

10

DEVELOPMENT IN MIDDLE CHILDHOOD

10.1 Introduction

You have studied earlier that development from birth to old age is a continuous process and is divided into four stages-childhood, adolescence, young age and old age. You have also studied about the special features of growth and development that takes place in early years called 'childhood'. Childhood lasts from 0 to 10-11 years. Because of certain specific characteristics, this period is also divided into three stages:

- infancy (0-2 years)
- early childhood (2-6 years)
- middle childhood (6-10/11 years)

You have already learnt about infancy and early childhood. You can revise the lesson from Book I A of Home Science Secondary Course. It will help you to understand the lessons in this book. In this lesson, we will familiarise you with growth and development during middle childhood.

10.2 Objectives

After reading this lesson, you will be able to do the following:

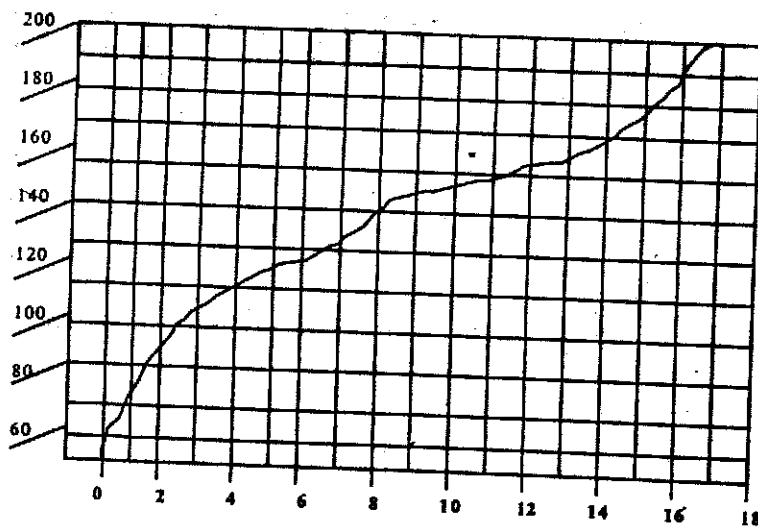
- describe how physical development takes place from early childhood to middle childhood;
- indicate the landmarks of motor development in middle childhood;

- compare the motor development of middle childhood to early childhood;
- point out the socio-emotional development that takes place in middle childhood and show that it is different from early childhood;
- elaborate the language development during childhood and point out the difference in language of early and middle childhood;
- trace the cognitive development from early to middle childhood;
- highlight the causes of handedness.

10.3 Physical Development

Do you remember the meaning of physical development ?

Physical development includes an increase in height and weight , changes in body proportions and development of teeth , bones and muscles .



Graph No. 1
The First Growth Curve

Look at graph No. 1 It is a physical growth curve. It shows that growth is a continuous process. It also shows that growth is fast during the first two years but steady during the next few years, i.e., up to 11-13 years. You can notice quick changes from 11-13 years onwards. If we draw a curve for motor development or cognitive development, we would get a similar curve. The sudden increase after 11-13 years is called *growth spurt*.

You may have noticed that boys and girls gain height suddenly but at different ages. From about 2½ to 3 years to 10 years, children (both boys and girls) gain about 5-7 cms every year in height and about 2-3 kg weight every year. Have you noticed in your neighborhood 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 reach the maximum earlier.

