

Growth and development in childhood

Module Details

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4.	Module Name	Growth and development in childhood
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Content Outline:

1. Objectives
2. Introduction
3. Importance of growth and development
4. Concept of growth and development
5. Principles of growth and development
6. Factors affecting growth and development
7. Development during 3 years to 12 years
8. Summary

1. OBJECTIVES:

At the end of the session learners will be able to:

- Explain Importance of Growth and Development
- Explain Meaning growth and development.
- State Principles of growth and development.
- Identify Factors affecting growth and development.
- List Domains of growth and development in childhood- Physical ,Cognitive, Social and Emotional and Language

2. INTRODUCTION

Early experiences in a child's life provide the base for the future physical, cognitive, emotional and social development of children. Optimizing the early years of children's lives is the best investment we can make so as to maximize their future well-being. Understanding the stages of child development helps to know what to expect and how to best support the child as the child grows and develops.

3. IMPORTANCE OF GROWTH AND DEVELOPMENT

Knowledge of the normal growth and development of children helps in recognizing that each child is unique. Also, aids in appreciating the importance of having realistic expectations of a child at any given age and provide developmentally appropriate play and learning activities.

This knowledge is of immense educative value for care takers of children in order to help them achieve optimal growth & development at each stage.

Also, this helps to monitor progress to detect delays and deviations. Why it is important to track developmental changes?

Any developmental delays must be addressed quickly so that interventions can be introduced as soon as possible. It is important to keep a close check on a child's developmental changes for the following reasons:

Generally, children need to learn developmental skills in a consecutive order. A delay in one skill will have a knock-on effect on other skills. For example, a child needs language skills before she will be able to write.

Sometimes if a child has a delay in one area (i.e. speech) it can affect other developmental areas (i.e. social and emotional). Early identification and intervention of problems in one area will therefore help to ensure that a child makes progress across all areas of development.

Early intervention helps the child to develop good self-esteem. Without early intervention, a child may possess a poor self-image which may make them reluctant to participate in school activities. For example, a child who has poor language skills may feel embarrassed to speak in front of their peers and teacher.

4. CONCEPT OF GROWTH AND DEVELOPMENT

The terms growth and development are used interchangeably, but they are different and neither takes place alone.

Growth refers to an actual biological or quantitative increase in size, such as the enlargement of the body or any of its component parts by an increase in the number of cells. Increased head size, arm and leg length and weight are what are generally referred to as result of the growth process.



Development refers to the qualitative changes. Development refers to a progressive increase in skill and capacity of function. It can be measured through observation.



These qualitative changes are directional generally forward as it consists of growth, but also consists of decay – as in death

5. PRINCIPLES OF GROWTH AND DEVELOPMENT

- Development is Continuous:

The process of growth and development continues from the conception till the individual reaches maturity. Development of both physical and mental traits continues gradually until these traits reach their maximum growth. It goes on

