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GROWTH AND DEVELOPMENT (6-11 Yrs)

You have studied earlier that development from birth to old age is a continuous process and is divided into four stages—childhood, adolescence, adulthood and old age. You have also studied about the special features of growth and development that takes place in early years called ‘early childhood’. In this lesson, you will become familiar with growth and development during middle childhood, which you know is from 6-11 years of age.



OBJECTIVES

After reading this lesson, you will be able to:

- describe physical development in middle childhood;
- identify the landmarks of motor development during this period;
- relate the socio-emotional development that takes place in middle childhood to the behaviour of the child;
- elaborate the language development during middle childhood;
- trace the cognitive development during this period.

19.1 PHYSICAL DEVELOPMENT

You may have noticed that boys and girls gain height suddenly but at different ages. From about 2 ½ to 3 years to 10 years, children (both boys and girls) gain about 5-7cms in height and about 2-3kg weight every year. Have you noticed in your neighbourhood that many of the girls who were shorter than the boys till they were about 9-10 years of age suddenly become taller

than the boys? This happens because the girls start their growth spurt earlier than the boys and reach the maximum earlier.

The sudden increase in height and weight in the 11-13 years age group is called growth spurt.



Notes

REFERENCE BODY WEIGHTS AND HEIGHTS OF CHILDREN AND ADOLESENTS ACCORDING TO NCHS

Age (years)	BOYS		GIRLS	
	Height (cm)	Weight (kg)	Height (cm)	Weight (kg)
0	50.5	3.3	49.9	3.2
1/4(3m)	61.1	6.0	60.2	5.4
1/2(6m)	67.8	7.8	66.6	7.2
3/4(9m)	72.3	9.2	71.1	8.6
1.0	76.1	10.2	75.0	9.5
1.5	82.4	11.5	80.9	10.8
2.0	85.6	12.3	84.5	11.8
3.0	94.9	14.6	93.9	14.1
4.0	102.9	16.7	101.6	16.0
5.0	109.9	18.7	108.4	17.7
6.0	116.1	20.7	114.6	19.5
7.0	121.7	22.9	120.6	21.8
8.0	127.0	22.9	120.6	21.8
9.0	132.2	28.1	132.2	28.5
10.0	137.5	31.4	138.3	32.5
11+	140	32.2	142	33.7
12+	147	37.0	148	38.7
13+	153	40.9	155	44.0
14+	160	47.0	159	48.0
15+	166	52.6	161	51.4
16+	171	58.0	162	53.0
17+	175	62.7	163	54.0
18+	177	65.0	164	54.4



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19.1.1 Change in Body Proportions

As you already know the head of the newborn is $\frac{1}{4}$ th the size of the body and that of a 6-8 year old is about $\frac{1}{6}$ th of the body and by adulthood it will become $\frac{1}{8}$ th of the body. In other words, the head becomes smaller in proportion to the rest of the body as one grows.

In middle childhood along with gross muscles, fine muscles develop rapidly.



Fig. 19.1: Change in Body Proportions

19.1.2 Development of Teeth, Bones and Muscles

i) Teeth

If you remember, by the time a child is 3 years old, the child has 20 teeth and these are the milk teeth. But by the time the child is in middle childhood, he/she has 28 teeth and these are all permanent teeth. An adult has 32 teeth.



Fig. 19.2: Development of teeth

ii) Bones

By middle childhood, all the bones in the body are formed and henceforth, these continue to grow in size and strength. Bones become brittle when there is too much calcium in them and they break easily. During middle childhood, there is sufficient calcium in the bones to make them strong. This is one reason why the activity level in middle childhood is high. Strong bones provide better anchorage to the muscles.

iii) Muscles and Fat

All bones are covered with fat and muscles. Girls have more fat around their bones than muscles. At seven to eight years, girls start to gain more fat than muscles on their arms, legs and trunk, whereas boys have more of muscles than fat. This is why they have more strength. Boys can generally run longer distances, jump higher, etc.