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

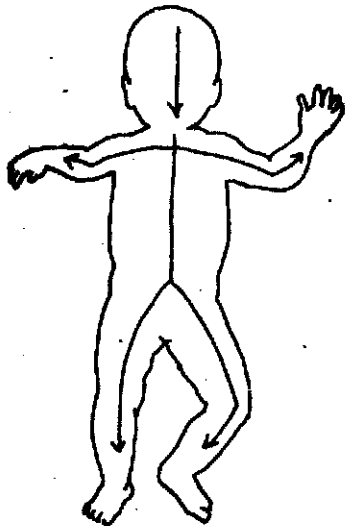
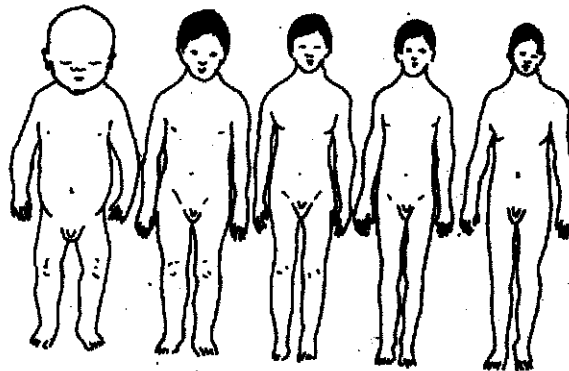
Age (years)	BOYS		GIRLS	
	Height (cm)	Weight (kg)	Height (cm)	Weight (kg)
0	50.5	3.3	49.9	3.2
¼(3m)	61.1	6.0	60.2	5.4
½(6m)	67.8	7.8	66.6	7.2
¾(9m)	72.3	9.2	71.1	8.6
1.0	76.1	10.2	75.0	9.5
1.5	82.4	11.5	80.9	10.8
2.0	85.6	12.3	84.5	11.8
3.0	94.9	14.6	93.9	14.1
4.0	102.9	16.7	101.6	16.0
5.0	109.9	18.7	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	25.3	126.4	24.8
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

INTEXT QUESTIONS 10.1

1. Define 'growth' and 'growth spurt'.
2. Fill in the blanks with appropriate words :
 - i) During the period of middle childhood the height increases about _____ cms per year.
 - ii) Towards the end of middle childhood, girls often become taller than boys of the same age because of _____.
 - iii) During the first two years, height and weight increase at a _____ rate.

10.4 Changes in Body Proportions

You have learnt that when we compare the head of an infant with that of an adult, it is larger in proportion to the rest of the body. Why is it so? This is because the head develops faster than the trunk and legs. This principle, that development takes place from head towards toes is called *Cephalo Caudal principle*.



Look at the diagram given above. Notice that 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.

Another principle of development called the *Proximodistal principle* states that development takes place from the center of the body to the outside. In other words, control is first gained over muscles in the trunk and back, then in the arms and lastly, in the extremities of the fingers.

10.5 Development of Teeth, Bones and Muscles

i) Teeth

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



Fig. 10.1 Development of the teeth.

Look at the figure given above. Twenty baby teeth appear in five stages, shown from left to right, usually starting at about seven months of age. The infant's jaw contains the buds of some permanent teeth even before the first baby teeth break through the gums.

ii) Bones

By middle childhood, all the bones in the body are formed and hence forth, these continue to grow in size and strength. Observe a two year old, you will notice that she falls so very often. But you will rarely come across a case where a two year old has broken a bone, this is because the bones of a two year old have very little calcium deposit so they are supple. As the child grows, calcium gets deposited in the bones. The process of addition of calcium to the bones is called *ossification* and this is a continuous process.

Bones become brittle when there is too much calcium in them and they break easily, (as in old age). 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. Boys have more strength because they have more muscles. This is why, as you may have observed, boys can generally run longer distances, jump higher, etc.

INTEXT QUESTIONS 10.2

1. Tick mark the most appropriate answer.

i) Principle of development from head towards toe is called :

- a) proximodistal
- b) cephalocaudal
- c) growth spurt
- d) body proportion

- ii) By middle childhood, _____ number of teeth appear.
- 20
 - 24
 - 28
 - 32
- iii) Head to body proportion of an adult is :
- $\frac{1}{8}$
 - $\frac{1}{6}$
 - $\frac{1}{4}$
 - $\frac{1}{2}$
- iv) All the bones of the body are formed by :
- infancy
 - early childhood
 - middle childhood
 - adolescence
- v) Boys are stronger because they have more :
- bones
 - muscles
 - fat
 - calcium

2. Give one word for the following :

- Addition of calcium to bones _____.
- Development from torso to extremities _____ principle.
- Development from head to toe _____ principle.

