2.1 Intellectual Development

The term intelligence is used in a variety of contexts, and very often we find the words 'mental ability,' cognitive ability and intelligence used synonymously. The word 'intelligence' is a singular noun and is conceived sometimes as having a thing-character though whatever we know about anyone's intelligence is through the observation of his behaviour which is the reflection of his ability (Kale, 1989).

2.1.1 Definitions

To Binet (1905) intelligence lies in comprehension, direction, invention censorship. Terman (1921) defined intelligence as an individual's ability to use abstract symbols in all kinds of problems.

For Woodworth and Marquis (1948) intelligence means intellect put to use. It is the use of intellectual abilities for handling a situation or accomplishing any task.
Wechsler (1958) defined intelligence as the aggregate or global capacity of the individual to act purposefully, to think rationally and to deal effectively with his environment.

Mangal (1990) explains intelligence as a sort of mental energy (in the form of mental or cognitive abilities) available with an individual to enable him to handle his environment in terms of adaptation and facing novel situations as effectively as possible.

Kuppuswamy (1990) defined intelligence as the capacity to carry on abstract thinking, with the ability to generalise in response to a problem situation.

To Feldman (1997) intelligence is the capacity to understand the word, think rationally, and use resources effectively when faced with challenges.

### 2.1.2 Aspects of Intelligence

The various aspects of intelligence identified by Thurstone (1938) are verbal comprehension, word fluency, number, space visualization, memory, perceptual speed and reasoning. To Hurlock (1978), the intellectual abilities include memory, creativity, concept development, and association of imagination.

According to Flavel (1985) it includes all the mental activity – remembering, symbolising, categorising, problem solving, creating, fantasising and even dreaming. In the views of Zanden (1989)
intelligence covers areas of sensation, perception, memory, thought, reasoning and language.

2.1.3 Theories of Intelligence

The theories of intelligence propagated by psychologists from time to time have tried to explain the structure of intelligence.

(i) Anarchic Theory or Multifactor Theory

The main propagator of this theory was E. L. Thorndike (1948). As the name suggests, this theory, also named as atomistic theory of intelligence, considers intelligence a combination of numerous separate elements of factors, each one being a minute element of an ability.

(ii) Spearman's Two Factor Theory

To Spearman (1904) intelligence consists of two factors. A general factor (G) seemed to exist in all mental performances regardless of its nature and a specific factor(s) which is unique or specific to a particular mental activity. To him an individual with large element of G factor is considered to be intelligent.

According to him general ability helps a person at every time, but the specific ability is useful in its own particular sphere. Due to more general ability a person fares better in most situations. But if
he had been endowed with good general ability. He would have shown better skill in his specific field as well.

(iii) Thurstone’s Multiple-Factor Theory

In the view of Thurstone (1941) intelligence consists of seven separate factors. They are verbal comprehension, word fluency, numerical ability, space visualization, memory, perceptual speed and reasoning and he called them 'Primary Mental Abilities' (PMA). To him an individual’s intelligence cannot be described as a single IQ score, but as separate scores on primary mental abilities. Thurstone holds that in doing some work, a person uses all these abilities in a mixed form. But some primary abilities are more helpful in some specific field than the other abilities, as for becoming an engineer, the numerical, visual and inductive abilities maybe more useful, but in learning music they will not be much useful.

(iv) Guilford’s Structure of Intellect Theory

Guilford (1956) rejects the earlier notions on G and S and primary mental abilities and formulates a three dimensional system according to (1) the kind of mental operations, (2) the kind of content and (3) the mental products. Content refers to the kind of information involved. This may be figural, symbolic, semantic and behavioural. Content can take six different forms, these are called
products. Operations are of five types, namely cognition, memory, convergent thinking, divergent thinking and evaluation.

In short this model provides for 120 factors in intelligence. Each factor is represented by a cell in a cube and is some combination of three dimensions: (a) five operations, (b) six products and (c) four contents \((5 \times 6 \times 4 = 120)\). Because of the great variety of tests involved, the concept of intelligence represented by this model is broader than that of the typical intelligence test.