Fig. 19.3: Development of bones and muscles
HOME SCIENCE



INTEXT QUESTIONS 19.1

1. Tick mark the most appropriate answer.
- i) By middle childhood, the number of teeth in a child's mouth are
 - a) 20
 - b) 24
 - c) 28
 - d) 32
 - ii) Head to body proportion during middle childhood is
 - a) 1/8
 - b) 1/6
 - c) 1/4
 - d) 1/2
 - iii) All the bones of the body are formed by :
 - a) infancy
 - b) early childhood
 - c) middle childhood
 - d) adolescence
 - iv) Boys are stronger because they have more:
 - a) bones
 - b) muscles
 - c) fat
 - d) calcium

19.2 MOTOR DEVELOPMENT

Have you seen 6-11 year old coming out of their classes after school is over? What would they be doing ? Yes, you are right ! Some of them would be running, others would be skipping and still others leaping onto narrow edges and balancing themselves. In all these activities, the children are learning to co-ordinate their muscles for different types of movements.

The body has two types of muscles, namely, the **large muscles** such as those of the arms, legs, back, etc., and the **small or fine muscles** such as those in the fingers, toes, etc. You probably know that muscular activity is possible because of their contraction and flexion (relaxation). Different muscles placed in different parts and some in same parts of the body perform and control different movements. Some part of this control is automatic while some part



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is learnt. Movement due to muscular control which is learnt is called **muscular co-ordination**.

Muscular co-ordination is of two types : **fine** and **gross**. The movement of the fine (small) muscles is called **fine muscular coordination** while the movement of large muscles is called **gross muscular coordination**. Activities such as running, balancing, skipping climbing, involve mostly the coordination of large muscles.



Fig. 19.4: Gross muscular coordination

Let us make the following observation. There is a pencil lying on a table-How will a one year old child pick it up? How will a 3 year old and and 11 year old pick it up? How will you pick it up?

You will observe that the one year old uses her entire palm to pick the pencil while the three year old may use more than one finger and thumb to pick the pencil. At the same time, the eleven year old may use the index finger and thumb and may also be able to manipulate the pencil with very fine movements, i.e., play with it using only the index finger and the thumb or twirl it around or apply just the right pressure for writing.



Fig. 19.5: Fine muscular coordination

What type of muscles do the fingers have? Large or small? Obviously, the small ones. Through this example, you can see that the younger child uses gross muscular coordination for picking a pencil while an older child uses finer muscular coordination for the same task. As the child grows older greater proficiency over fine movements is gained. This is the period when many activities which involve fine muscle coordination can be taught to the child such as writing, needlework, painting, etc.,

Can you suggest some more activities of this type?

You already know from experience that children learn to walk, run, jump, kick, before they learn to feed themselves or write. What does this tell you ?



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This tells you that ***gross muscular coordination is learnt before fine muscular coordination.***




Sensitive Period

Think what will happen if we insist on making a child learn an activity before the muscles are ready for it ? Yes, the muscles which are not yet completely formed will get damaged. Which muscles stand greater chance of being damaged? Yes, the fine muscles. This is the reason why children should not be forced to write before they are four and a half to five and a half years old. You will now realize that formal studies in schools start only in class I, when the child is 5-6 years of age and the fine muscular coordination for writing is almost complete. From 6-11 years, the handwriting gradually improves i.e., it becomes better and faster.

Sensitive period is the time when one can learn a specific activity most effectively.

Around the sensitive period, the body is ready to learn a particular activity or skill most efficiently. If the child is given practice and encouragement at this time to learn that activity or skill, the child will learn it best. Children in the age group of 6-11 years learn maximum number of different activities. They play different types of games. What does this information indicate ? That many of the muscles are maturing at this stage.

The following chart shows the motor development or certain activities and skills from 6 years to 10 years.

AGE	RUN, KICK THROW BALL	BALANCE	SKIP, HOP AND JUMP
6 yrs.	 Fig. 19.6 Catching Can throw a ball	 Fig. 19.7 Balancing Can balance on one foot for very short while	 Fig. 19.8 Jumping Can skip with two legs.
7 yrs.	Can throw a ball at an estimated distance	Can balance on one foot for short while.	Can hop and jump in small squares
8 yrs.	Can throw a small ball at an estimated distance	Can balance on one foot for a short time.	Can skip and play games with alternate hopping rhythm.
9 yrs.	Can throw a small to even larger distances, runs with coordinated movements	Can balance and hop on one foot for long periods.	Jump as high as oneself.
10 yrs.	Can judge and stop a small ball	Can balance and hop on one foot for long periods	Can run and jump hurdles at same time



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INTEXT QUESTIONS 19.2

- Carefully read the list of activities given in column A. Rearrange them in column B as a child learns them age-wise. Mention the age in column C.

