time a boy or a girl crosses "teens" whereas the development may continue further, depending upon one's professional work and labour. Not only does one develop physically but also socially and intellectually. Acquisition of new skills and assimilation of more knowledge constitute those qualitative changes which characterise 'development'. Quantitative measurement of the structure may reveal the pattern of growth a child is following and it is now a days very easy to find out from the school health records whether the child is growing or not. Similarly tests have been devised to objectively measure the 'functional' ability of an individual. We can measure strength - an indirect index of the qualitative change in muscles and bones - and determine the intent of their development. In the same way intellectual capacity and ability, which are the indices of mental development, can be measured with ease. Development can be noticeable in the players and athletes who day after day give better performance in activities involving strength speed, cardio-vascular endurance etc. Ordinarily when children of varying ages are compared with regard to the level of their motor skills, intellectual ability etc., differences in their growth and development can be spotted out without much difficulty. Physical development is prominent in athletes who regularly take exercise while people with sedentary habits lag behind in this sphere. Similarly voracious readers show signs of mental development. When athletes behave wonderfully

well during play and do not lose mental equilibrium when defeated, we normally say that they have developed emotionally too. Social development is purely qualitative in nature because it reflects one's adjustment in the environment.

The Purpose of Studying Growth and Development

Regardless of individual background and concerns, it is desirable to examine our purpose in studying growth and development. We want to acquire the following competencies:

- (1) The ability to recognize individuality. This implies the ability to recognize the uniqueness of each child's traits and view of life.
- (2) An understanding of the theories and principles of growth and development so that one can understand development in terms of the varied hereditary, environment and self influences usually involved.
- (3) An increased effectiveness in observing and interpreting the pattern of individual behaviour.
- (4) The ability to differentiate and evaluate the effectiveness of varying points of view in child study.
- (5) The development of a point of view and set of principles basic of guiding children more effectively in the learning and adjustment processes.
- (6) The ability to locate and utilize a variety of resource material from the vast literature on growth and development.

Thus, the students of child development should be involved not merely with learning a number of facts, but also with developing skills which can help him both personally and professionally throughout his life. This necessitates the continuing and purposeful observation of children in action, to supplement regular class study. As time goes on, he will be able to apply his knowledge and experience to interact more effectively with children.

✓ Principles of Growth and Development

Developmental psychologists believe that an accurate picture of the principles of Growth and development is essential for the teacher. They are as follows:

- (1) **Growth in some direction is inevitable:** All living organisms have to grow come what may. Propensity to grow is inherent in

the organism. Because of malnutrition or some other environmental factors, the functional capacity of the child may not improve yet he has to grow and become bigger to the extent to which his heredity has set limits. It has been found that mental development is not much affected by malnutrition in childhood, provided the child receives normal diet later on and that unfavourable conditions are not allowed to continue. All persons gain normal height even if they are not subjected to any special diet and physical exercises only those who exercise shall have better physical functional ability. There is, in each individual, an urge to grow and become bigger. Some individuals strive to grow into athletes, others into mathematicians. The inner urge for growth will certainly take some form or direction.

(2) **Mental growth is dependent upon the changed structure:**

Along with increase the child's physical proportions, his ability to experience things enhances because physical growth and mental activity go hand in hand. When a child is found to be poor at perception and comprehension, it is because various organs of perception are not fully developed to receive uses from the environment and he is not in opposition to sift the wrong from the right. Gradually the brain also becomes capable of accumulating experiences. A child and an adult differ from each other in physical as well as mental growth. Perception and execution of a complex motor skill involving a very high degree of neuro-muscular coordination is beyond the mental limits of the child while an adult having richer experience of years takes little time in picking up hints and behaving accordingly. Qualitative mental activity is not possible without proper growth of the nervous system. Many a time, there is no synchronization between the physical growth and the mental development.