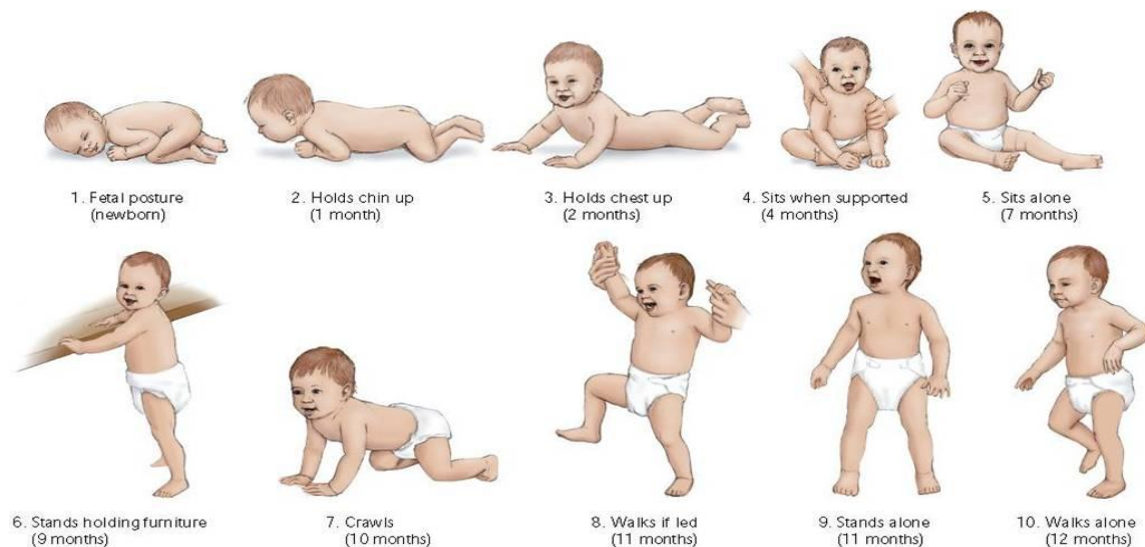
continuously throughout life. Even after maturity has been attained, development does not end.

- Development is Gradual:

It does not come all on a sudden. It is also cumulative in nature.

- Development is Sequential / Predictable pattern:

Development is sequential or orderly. Every species, whether animal or human, follows a pattern of development peculiar to it. This pattern in general is the same for all individuals. The child crawls before he creeps, stands before he walks and babbles before he talks.



- Rate of Development Varies Person to Person:

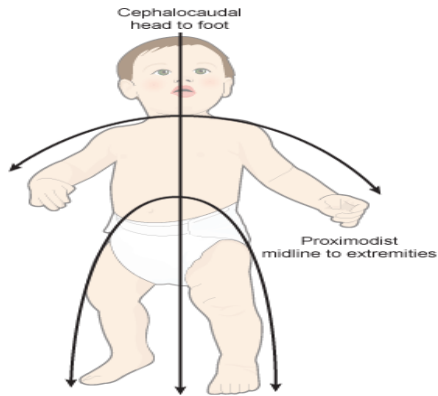
Rate of development is not uniform. Individuals differ in the rate of growth and development. Boys and girls have different development rates. Each part of the body has its own particular rate of growth. There are periods of great intensity and equilibrium and there are periods of imbalance.

- Development according to Growth Gradients:

Diffrentiation: Development proceeds from general to specific: learn to walk before they skip

Cephalo-caudal: growth occurs from top to down; infants gain control over head movement then the control over trunk and leg movements.

Proximo-distal: growth occurs from centre to periphery; gain control of leg movements then foot and finally toe movements.



With respect to emotional behaviour infants approach strange and unusual objects with some sort of general fear response. Later, their fears become more specific and elicit different kinds of behaviour, such as, crying, turning away and hiding etc.

- Inter-correlation in Different Aspects of Development:

Generally, it is seen that the child whose mental development is above average, is also superior in so many other aspects like health, sociability and special aptitudes.

- Growth and Development is a Product of Both Heredity and Environment:
Development is influenced by both heredity and environment. Both are responsible for human growth and development.

- Development in Sensitive and Critical Periods is Important:
There are specific periods in development when potential for growth is maximal. Potentials, be they physical, mental or emotional can be seriously damaged by unfavourable conditions in the critical or sensitive periods.

- Development occurs at Different Rates:
There are slow, medium, and rapid rates of development depending on the age and environmental influences.

- There is a Constant Interaction between All Factors of Development:
Development in one area is highly related to development in other areas. For example, a child who has a good health can be active socially and intellectually.

6. FACTORS AFFECTING GROWTH AND DEVELOPMENT

1. Genetic:

Certain hereditary factors influences on the body formation. Tall parents have tall offspring. Genetic & chromosomal disorder also effect on growth & development of a baby. Different characteristics of growth and development like intelligence, aptitudes, body structure, height, weight, color of hair and eyes are highly influenced by heredity. Sometimes it is not possible to prevent the genetic factors but to take necessary care by early identification.