(v) Thorndike's Theory of Combination of Several Capacities

According to Thorndike (1927) intelligence is of three kinds, mechanical, abstract and social. Thorndike is of the view that intelligence does not consist of general and specific abilities only, but it includes several abilities, like attention, retention, memory, recognition, organising capacity, deductive and inductive reasoning, capacity of learning and knowledge, etc. These are all necessary aspects of intelligence.

According to him intellectual work is controlled by a complex nervous system, and the nervous system works in so many divergent ways that it cannot be considered as a sum total of general ability and several specific abilities.
(vi) **Hebb's Theory**

The American psychologist Hebb (1948) talked of three kinds of intelligence A, B, C. Intelligence 'A' innate, neither observable nor measurable. 'B measures school and related works, 'C' is measured in an intelligence test. Intelligence A is responsible for the development of 'Schemata.' Cognitive abilities are reflected in intelligence B. Early experience is important in the development of intelligence.

(vii) **Piaget's Theory**

Piaget's (1950) theory deals with the autogenesis of knowledge from infancy to maturity. He related biological adaptation to cognitive adaptation which consists of two processes assimilation and accommodation. Piaget believes that intelligence is a biological adaptation as a result of countless assimilation and accommodation which results in a balance (equilibration) between these two. To him mind is active, not passive and his theory stresses the interaction between the person and the environment. To Piaget the intellectual development occurs in four distinct stages. They are (1) the sensory motor period (birth to 2 years), (2) pre-operational period (2 to 7 years), (3) period of concrete operations (7 years).
(viii) Bruner's Theory

To Bruner (1973) language expands the use of mind and provides the means for information processing. Fascinated by the process of intuition, creativity and aesthetics, he investigated the kind of knowing expressed in poetry and art and combined the two aspects of humans—the artist and the scientist.

Bruner's three stages of development correspond roughly to Piaget's first two periods. The 'enactive' stage is the first and is like Piaget's sensorimotor period, in which the infant learns through action. The second, the 'iconic' stage is akin to Piaget's early operational period in which children develop and use imagery. In the third 'symbolic' stage, the child uses language to relate the real abstract.

(ix) Cattel's Theory

Raymond B. Cattel's (1971, 1987) approach to defining intelligence differs sharply from Guilford's as it accept 'g' and divides it into only two factors, crystallised intelligence and fluid intelligence. Crystallised intelligence is a form of intelligence that depends on culturally loaded, fact-oriented information. Tasks highly correlated with it include vocabulary, general information and arithmetic problems. Fluid intelligence, is a form of intelligence that require very little specific knowledge, but involves the ability to see
complex relationships and solve problems as in the number series, spatial visualization and figure matrix items.

(x) Sternberg's Triarchic Theory of Intelligence

Sternberg's (1985, 1988) triarchic theory of intelligence states that information-processing skills, prior experience with tasks and contextual (or cultural) factors interact to determine intelligent behaviour.

(xi) Gardner's Theory of Multiple Intelligences

Howard Gardner's (1983) theory of multiple intelligence provides yet another view of how information-processing skills underlie intelligent behaviour. It identifies seven distinct intelligences on the basis of distinct sets of processing operations applied in culturally meaningful activities—linguistic, logico-mathematical, musical, spatial, bodily-kinaesthetic, interpersonal and intrapersonal.

2.1.4 Intellectual Development during Pre-school Years

In the views of Piaget (1970) a pre-school child is in the pre-operational stage of thinking. The significant aspect of intellectual development during this stage is the continuous development and use of internal images and symbols. This period is called pre-operational because it precedes the concrete operations stage. This
The pre-operational stage consists of two sub-stages, namely, the pre-conceptual stage (2 to 4 years) and the intuitive stage (4 to 7 years).

During the pre-conceptual stage, the children develop immature or incorrect concepts called pre-concepts. The child's reasoning is based on limited criteria. These children show centredness (the inability to concentrate on different aspects at the same time), Animism (the belief that inanimate objects have life and the difficulty in differentiating the real from the imagined). Another characteristic of this period is transductive thinking. It is the inability to understand transformation. The child shows egocentric speeches which helps him in his intellectual development. He uses words like 'I', 'mine', 'my', etc.