Column A	Column B	Column C
i) Hops and jumps in small squares
ii) Skips with both legs
iii) Runs and jumps hurdles
iv) Jumps as high as oneself

- These activities are performed by you everyday. Separate the fine muscular co-ordination from the gross muscular co-ordination.

i) Sharpening a pencil
ii) Walking on the road
iii) Eating food with spoon
iv) Climbing stairs
v) Running and jumping hurdles
vi) Tacking a button on the shirt.

19.3 LANGUAGE DEVELOPMENT

Let us now see what happens to language in the middle childhood. Have you conversed with an eight year old child ? You will be surprised to see how much the child knows and can explain. By middle childhood (6-11 years) a child's basic command over language is complete. The child has a vocabulary of about 14,000 to 30,000 words. The ability to use language well and to communicate well develops at this age. By now, the child also understands that one word can have more than one meaning. Children like to crack jokes where the same word or similar words have the same or similar meanings.

Children of six years to eleven years begin to understand the formation of sentences better. Not only do they know that the same word can have different meanings they also know that words with the same pronunciation can have different spellings and thus different meaning. For example, CORN can mean the cereal or the hard, painful growth on the skin. HERE and HEAR or WHOLE and HOLE have not only different meanings but also different spellings. They enjoy using metaphors and tongue twisters.



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Some **metaphors** are:

- bright as the sun
- look before you leap
- light as a feather
- between the devil and the deep sea

Some **tongue twisters** are

- She sells sea shells on the sea shore.
- Betty Boughter bought some butter but the butter was too bitter so she bought some better butter to make the bitter butter better.
- How much wood could a wood-chuck chuck, if a wood-chuck could chuck wood.

Besides the metaphors and tongue twisters that the children enjoy, they also develop a sense of **humour**. Much of the children's humour at this age is centered around the subtle meaning of language. Children love jokes which may appear rather silly to adults.

For example:



Fig. 19.9 : Humour in children's conversation

19.4 SOCIO EMOTIONAL DEVELOPMENT

Let us first understand the meaning of social development:

"Social development involves not only learning to behave in a socially approved manner but also developing the ability to get along with others."

And, what is emotional development?

"Emotional development means gaining control over one's emotions and learning to express them in socially approved ways."



The common thing that emerges from both the definitions is “learning to behave in socially approved ways.” By middle childhood all major emotions are present in the child. Between 6-11 years of age children learn to gain more control over emotions. They learn to select and express emotions in more *socially approved* ways. Emotional development occurs simultaneously and almost as a part of social development. Hence, we refer to it as *socio emotional development* of children.

You know that social development refers to a child’s ability to adjust to the social surroundings i.e., home, playmates, school, etc. This means that certain people like parents, playmates of the same age group, teachers at school, influence the social development. In the following sections we shall learn about how they actually influence the social development.

i) Parents

Middle childhood is the stage where children develop self confidence and acquire *self-esteem*. Confident parents provide better opportunity to children to be confident. Parents who accept their children “as they are” and love them, help the child to develop *self-confidence*. Such parents lay down clear rules for the children. They praise their children for the good things they do and usually do not punish them for their wrong doings. If the child does anything wrong, they try to explain why it is wrong. In other words, they adopt a *democratic* method of *disciplining* the children.

ii) Peer Group

Peer group refers to the playmates of the same age group. Peer group plays an important role in helping fellow mates develop socio-emotional skills. For example, children come to know from each other that all parents have high expectations from their children. If one child falters, she knows that others also do/can falter. In other words, peer group offers a platform for children to compare.

From the peer group, children also come to know that all parents guide, dictate and scold. They learn that no child gets a free hand in doing whatever she/he wishes to do. This may make an individual child very angry and rebellious but by talking to the peer group, she realizes that she is not only one who feels like this. All children get angry with their parents but the peer group helps the children to cope effectively with this anger and not become rebellious against parents. Thus, peer group provides comfort and emotional security that adults cannot. Children learn from their peers to keep parents happy and thus, master the skill of getting along in society.

Peer group also teaches children to become independent. The following is a typical example of a conversation between two ten year olds.