2. Nutritional:

Nutritional deficiency considerably retards physical growth. Malnourished mother produce babies with IUGR. Over nutrition may cause obesity. So to control the nutritional requirements of mother is necessary to have a healthy child. This factor is neglected in our country, specially the poor families can not afford to have a proper nutrition during pregnancy. A balanced diet containing all the basic food principles such as protein, vitamins, minerals etc. According to the World Health Organization. Lack of proper nutrition can interfere with the maturation of your child's brain and body.

3. Sex:

Sex is a very important factor which influences human growth and development. There is lot of difference in growth and development between girls and boys. Physical growth of girls in teens is faster than boys. Overall the body structure and growth of girls are different from boys.

4. Socio Economic Condition:

Poor socio-economic condition affects growth & development. Sanitary conditions, various parasitic morbidity, poor housing, stressful family condition, bad financial situation etc have a serious effect on child growth and development. Children's coming from adequate finances are more likely to grow and develop to optimal levels.

5. Environment:

Physical, psychological, social and cultural environment affects growth and development. Some of the environmental factors are: housing conditions, community structure, urban or rural set up, family size, pollution.

6. Chronic diseases:

Chronic untreated diseases of heart, lungs, liver etc impair growth and development seriously. Growth Hormone Deficiency, Hypothyroidism, Cushing's Syndrome etc medical condition that needs early attention.

7. Emotional & cultural:

Trauma from unstable family, insecurity, sibling jealousy & loss of parents has effect on growth & development.

8. Intrauterine:

IUGR & maternal infections & diseases affect on growth & development. Maternal diabetes may result in macrosomia causing more than normal weight baby.

9. Growth potentials:

The smaller the child at birth, the smaller he is likely to be in subsequent years. The larger the child at birth, the larger he is likely to be in later years.

10. Race:

Racial factors also influence height, weight, colour, features, and body constitution of a human being. The body growth and development differences show a relationship with varied cultural groups. For example a child of black race will be black, their height, their hair and eye colour, facial structure are all governed by the same race.

7. DEVELOPMENT DURING 3 years to 12 years

Three-year-old

Physical

- Growth is steady though slower than in first two years.
- Adult height can be predicted from measurements of height at three years of age; males are approximately 53% of their adult height and females, 57%.
- Legs grow faster than arms,
- Circumference of head and chest is equal; head size is in better proportion to the body.
- "baby fat" disappears as neck appears.
- Posture is more erect; abdomen no longer protrudes.
- Slightly knock-kneed.
- Can jump from low step
- Can stand up and walk around on tiptoes
- "Baby" teeth stage over.
- Motor development
- Walks up and down stairs unassisted, using alternating feet; may jump from bottom step, landing on both feet.
- Can momentarily balance on one foot.
- Can kick big ball-shaped objects.
- Needs minimal assistance eating.
- Jumps on the spot.
- Pedals a small tricycle.
- Throws a ball overhand; aim and distance are limited.
- Catches a large bounced ball with both arms extended.
- Enjoys swinging on a swing.
- Shows improved control of crayons or markers; uses vertical, horizontal and circular strokes.
- Holds crayon or marker between first two fingers and thumb (tripod grasp), not in a fist as earlier.

- Can turn pages of a book one at a time
- Enjoys building with blocks.
- Builds a tower of eight or more blocks.
- Enjoys playing with clay; pounds, rolls, and squeezes it.
- May begin to show hand dominance.
- Carries a container of liquid, such as a cup of milk or bowl of water, without much spilling; pours liquid from pitcher into another container.
- Manipulates large buttons and zippers on clothing.
- Washes and dries hands; brushes own teeth, but not thoroughly.
- Usually achieves complete bladder control during this time.