(3) **Characteristically, Children are ego-centric and adults are socio-centric:**

A child's behaviour is motivated by the intrinsic organismic drives which lead to the achievement of biological ends. When the needs connected with this process are not satisfied, the child revolt. As the child mature, he also learns to consider "other things" before his "self". Much of his instinctive behaviour gets modified because the society demands certain norms, standards, customs and traditions as well as etiquettes to be observed and followed in the matter of walking, talking, dressing

up, eating and the like. The adult behaviour is guided more by social norms and standards, childhood, infancy, is a state of animal-hood. The child does what pleases him and what strengthens his ego. In infancy, for example, all activities of the child, including play, are individualistic in nature. Childhood is not bound by the shackles of social norms and standards.

(4) **Growth is a creative process :** Right from the time of conception to adulthood marked differences in structure and from appearing in behavioural variability turning of a infinitesimal note resulting in behavioural variability turning of a infinitesimal note into a child, is the nature's highest form of creativity. As a child advances in age, year by year marked changes become visible in his behaviour. Instinctive behaviour which hitherto was more or less fixed, starts giving way to variability. Behaviourally what a child is at the age of one year, he would not be so at the age of five and the child at the age of fourteen is entirely different from the one at five. The process of growth creates novel cognitive, conceptual and motor forms of behaviour as the child marches ahead in time.

(5) **Heredity Sets Limits for development in terms of potential:**

Even if environmental factors such as food, air, exercise etc. are abundantly available the organism would never grow beyond the Limits nature has already set on various animals and their respective species. Even twins may differ on anatomical characteristics. Certain races are tall while others are short saturated. Similarly short children born of short parents would not gain height despite the best nutritional facilities and physical exercise. No teacher of physical education and sports should hope to increase the height/size of the individual which is already determined and demarcated by his hereditary forces. Many parents and teachers still erroneously believe that certain physical exercise can help children gain height. The teacher of physical education has to take special note of this fact. The activity programme has to be framed keeping in view these facts concerning the hereditary structure and its development. Similarly many other hereditary traits cannot be developed beyond a certain Limit. A born imbecile will never become a genius despite all efforts. Effect of certain congenital defects and deformities might be attenuated yet the total cure is impossible.

- (6) **Different aspects of growth develop at different rate of speed:** Some children start toddling earlier than they start babbling some start articulating sounds before they step into the phase of upright locomotion. Parent's often worry when there is some delay in the appearance of a particular trait or characteristics at a particular period of time. Children characteristically speak three to five words at twelve months of age but in the next three or four months they seldom words and often even forget the ones they knew. Language growth slows down for the time being because the child's physical energy and enthusiasm for learning are thoroughly occupied with the thrills of upright locomotion. Physical growth proceeds rapidly during puberty. Children probably learn more new things in the first five years of life than at any comparable period during the rest of their lives. In most of the children there is no synchronization between the physical and the mental growth. Some children became psychologically mature earlier while some excel mentally earlier than others. Ultimately all aspects of growth catch up by the time maturity is reached.
- (7) Various organs of the body grow at different rates as do dimensions of each organ. Moreover each organ reaches its maximum order has been found by the researchers. The fact speed of up first reaching their peak growth rate only after about three months after the adolescence spurt has begun. In other six months it is the turn of the calf muscles and the tibia. Four months later the hips and chest begin to broaden at an accelerated rate followed by the shoulders. In both sexes the length of the trunk and the depth of the chest reach peak growth speed last of all most of the teachers and the parents are baffled as to why a child seems to be out of proportion in physical development. At times so for so looks much longer than the limbs and viceversa. Nose, ear, head, neck extremities all the growth at their own rate of speed.

- (8) **Growth is characterised by fluctuation : Ups and down.** Many factors may be held responsible for fluctuation in growth. Generally infancy are pre school years are periods of accelerated growth while later childhood and late adolescence are periods of blackness. They are in fact periods of consolidation. After adolescence the growth tapers of some psychologists have found certain individuals skill growing through imperceptibly at forty. Nutrition, physical

- (9) and mental stresses and sciences and other environmental factors influence the rate of growth. Some time with all other factors there is still fluctuation in growth with certain children. For this some inter external factor may be responsible. Fluctuation in growth is not a drawback but an internal law and can easily be spotted out if periodic check-up is made and proper records are kept. A month-to-month and year-to-year study through physiological and ability tests can reveal fluctuation.