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Fig. 19.10

Rahul was scared to spend a night away from his mother but when he realized that it was quite normal to feel scared (as other children did too) and yet possible to spend a night away from his mother, he was able to do so.

In short, we can say that peer group:

- helps to see how one compares with others of same age;
- provides emotional security and comfort that an adult cannot;
- helps the child learn how to get along in society;
- helps children to become independent of their parents.



Activity 19.1 Give the meaning of the following similar sounding words. You may consult a dictionary to get correct meanings.

Word	Meaning
Corn	Cereal
Corn	painful growth on skin
Weak	
Week	
Principle	
Principal	
Beer	
Bear	

iii) School

School also plays an important role in the socio-emotional development of children. Teachers encourage students to do well. When they praise the children for things done well and scold them for bad/poor performance, they are helping children to develop.



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For example, everyone can not be good at sports or at drawing or at needle work. Every child cannot stand first in class. But every child is good at doing something or the other. Teachers praise and encourage children to do better in whatever task they are good at. Remember, self confidence is essential for learning skills needed to become a useful adult.



INTEXT QUESTIONS 19.3

State whether the following statements are true or false. Give justification for your answer.

- i) Children between 6-11 years get confused between words which are pronounced the same way but have different meanings.

Justification.....
.....

- ii) Children of middle childhood find it difficult to speak tongue twisters.

Justification.....
.....

- iii) Confident parents have confident children.

Justification.....
.....

- iv) Democratic method of disciplining hinders development of self confidence in children.

Justification.....
.....

- v) Peer group provides emotional security and comfort.

Justification.....
.....

- vi) Peer group makes children dependent on their parents.

Justification.....
.....



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19.5 COGNITIVE DEVELOPMENT

Cognitive development refers to the way a child thinks, reasons and solves problems.

You have already learnt that in early childhood, i.e., between 2 and 7 years of age, cognitive development has taken place in the following areas:

- object permanence
- belief that non-living things have human qualities
- inability to understand another's view point.

The period 6-11 years is a major turning point in cognitive development. Now the child learns to think in a more logical way. Some of the other major cognitive developments are:

i) Differentiation between fantasy and reality

For a young child, there is no difference between fantasy and reality. For a four year old, Santa Claus is real whereas a ten year old will immediately say that Santa Claus is imaginary. A small child believes that babies can be bought from a hospital whereas an older child will tell you that babies can not be bought at a hospital. We are sure you can quote many more examples of this kind.

ii) Understanding another's point of view

Let us take an example. Rohan's mother is in the kitchen and asks him a question. Five year old Rohan who is playing in another room, nods in answer to the question. At that age Rohan thought that his mother could see him nod. At a slightly older age, say, at eight years, Rohan will be able to place himself in his mother's shoes and realize that his mother can not see him nod. In other words, he will be able to understand another persons view point or EMPATHIZE with others. The inability to empathize with others is called EGOCENTRISM. This ability to empathize starts developing in middle childhood and improves as the child approaches the end of middle childhood.

iii) Reversibility

Let us do the following activity.

Show a mud ball to a four year old child. Make a bed out of it. Show it to the child. Now transform this bed into a snake. Now ask the child to make a bed out of it again. The child shows his inability.

This happens because he/she is not able to think backwards clearly through the various steps. By middle childhood this ability starts developing and by eleven years, the child will be able to trace with expertise all the steps backwards. This ability to think and follow the steps backwards is called reversibility.



iv) Belief that physical properties do not change: Conservation

Let us do another activity. Arrange ten coins in two lines. In one line coins are nearer to each other while in another line coins are further away from each other. Ask a four year old child, 'which line has more coins?' The child says, the line which is longer has more coins. But an eight year old will immediately know the difference and give the correct answer. This is because she understands that physical properties of objects remain the same—ten coins will remain ten coins, whether arranged nearer or away from each other.

Let us do a small experiment on physical properties of objects and how children understand them. Invite a four-five year old and a nine-ten year old for a cold drink. Take two bottles of cold drinks. Take two glasses—one of them should be tall and narrow and the other should be short and wide. When you pour the same amount of cold drink to the two glasses, what will happen? Yes, of course. The level of cold drink in the taller glass will be higher and lower in the wider glass. Remember to pour the cold drink in front of the children. Now ask them to pick up a glass each. You will notice that the younger child will definitely choose the tall glass even if she has to fight for it. This is because the younger child thinks that the tall glass has more. The older child understands that the volume of drink is same in both the glasses, irrespective of the shape of the glass.