Cognitive development

- Listens attentively to age-appropriate stories.
- Makes relevant comments during stories, especially those that relate to home and family events.
- Likes to look at books and may pretend to "read" to others or explain pictures.
- Enjoys stories with riddles, guessing, and "suspense."
- Speech is understandable most of the time.
- Produces expanded noun phrases: "big, brown dog."
- Produces verbs with "ing" endings; uses "-s" to indicate more than one; often puts "-s" on already pluralized forms: geeses, mices.
- Indicates negatives by inserting "no" or "not" before a simple noun or verb phrase: "Not baby."

- Answers "What are you doing?", "What is this?", and "Where?" questions dealing with familiar objects and events.

Four-year-old

Physical development

- Head circumference is usually not measured after age three.
- Hearing acuity can be assessed by child's correct usage of sounds and language, and also by the child's appropriate responses to questions and instructions.

Motor development

- Walks a straight line (tape or chalk line on the floor).
- Hops on one foot.
- Pedals and steers a wheeled toy with confidence; turns corners, avoids obstacles and oncoming "traffic."
- Climbs ladders, trees, playground equipment.
- Jumps over objects 12 to 15 cm (5 to 6 in) high; lands with both feet together.
- Runs, starts, stops, and moves around obstacles with ease.
- Throws a ball overhand; distance and aim improving.
- Builds a tower with ten or more blocks.
- Forms shapes and objects out of clay: cookies, snakes, simple animals.
- Reproduces some shapes and letters.
- Holds a crayon or marker using a tripod grasp.
- Paints and draws with purpose; may have an idea in mind, but often has problems implementing it so calls the creation something else.
- Becomes more accurate at hitting nails and pegs with hammer.
- Threads small wooden beads on a string.
- Can run in a circle
- Can jump



Cognitive

- Can recognize that certain words sound similar
- Names eighteen to twenty uppercase letters. Writes several letters and sometimes their name.
- A few children are beginning to read simple books, such as alphabet books with only a few words per page and many pictures.
- Likes stories about how things grow and how things operate.
- Delights in wordplay, creating silly Language.
- Understands the concepts of "tallest," "biggest," "same," and "more"; selects the picture that has the "most houses" or the "biggest dogs."
- Rote counts to 20 or more.
- Understands the sequence of daily events: "When we get up in the morning, we get dressed, have breakfast, brush our teeth, and go to school."
- When looking at pictures, can recognize and identify missing puzzle parts (of person, car, animal).
- Very good storytellers.
- Counts 1 to 7 objects out loud, but not always in order
- Follows two to three step directions given individually or in a group
- May put the "ed" on the end of words such as "I goed outside and I played."

Language

- Uses the prepositions "on," "in," and "under."
- Uses possessives consistently: "hers," "theirs," "baby's."

- Answers "Whose?", "Who?", "Why?", and "How many?"
- Produces elaborate sentence structures: "The cat ran under the house before I could see what color it was."
- Speech is almost entirely intelligible.
- Begins to use the past tense of verbs correctly: "Mommy closed the door," "Daddy went to work."
- Refers to activities, events, objects, and people that are not present.
- Changes tone of voice and sentence structure to adapt to listener's level of understanding: To baby brother, "Milk gone?" To Mother, "Did the baby drink all of his milk?"
- States first and last name, gender, siblings' names, and sometimes own telephone number.
- Answers appropriately when asked what to do if tired, cold, or hungry. Recites and sings simple songs like rhymes.

Social development

- Outgoing; friendly; overly enthusiastic at times.
- Moods change rapidly and unpredictably; laughing one minute, crying the next; may throw tantrum over minor frustrations (a block structure that will not balance); sulk over being left out.
- Imaginary playmates or companions are common; holds conversations and shares strong emotions with this invisible friend.
- Boasts, exaggerates, and "bends" the truth with made-up stories or claims of boldness. Cooperates with others; participates in group activities.
- Shows pride in accomplishments; seeks frequent adult approval.
- Often appears selfish; not always able to take turns or to understand taking turns under some conditions; tattles on other children.
- Insists on trying to do things independently, but may get so frustrated as to verge on tantrums when problems arise: paint that drips, paper airplane that will not fold right.
- Enjoys role-playing and make-believe activities.
- Relies (most of the time) on verbal rather than Physical aggression; may yell angrily rather than hit to make a point; threatens: "You can't come to my birthday party"
- Name-calling and taunting are often used as ways of excluding other children.