In the intuitive period instead of logical operational thought, children rely on their senses and imagination to arrive at conclusions. The child is egocentric and irreversible in his thinking and has conservation problems.

According to Hurlock (1981), Craig (1989) and Hendrick (1990) the pre-school children acquire certain concepts. They attribute life to inanimate objects. They consider death as a departure or change of living place and are unable to comprehend the finality of death. They can judge short distances but not the long distances, can select largest and smallest objects from a group of objects and are able to select medium sized objects only when five years old.
By two years, they can distinguish between one and many. By three years, they can count two objects, by four years they can count three objects. Most children can count up to 13 by five years. And by six years, they can count up to 100. They can understand today, tomorrow and yesterday and have well-developed concepts about circles, squares and triangles. They know their full name, sex and can name the different parts of their body. They are also capable of forming definite opinions about others. These children prefer music with a definite tune and rhythm. They like bright colours and can associate their moods with colours.

In pre-school period mental development is characterised by the rapid expansion of cognitive abilities. Intelligence is a capacity for acquiring knowledge and functioning rationally and effectively, rather than a possession of fund of knowledge (Zander, 1993).

2.1.5 Factors Influencing Intellectual Development of Pre-school Children

Heredity

It is from heredity that the child acquires a particular mental level and specific mental abilities (Matt McGue, 1981; Sharma, 1998). Every person is born with a certain mental capacity that influences how intelligent he or she will be as an adult. The development of this capacity is influenced by the person's environment. Jupe et al. (1985), Clark Stewards and Friedman (1987) have stressed that the inherited intelligence together with
environmental stimulation results in the intellectual development of the child.

**Stimulating Environment**

A study by Hetherington and Parke (1986) has demonstrated the influence of environment on the intellectual development. Atkinson et al. (1987), Devadas et al. (1990), Vernon (1990) and Berk (1986) have reported that children living in stimulating environments have better intellectual development. Every child is born with certain strategies for interacting with the environment. As per Muralidharan (1990) intellectual development during early years is rapid, and environment creates a deep impact on the child. Environmental changes after six years do not alter the child's IQ scores. Several studies report that environmental enrichment is of great significance in improving within limits, the scores of intelligence tests among children below six years of age (Ilg and Annes, 1961). Intelligence is more plastic at this early age and can be significantly modified by enriching the experience of children. Sensory motor impairment (Hunt, 1961), inferior opportunities for education (McCandless, 1967); Brain damage during pre-school years (Devadas et al., 1972) will retard the intellectual development in children. For optimal development children require emotional support and cognitive stimulation.
Nutrition

Townsend (1982) and his associates after conducting a study reported that good nutrition significantly improved the children's mental performance for most tasks. Youngsters who are severely malnourished in childhood may be unable to develop their natural abilities. Furthermore, they reported that follow up research suggested that the intellectual advantages attributed to an improved diet carry over into adolescence and perhaps into adulthood. Hurlock (1990) reveals that during the months before birth and through the early childhood years, malnutrition interferes with the development of the brain and this in turn affects the child's ability to learn. Better nourished children are superior to malnourished children in their mental abilities (Devadas et al., 1973; Arya, 1979; Sigman and Neuman, 1989), whereas poverty and under nutrition hinder and lower cognitive development (Usharani, 1990; Vernon, 1990; Lansky et al., 1981; Pollitt et al., 1993). In infancy and early childhood, Iron deficiency anaemia can delay psychomotor development and impair cognitive development, lowering IQ about 9 points. It is evident that children who have recovered from severe malnutrition in early childhood, have inferior mental development and learning capacity as compared with normal well-nourished children of the same age group and from the same socio-economic class; So it is very important eradicating malnutrition among weaned infants, pre-school children and expectant and nursing mothers (Swaminathan, 1990).
Home

A home with access for play and exploration (White et al., 1976) with warm and democratic attitude towards the child (Umadevi, 1987; Chattopadhyay, 1985) with books around and plenty of interesting conversation (Craig, 1989) enhances the child's intellectual development. During pre-school years warmth and affection, stimulation of language and academic behaviour, and provision of appropriate play materials are the best predictors (Bradely and Caldwell, 1976; Elardo et al., 1975). Studies have proved that maternal warmth (Radin, 1971) stimulating maternal responses to the child's signals (Yarrow et al., 1972) maternal concern for the children (Umadevi, 1978) and a close mother-child bond in the early months (Vernon, 1990) are positively and significantly correlated to the initial IQ and the IQ gain during pre-school years.