10.6 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 ledges 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 **smaller or fine muscles**. You probably know that muscular activity is possible because of their contraction and flexion (relaxation). Different muscles placed in different and same parts of the body perform these movements and control different movements. Some part of this control is automatic while some part 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.

OBSERVE : 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 a 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.

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 ? 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. And, 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 4 1/2 to 5 1/2 years old. You will now realize that formal studies in schools start only in class 1, i.e. When the child is 5-6 years of age and the fine muscular coordination for writing is ready. From 6—11 years, the handwriting gradually improves—it becomes better and faster.

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

Around the sensitive period, the body is ready to learn a particular activity or skill. 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 6-11 years learn the maximum number of different activities, they play maximum number of different types of games than they will play or have played before. 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 & JUMP
10 yrs.			Judge and stop a small ball.	Can balance and hop on one foot for long periods		Can run & jump hurdles at same time
9 yrs.	Runs with coordinated movements.		Throw small ball to even larger distances.			Jump as high as oneself.
8 yrs.			Throw a small ball at estimated distance		Can skip with alternate rhythm	Can play hopping games.
7 yrs.				Can balance on one foot for short while.		Can hop and Jump in small squares
6 yrs.				Can balance on one foot for very short while.		Can skip with two legs.

Handedness

You all know that we prefer to use our right hand to do the majority of our daily chores. But some children prefer to use their left hand as their main hand. We should not force these children to change to the right hand because it may affect their brain and other developments. The child may also develop certain speech problems. This is because in the case of *right handed persons*, the center that controls handedness is on the left side of the brain and the main speech center is on the right side of the brain. In case of *left handed* people, the system is reverse, i.e., the *main center of speech is on the left hand side* and the *handedness center is on the right side of the brain*.

When you force a child to change from left hand to right hand, the main speech center on the left side tries to take up the function of handedness also. Hence the main speech center gets over loaded and this affects both the functions of speech and handedness. This leads to speech problems accompanied by bad handwriting and other problems of coordination. Hence, let a left handed child remain left handed. Moreover, *left handed children are as intelligent as right handed children*.

INTEXT QUESTIONS 10.3

1. Match the activities in Column A with the ages in Column B.

Column A

Column B

- | | |
|---------------------------------|--------------|
| i) Hops and jumps small squares | (a) 10 Years |
| ii) Skips with both legs | (b) 9 Years |
| iii) Run and jumps hurdles | (c) 8 Years |
| iv) Jumps as high as | (d) 7 Years |
| | (e) 6 Years |

2. Choose the most appropriate answer.

- i) The period during which an activity is most effectively learnt is called:

- Critical period
- Proficiency period
- Sensitive period
- Important period

- ii) Forcing a child to change from left handed to right handed can lead to

- Mental retardation
- Speech defects
- Physical defects
- Physical deformity.

10.7 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 formations of sentences better. They know that the same word can have different meanings and 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 HEIR or WHOLE and HOLE have not only different meanings but also different spellings. They enjoy using metaphors and tongue twisters.

Some metaphors are :

- bright as the sun
- look before you leap

- light as a feather
- between the devil and the deep

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.

Humour

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 :

Rahul : Do you want to hear a dirty joke ?

Akash : Yes !

Rahul : A boy fell into the mud.

Akash : Ha ! Ha ! Ha !

Rahul : Do you want to hear another dirty joke ?

Akash : Yes

Rahul : A girl fell into the mud !

10.8 Socio Emotional Development

Let us recall the definitions 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, now let us also recall the definition of emotional development :

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

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 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.

1. 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.

2. 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 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.