- Establishes close relationships with playmates; beginning to have "best" friends.

Five-year-old

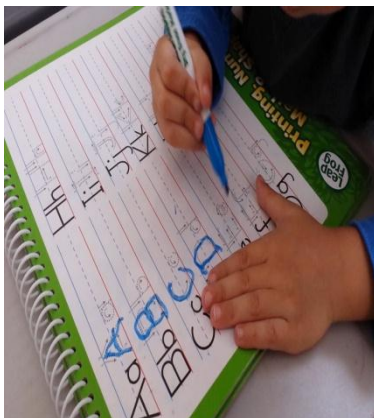
Physical

- Head size is approximately that of an adult's.
- May begin to lose "baby" teeth.
- Body is adult-like in proportion.
- Visual tracking and binocular vision are well developed.
- Motor development
- Walks backwards, toe to heel.
- Walks unassisted up and down stairs, alternating feet.
- May learn to turn somersaults (should be taught the right way in order to avoid injury).
- Can touch toes without flexing knees.
- Walks a balance beam.
- Learns to skip using alternative feet.
- Catches a ball thrown from 1 m (3.3 ft) away.
- Rides a tricycle or wheeled toy with speed and skilful steering; some children learning to ride bicycles, usually with training wheels
- Jumps or hops forward ten times in a row without falling.
- Balances on either foot with good control for ten seconds.
- Builds three-dimensional structures with small cubes by copying from a picture or model.
- Reproduces many shapes and letters: square, triangle, A, I, O, U, C, H, L,
- Demonstrates fair control of pencil or marker; may begin to color within the lines.
- Cuts on the line with scissors (not perfectly).
- Hand dominance is fairly well established

Cognitive

- Forms rectangle from two triangular cuts.
- Builds steps with set of small blocks.
- Understands concept of same shape, same size.
- Sorts objects on the basis of two dimensions, such as colour and form.

- Sorts a variety of objects so that all things in the group have a single common feature (classification skill: all are food items or boats or animals).
- Understands the concepts of smallest and shortest; places objects in order from shortest to tallest, smallest to largest.
- Identifies objects with specified serial position: first, second, last.
- Rote counts to 20 and above; many children count to 100.
- Recognizes numerals from 1 to 10.
- Understands the concepts of less than: "Which bowl has less water?"
- Understands the terms dark, light, and early: "I got up early, before anyone else. It was still dark."
- Relates clock time to daily schedule: "Time to turn on TV when the little hand points to 5."
- Some children can tell time on the hour: five o'clock, two o'clock.
- Knows what a calendar is for.
- Recognizes and identifies coins; beginning to count and save money.
- Many children know the alphabet and names of upper- and lowercase letters.
- Understands the concept of half; can say how many pieces an object has when it's been cut in half.
- Asks innumerable questions: Why? What? Where? When? How? Who?
- Eager to learn new things. Curious and inquisitive.



Language development

- Vocabulary of 1,500 words plus.
- Tells a familiar story while looking at pictures in a book.
- Defines simple words by function: a ball is to bounce; a bed is to sleep in.
- Identifies and names four to eight colours.

- Recognizes the humour simple, jokes, makes up jokes and riddles.
- Produces sentences with five to seven words; much longer sentences are not unusual.
- States the name of own city or town, birthday and parents' names.
- Speech is almost entirely grammatically correct.