- (9) **Any breaks in the continuity of development will generally be due to environmental factors :** Given an adequate environment development will ordinarily take place in a relatively predictable way. Infants will grow physically as do most other children in the culture; they will learn to creep before they walk, by the age of two they will have a rough working knowledge of the language that surrounds them; and toward the end of childhood they will experience rapid physical changes cultivating in sexual maturity and adult... Motor, or intellectual development may be impeded. This is most obvious in case of severe childhood diseases or as a result of certain maternal diseases while the child is still in embryo. In much the same way, diet, drugs, and illness can affect children directly at various stages of their development—may serve to stunt both Physical and intellectual growth. And, according to a principle already stated, the effects of these conditions will be most pronounced during the period of most rapid growth.

- (10) **Correlation and not compensation is the rule in development:** It has often been assumed by grandmothers that nature makes up for deficiencies in some areas by compensating for them in others. Thus children who develop with truth and uncoordinated bodies, will most likely be given exceptional minds to make up for it. Only rarely with mothers nature give the same individual both a superior body and a superior mind.

In reality, mother nature is probably not responsible for the such events. And even if she is, they are not quite. Striking incidents of compensation that can be gleaned from personal experience or an anecdotal evidence one probably most often the result of considerable directed effort on the part of the individuals concerned. Because all individuals have a need for acceptance by others needs. It follows that if the needs can other. Children who are unsuited for the competitive aggressive sports of their

peers because they are significantly smaller may naturally become more interested in intellectual or other matters. The point is that the compensation is not a natural phenomenon, but results instead from the individuals' activities motivated by whatever needs are predominant at that time. That correlation rather than compensation is the rule is supported by evidence from a number of studies of gifted children.

(11) **Development usually proceeds at the rate of which it started:** Children who learn to walk and talk at an early age are likely to be advanced in all areas of development throughout their childhood. This does not mean, of course, that they will more intelligent and better developed physically than children who mature more slowly. Although their biological clocks may be faster, they are not necessarily programmed for more superior development.

(12) **Development is a life long process:** Generally growth and development go hand in hand. When the boy of an individual child grows in stature it also develops in function. But it is not the universal truth. A time may come when he may grow but does not develop or he may develop but does the grow. Again growth may stop at a particular period, but development continuous after growth has ceased. Development thus, is a continuous process. An individual changes both physically and psychologically and encounters new adjustment problems through out his life.

(13) **Development involves changes:** The life of and individual is dynamic in nature. It is never static. From the moment of conception to the time of death, it under-goes changes. At each stage of human development, changes take place. Whether for good or bad, as a result of accumulation of experience. The aim of such developmental changes are achievement of genetic potentials or self actualization.

(14) **Early development is more critical than later development:** Milton, the world famous poet once said, "The childhood shows the man, as morning shows the day." Right from the beginning of the early childhood, one can predict the future of an individual. Freud, in his study about personality maladjustment emphasises on the significance of early years of life. Erikson also opines that, "childhood is the scene of man's beginning as man." Thus most educationists and the psychologists feel that the early

development of the child is very critical. Early pattern of life is relatively unchanged as time goes on. The early impression of the child remains for all times to come. Therefore, the first five years of the child has been called. "The critical period". From this age onwards the foundations are laid for future life. The environment in which the child lives during this period has strong impact on their hereditary patterns. Hence guidance is most needed in the early stages of life.

(15) **From Infancy to childhood each individual has his own rate of growth :** The rate of development varies from individual to individual. When some develop rapidly other develop slowly. Dull, children continue to be dull and the bright children maintain their brightness. Children having mental defects stop growing at an early age in comparison to the normal children from physical point of view, a child who is fall and heavy for his age, will continue to be fall and heavy to his age and a child who is weak for his age. Such rate of growth is a tendency and it may be influenced by environment.