Rahul : Have you ever stayed away from your mother at night ?

Akash : Yes,

Rahul : How does it feel ?

Akash : It is all right for one night but after that it becomes difficult.

Rahul : Yes, exactly !

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.

3. 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.

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

INTEXT QUESTIONS 10.4

State whether the following statements are true or false :

- i) Children between 6—11 years can differentiate between words which are pronounced the same way but have different meanings.
- ii) Children of middle childhood find it difficult to speak tongue twisters.
- iii) Confident parents have confident children.
- iv) Democratic method of disciplining hinders development of self confidence in children.
- v) Peer group provides emotional security and comfort.
- vi) Peer group makes children dependent on their parents.

10.9 Cognitive Development

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

You have already learnt that cognitive development 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. I am 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 ability to empathize with others is called **EGO CENTRISM**. This ability starts developing in middle childhood and improves as the child approaches the end of middle childhood.

iii) Reversibility

Read the following conversations with a four year old who has come to visit you.

You : Rita, how did you come ?

Rita : I came.

You : But how did you come ?

Rita : I have come.

You : Did you come all alone ?

Rita : Mummy is at home.

You : Did you come walking ?

Notice that the child is answering everything but not saying that she has come with her father or on a bike. This is because a four year old is not able to tell you the steps which were followed to reach your place from her home. This happens because 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

If a five year old child spills ten coins and you help her to search for them and give back only eight, she will not know the difference. But an eight year old will immediately know the difference. This is because she understands that physical properties of objects remain the same—ten coins will remain ten coins, they can not become eight coins.

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 drink. Take two glasses—one of them should be tall and narrow and the other should be quite wide. When you pour the same amount of cold drink into 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 the two children 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 doubtless 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 color. 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 traveling 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.

Cognitive characteristics of middle childhood :

1. Ego-centrism
2. Reversibility
3. Conservation
4. Classification
5. Seriation
6. 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 in daily life will depend 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 seriations? An exposure to enriched environment and many different activities helps the child to develop her faculties to the maximum and use them as need be. Allow each child to grow up in a rich and simulating environment.

Remember that all growths are inter-related and any influence in one always influences others—it may hinder or facilitate the other developments. If the child is healthy, she has energy to work and learn. She is happy with her progress and things and gets along well with her playmates. Poor health means lack of energy, irritation and frustrations all the time and thus, fewer friends.

INTEXT QUESTIONS 10.5

Choose the most appropriate answer.