Social development

- Enjoys and often has one or two focus friendships.
- Plays cooperatively (can lapse), is generous, takes turns, shares toys.
- Participates in group play and shared activities with other children; suggests imaginative and elaborate play ideas.
- Shows affection and caring towards others especially those "below" them or in pain
- Generally subservient to parent or caregiver requests.
- Needs comfort and reassurance from adults but is less open to comfort.
- Has better self-control over swings of emotions.
- Likes entertaining people and making them laugh.
- Boasts about accomplishments.

Six-year-old

Physical

- Weight gains reflect significant increases in muscle mass.
- Heart rate and respiratory rates are close to adults.
- Body may appear lanky as through period of rapid growth.
- Baby teeth beginning to be replaced by permanent ones,
- Motor development
- Gains greater control over large and fine motor skills; movements are more precise and deliberate, though some clumsiness persists.
- Enjoys vigorous running, jumping, climbing, and throwing etc.
- Has trouble staying still.
- Span of attention increases; works at tasks for longer periods of time.
- Can concentrate effort but not always consistently.
- Understands time (today, tomorrow, yesterday) and simple motion (some things go faster than others).
- Recognizes seasons and major activities done at certain times.

- Has fun with problem solving and sorting activities like stacking, puzzles and mazes
- Enjoys the challenge of puzzles, counting and sorting activities, paper-and-pencil mazes, and games that involve matching letters and words with pictures.
- Recognizes some words by sight; attempts to sound out words
- In some cases the child may be reading well.
- Functioning which facilitates learning to ride a bicycle, swim, swing a bat, or kick a ball.
- Enjoys making things.
- Reverses or confuses certain letters: b/d, p/g, g/q, t/f.
- Able to trace objects.
- Folds and cuts paper into simple shapes.
- Can tie laces, string (like shoes).



Language

- Can identify right and left hands fairly consistently.
- Holds onto positive beliefs involving the unexplainable (magic or fantasy)
- Arrives at some understanding about death and dying; expresses fear that parents may die.
- Talks a lot.
- Loves telling jokes and riddles
- Enthusiastic and inquisitive about surroundings and everyday events.
- Able to carry on adult-like conversations; asks many questions.
- Learns 5 to 10 words a day; vocabulary of 10,000–14,000.
- Uses appropriate verb tenses, word order, and sentence structure.

Social and emotional

- Uses language rather than tantrums or physical aggression to express displeasure: "That's mine! Give it back, you dummy."

- Talks self through steps required in simple problem-solving situations (though the "logic" may be unclear to adults).
- Has mood swings towards primary caregiver depending on the day
- Friendship with parent is less depended on but still needs closeness and nurturing.
- Anxious to please; needs and seeks adult approval, reassurance, and praise; may complain excessively about minor hurts to gain more attention.
- Often can't view the world from another's point of view
- Self-perceived failure can make the child easily disappointed and frustrated.
- Can't handle things not going their own way
- Does not understand ethical behaviour or moral standards especially when doing things that have not been given rules
- May be increasingly fearful of the unknown like things in the dark, noises, and animals.

Seven year old

Motor development

- Well-developed hand-eye coordination
- Good sense of balance
- Capable of basic gymnastics moves such as somersaults
- Able to ride a bicycle without training wheels
- Increased ability at problem solving and reasoning
- Can feel shame and guilt



Language

- Vocabulary now numbers at least a few thousand words
- Capable of telling time

- Begins to understand how words form sounds

Social and emotional

- Highly self-critical and eager to please
- Can understand right and wrong
- Complains a lot and has strong emotional swings
- Ability at dealing with mistakes and failure improves

Eight year old

Motor development

- Has good finger control
 - Increased physical strength and endurance
 - Almost able to converse at an adult level
 - Wants to understand how and why things work
 - Clear, logical thinking skills
 - Exhibits a clear preference for certain subjects and activities