(16) **The pattern of growth is continuous and gradual :** Behaviour of an individual does not become mature and perfect soon after birth. It is a slow continuous and gradual process. To enter into a stage or level, it takes time. Early childhood lays the foundation for later childhood and later childhood for adolescence. Therefore, it is not possible to demarcate sharply the different stages of development. It is a continuous process. Physical growth and mental and social development is also a continuous process. The process of continuity is maintain even in the development of traits.

(17) **Growth is a process of both Differentiation and Integration:** People vary in their behaviour because of differences in their genetic constitutions. From birth till the end of life man's behaviour changes at each progressive stage. This change in behaviour pattern occurs due to new discriminations and generalisation of different factors. Now we shall discuss how the child discriminates and generalizes mental processes.

The complex mental processes are the combinations of simple processes like sensations, feelings and images. Behaviourist also built complex behaviour patterns from simple reflexes. At the

first stage of life the child was in a state of confusion but gradually according to his age and mental ability he is able to discriminate things properly. For example when the child utters the words 'mummy, daddy' etc. He may use the same word 'mummy' for every woman. But when his intellect develops properly he uses the same word for one person only. At first the child does not know the actual relationship with different people. But gradually he learns to distinguish between them. Again another example may be sighted that in early infancy emotions begins as undifferentiated generalized excitement. But day by day anger, fear, love, delight begin to be distinguished from each other. In the social development the child also selects his friends, peer group, companions through the process of discrimination. In growth and development integration and co-ordination of different physical parts, mental activities one more important as differentiation because the growth and development of every individual, is a process of integration, staging drama, appearing at a competitive examination, playing cricket, giving a lecture, writing an essay, organising a social function are seemed as simple unitary responses but all the activities require some mental and physical capacities in an integrated way. For example we expect more achievement from a three or four years old child when he starts his first alphabet learning. But until the proper movement of his hand, proper mental development he cannot write a single letter. Therefore without proper integration and co-ordination among different organs, no success is possible.

(18) **The effect of training varies with the stage of maturation :**

In the process of growth and development the role of maturation is more important. But what do we mean by maturation? It is appropriate inner growth which develops readiness for learning. Without proper development of inner organs of the body, the child is unable to acquire new skill by over guidance or training or education. Therefore training and teaching are truthful unless actual maturation has taken place. But from our day to day experience we have marked that many parents don't have any knowledge about this inner growth. They lay much emphasis on education and training and except notable results. Now psychologists have conducted many investigations upon this factor or growth and development. The outcomes of their studies indicate

that the teacher or the parent cannot put new things into the child until he is mature for that. Real matured child can learn easily. Therefore proper training or instruction should be given at the right level of maturation and that may produce high results. In the process of teaching subject matter for curriculum evaluation procedure of that time the level of maturation of the child must be taken into consideration.

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There are wide individual difference in growth pattern:

Individuals differ in respect of their physical appearance mental ability, school achievement height and weight, habit and skills, temperament etc. This individual difference occurs due to genetic factor environmental influence and many other reasons. But in the process of growth and development children vary in their rate of growth. It implies wide individual variations both in their rates and patterns of growth. From our modern research it has been found that growth is a creative force which results new experience and ability. According to one's own intelligence and ability, influence of his own environment he is capable of making as unique pattern of growth. Thus this variation occurs spontaneously growth pattern.

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Both rate and pattern of growth can be modified:

Both rate and pattern of growth can be modified by the conditions within and without the body. Although the patterns of growth are fairly definite for all children yet 'some' modifications can be envisaged. When environment does not offer equal opportunity to all, the natural flow of growth is modified. Amount activity, psychological challenges, learning facilities, security, affection discipline etc. are a few factors which determine how fast and to what extent the potentialities of the child will have opportunity to develop. Children living under object poverty and constant mental strains when freed, will show. Positively modified growth patterns. Growth brings differentiation as well as integration in behaviour. The processes are closely knit. It is impossible to understand the 'Physical' child without understanding, at the same time, the 'thinking', the 'feeling' and the 'impulsive' child. Likewise is impossible to understand a mentally, 'matured' child without evaluating his social developments. There is a close relationship, for example, between his total adjustment at school and his emotional growth, his physical health and his intellectual adequacy;