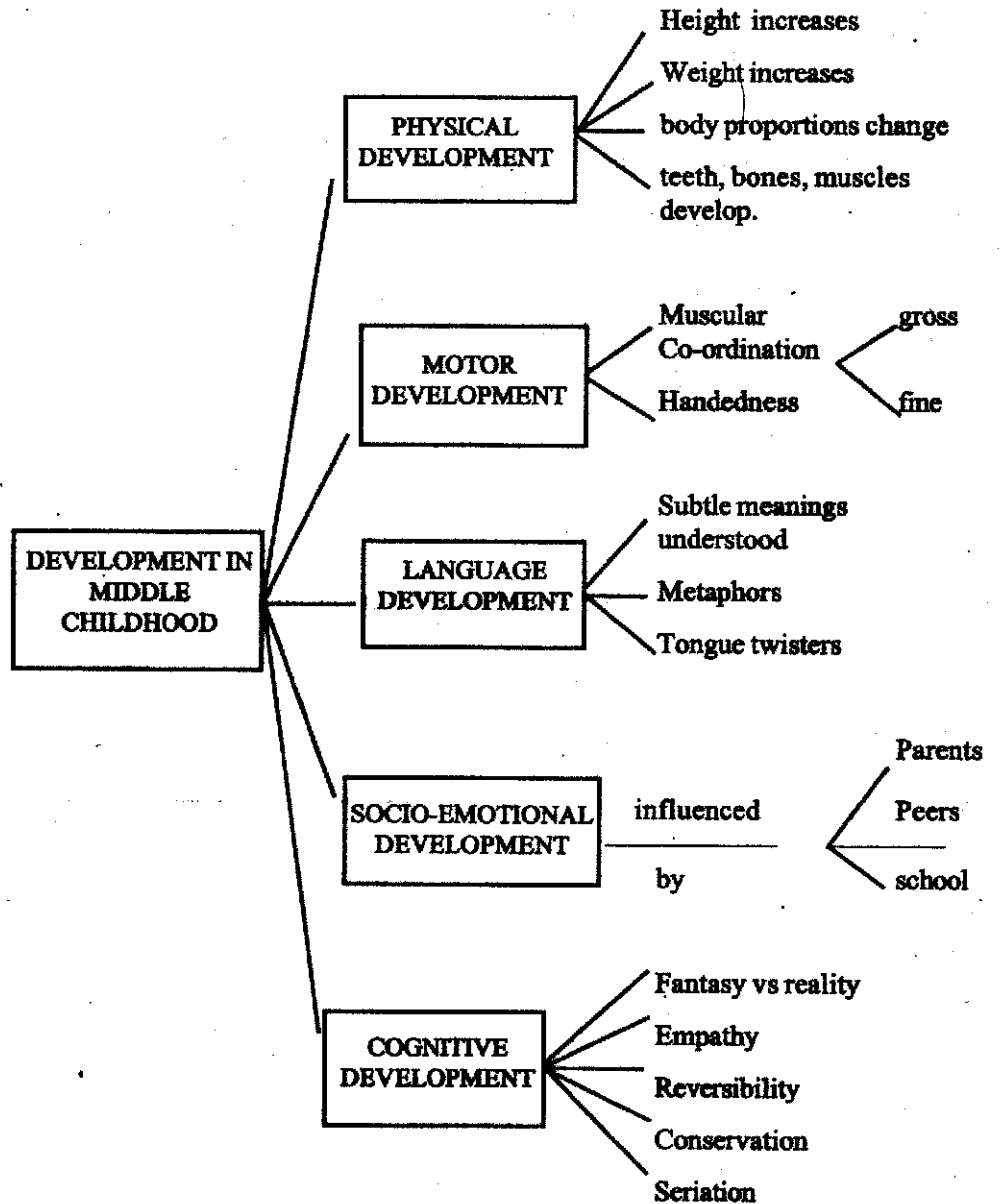
1. The ability to think backwards is :
 - i) reversibility
 - ii) backwardness
 - iii) empathy
 - iv) apathy

 2. The ability to understand another's point of view is :
 - i) reversibility
 - ii) accountability
 - iii) empathy
 - iv) apathy

 3. The ability to arrange items is :
 - i) conservation
 - ii) reversion
 - iii) classification
 - iv) differentiation.

 4. The ability to understand that physical characteristics do not change is :
 - i) classification
 - ii) seriation
 - iii) conservation
 - iv) differentiation
-

10.10 What you have Learnt



10.11 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 social-emotional development of a 8 years old child is different from a 4 years old.
3. Give the details of language development of a 10 years old child.
4. What are the cognitive characteristics of a 11 years old child ?
5. Why are some people left-handed ? What happens if they are forced to become right-handed ?

10.12 ANSWERS TO INTEXT QUESTIONS

10.1 1. Refer to text

2. i) 5—7 cms ii) earlier growth spurt iii) rapid

10.2 1. i) (b) ii) (c) iii) (a)

iv) (b) v) (b)

2. i) ossification ii) proximodistal iii) cephalocaudal

10.3 1. i) (d) ii) (e) iii) (a) iv) (b)

2. i) (c) ii) (b)

10.4 i) T ii) F iii) T iv) F

v) T vi) F

10.5 1) (i) 2) (iii) 3) (iii) 4) (iii)