Language

- Enjoys reading a lot
- Can start to understand how opposites work

Social and emotional

- Starts to develop a close circle of same-gender friends
- Becomes more susceptible to peer pressure
- Enjoys group activities
- Prone to mood swings and melodramatics
- Extremely impatient and may have a hard time waiting for special events



Nine year old

Motor skills

- Quite good at handling tools
- Manual dexterity and hand-eye coordination are well-developed
- Capable of drawing in detail
- May persist with a particular physical activity to the point of exhaustion

Language

- Good at memorizing and recalling information, but typically does not show a deep understanding of it
- Capable of concentrating and resuming a task after interruption
- Eager to learn skills
- Starts to understand right v/s wrong in place of good v/s bad

Social skills

- Often displays an intense revulsion of the opposite gender
- Will use physical complaints as a means of getting out of undesired tasks
- Generally dependable and can be trusted with basic responsibilities
- Prone to wide mood swings

Ten year old

Motor skills

- Capable of demanding motor/endurance tasks like bicycling and team sports
- Girls may begin breast development and exhibit a change in facial shape

Language

- Still does not display a deep understanding of subjects
- Does not yet fully understand right from wrong
- Not yet good at organizing or planning things in a practical way

Social skills

- No interest in the opposite gender yet
- Not as moody as 7-9 year olds; overall disposition tends to be cheerful and fun-oriented
- Friendships are highly important, friends are almost exclusively same gender
- Can have a short temper, but has learned to adjust anger levels according to the appropriateness of the situation
- Gets along well with parents, eager to please
- Has fewer fears than he/she did at younger ages

Eleven year old

Motor skills

- Extremely jumpy and has a hard time sitting still
- No obvious signs of puberty in boys yet, girls typically begin growth of pubic hair. Breast development not significant yet, but is of great interest.
- Rapid height gains
- Better ability at making decisions
- Begins to understand that not everyone holds the same beliefs

Language

- Able to use logic and debate others quite well
- Social and emotional development
- Often critical of others, stubborn, and egotistical
- Tends to display anger physically by hitting people/objects, throwing things, or slamming doors
- Still no interest in the opposite sex
- Friends are important, but with more arguments than before
- May be worrisome and afraid of things

Twelve year old

Physical

- Girls are developing breasts, filled-out pubic hair, underarm hair, and may begin menstruation
- Changes in boys less dramatic, but enlargement of the penis and testicles typically begins along with growth of fine pubic hair and frequent, random erections

Language

- Capable of categorizing information to make better sense of it
- Reads adult books and magazines on subjects of interest
- Capable of proofreading homework for spelling, grammar, and logic

Social skills

- Overall disposition is pleasant and upbeat
- Can become extremely excited over subjects of interest or accomplishments
- Strongly prone to peer pressure and following trends
- More stable friendships with less melodramatics than at 11
- Beginning to be interested in the opposite sex, particularly girls

8. SUMMARY:

- Knowledge of the normal growth and development of children helps in recognizing that each child is unique.
- Also, aids in appreciating the importance of having realistic expectations of a child at any given age and provide developmentally appropriate play and learning activities.
- It helps to keep a close check on a child's developmental changes for the following reasons: developmental skills are sequential and inter dependent and early intervention for delays helps develop good self-esteem.
- Growth refers to an actual biological or quantitative increase. Development refers to the qualitative changes.
- Principles of growth and development are : Development is Continuous, Development is Gradual, Development is Sequential, Rate of Development Varies

Person to Person, Development according to Growth Gradients (Differentiation, Cephalo-caudal & Proximo-distal), Inter-correlation in Different Aspects of Development, Growth and Development is a Product of Both Heredity and Environment, Development in Sensitive and Critical Periods is Important, Development occurs at Different Rates

- Several factors affecting growth and development such as: Genetic, Nutritional, Sex, Socioeconomic conditions, environment, chronic diseases, emotional, cultural, intrauterine conditions, growth potentials & race.
- Details of Development from 3 to 12 years across the domains of physical, motor, cognitive, language social and emotional.