This ability to understand that certain physical characteristics of objects remain the same even when they appear to be outwardly different is called CONSERVATION.

v) Classification

You must have seen a set of playing cards. How many different ways can you classify them in? If you ask this question to a four year old, the child will insist that they can be arranged in only one way—probably by colour. But a nine-ten year old will be able to *arrange* i.e., CLASSIFY them in many different ways. So we see that in middle childhood, children realize that objects can be classified in many different ways.

vi) Seriation

Ask a five year old and a ten year old child this simple riddle. There are three sisters—A, B and C, A is taller than B and B is taller than C. Is A taller or shorter than C? The five year old will not be able to answer but the ten year old will be able to answer correctly and also explain how she reached the conclusion. This is because she can mentally arrange in ascending/descending order, i.e., $A > B$, and $B > C$, therefore $A > C$ or $C < A$.

This ability to arrange items is called SERIATION.

**vii) Time and speed**

A ten to eleven year old child has the concept of time and speed. She can read the time from a clock or a watch. She understands the concepts like early, late, quick, slow, now or later, etc. Similarly, she understands about speed and can tell you that a car travelling at 60 km/hr will reach earlier than the one traveling at 40 km/hr.

Can you now summarize the characteristics of cognitive development in middle childhood ? Look at the following table.

Characteristics of cognitive development in middle childhood:

1. Concept of fantasy and reality
2. Empathy, Egocentrism
3. Reversibility
4. Conservation
5. Classification
6. Seriation
7. Concept of time and speed

Like other developments, cognitive development depends upon heredity and environment. A person is born with a certain amount of intelligence. But whether the person will be able to use all this intelligence depends upon how these inborn capabilities are developed. If a child has never seen a written word how will she know what written words mean? If a child has never had an opportunity to arrange objects in order, how will she learn seriation ? An exposure to enriched environment and many different activities helps the child to develop her faculties to the maximum and use them as and when required. Allow each child to grow up in a rich and stimulating environment.

Remember that all developments are inter-related. If the child is healthy, he/she has energy to work and learn. He/she is happy with his/her progress and gets along well with his/her playmates. Poor health means lack of energy, irritation and frustrations all the time and thus, fewer friends.

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INTEXT QUESTIONS 19.4

- I. Using the following clues unscramble the given letters to find out the various areas of cognitive development being exhibited.
- i) Seema arranged all the water bottles height wise.
(SRAINOTIE)
 - ii) Shankar is trying arrange six marbles in different shapes.
(NIARSOCNEVTO)
 - iii) Radhika replies loudly to tell her mother that she does not want to watch T.V just now.
(YAPHTME).....
- II.
1. When a child is able to arrange A,B and C in ascending order he/she is:

(a) 3 year old	(b) 5 year old
(c) 6 year old	(d) 10 year old.
 2. When a child is able to say that a car moving at 50 miles/hour speed will reach its destination before the one moving at 40 miles/hour he/she is:

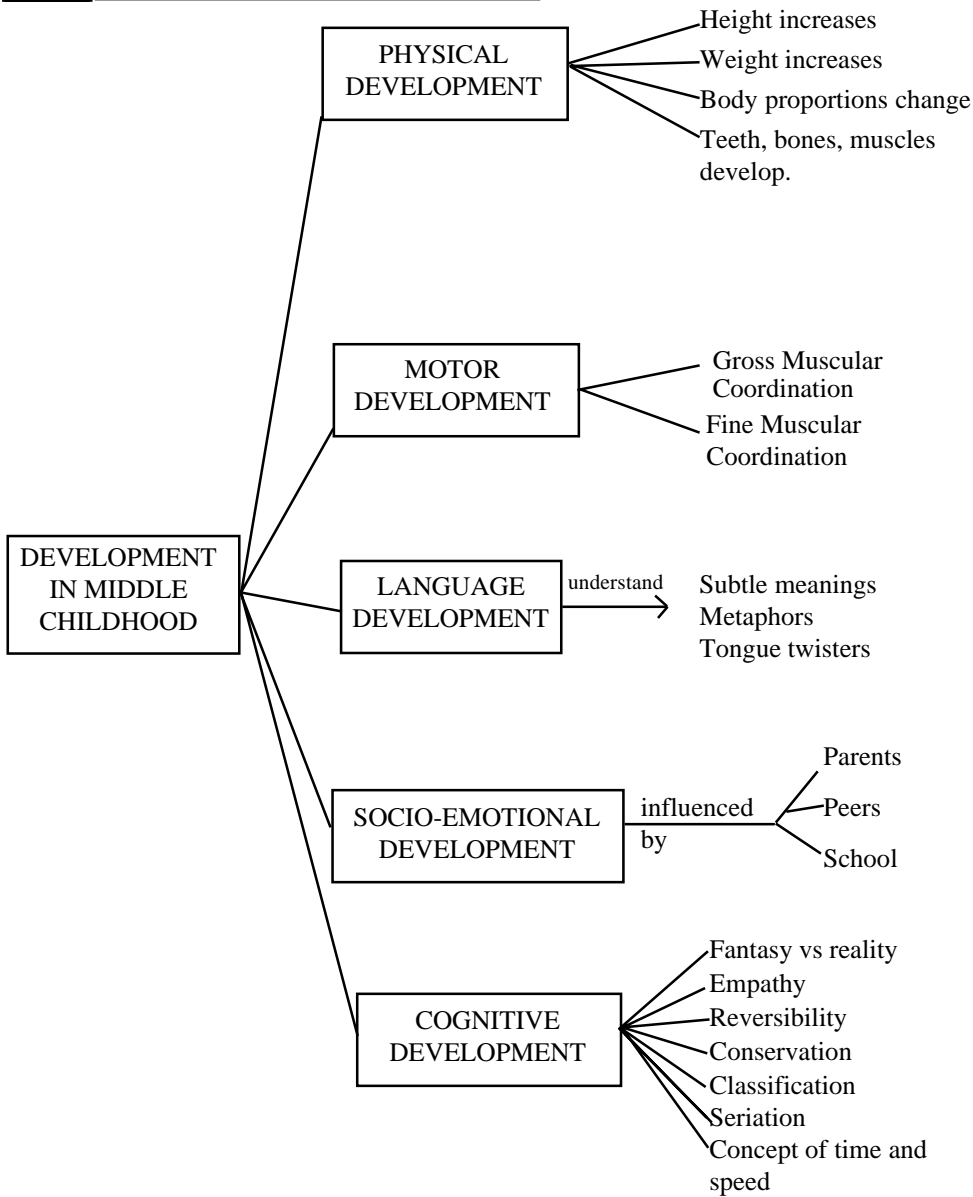
(a) 3 years old	(b) 5 years old
(c) 6 years old	(d) 10 years old
 3. A 9 year old child can arrange leaves from plants in

(a) one way	(b) two different ways
(c) ten different ways	(d) many different ways.
 4. Differentiation between fantasy and reality comes to a child when he/ she is

(a) 3 years old	(b) 5 years old
(c) between 3-5 years of age	(d) between 6-11 years of age



WHAT YOU HAVE LEARNT



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TERMINAL EXERCISE

1. Describe how the physical and motor development in middle childhood is different from early childhood.
2. Give examples to show how the socio-emotional development of an 8 year old child is different from a 4 year old.



3. Give the details of language development of a 10 year old child.
4. What are the cognitive characteristics of a 11 year old child?



ANSWERS TO INTEXT QUESTIONS

19.1 1. i) (c) ii) (b) iii) (c)
iv) (b)

19.2 I. i) 7 yrs, ii) 6 yrs, iii) 10 yrs iv) 9 yrs
II. Fine muscular coordination - i, iii, vi
Gross muscular coordination - ii, iv, v

19.3 i) False. 6-11 year olds can not only differentiate between such words but also enjoy using them.
ii) False. 6-11 year olds enjoy speaking tongue twisters.
iii) True. Confident parents bring up children democratically which helps in giving confidence to children
iv) False. It encourages self confidence in children
v) True. They know that others also feel the same way on many similar issues
vi) False. They learn from each others experiences and gradually learn to be independent.

19.4 I i) seriation ii) Conservation iii) Empathy
II i) (a) ii) (d) iii) (c) iv) (c)

VIDEO – Cognitive Development During Middle childhood.