Studies conducted by Belmont and Marolla (1973), and Mac Counell (1977) reveals that children from large families and later birth order are low in intelligence. Vernon (1990) has showed that the first born children have superior IQ than the only child. Children from one parent home are poor in intelligence (Zajone, 1976). Children who are overly dominated, overly controlled by their parents seem to be slower in their intellectual development (Muroe and Muroe, 1977). Children who were more self-directed scored high in the ability test than did more controlled children (Muroe and Muroe, 1978). Parents who assist in organising the
environment for children (Bradley et al., 1977); Parents who are intelligent (Yeates et al., 1983) warm and loving, who take time to explain their action, let their children participate in discussion, who take time to answer questions and are concerned about their children's excellence of performance, and parents who set the stage to make discoveries rather than impose memory drills (Chattopadhyay, 1985) and occupational status (Borbon, 1986) have children with high IQ. A study conducted by Hatano, Mikaya and Tajina (1980) has revealed that a highly directive parent actually inhibits a child's interaction with the world and thus inhibits the mental development. Less encouragement from parents (McCandless, 1967) is found to be associated with loss of intelligence. Since cognitive structures develop because of a child's interaction with the world, it would stand to reason that a family's child rearing patterns, and even the family structure itself (i.e., intact versus single parent family) could influence interactions (Piaget, 1950). A small but interesting body of research suggests that cognitive development is in fact influenced by variables such as family size, father absence or the child-care arrangements that have been provided (Nerlove and Snipper, 1981).

A child needs "food for thought" and some environmental diets are richer than others just as are some food diets. It may be helpful to think that what the child inherits is a range of potential abilities. Whether he/she will function within that range depends on the kind of environment in which the child grows up. Home
environments profoundly shape children's intellectual development. Some environments can encourage maximum growth, others may inhibit it, and still others fall in between. The place of home and its environment become all the more significant during the pre-school years as the first five years are considered to be the sensitive period of intellectual development. As mentioned by Montessori (1988), it is this sensitive period which enables him/her to assimilate images from his/her environment in a truly prodigious fashion.

**Nursery school**

Children who have nursery (Walsh, 1937; Stewart and Fein, 1983; Sjobund, 1971), day care (Craig, 1989) and balwadi experiences (Shoba, 1992) and those who attend special intervention programmes (Ramay and Campbell, 1971; Ramay and Haski, 1984; Faw and Belkin, 1989) and Head Start Programmes (Lee et al., 1988; Deutsch, 1985) have revealed that intervention programmes and pre-school experiences enhance the intellectual development of disadvantaged pre-school children. It is during the pre-school years that the child develops the ability to mentally represents objects and events (Cohen, 1996). To be most effective interventions need to be supplemented with high quality educational supports through the school years (Ramey and Ramey, 1990; Macphee and Yeates, 1982; Kozal, 1991, Wilion, 1987) otherwise the gain will disappear in course of time (Mekey et al., 1985; Kozal, 1991).
Sharma (1998) says that the teachers' behaviour in pre-
schools, method of teaching, curricular, extra curricular activities, 
disciplinary methods influence intellectual development.

**Culture**

It appears that there are few qualitative differences in the 
developmental process among widely diverse cultures throughout 
the world. However, the rate of progression through the stages 
varies considerably, and the explanations of this variance focus on 
cultural opportunities for advancement, cultural necessities for 
advancement and factors related to data gathering process itself. 

Dasen and Heran (1981), Price (1981), Raphael (1982), and Misra 
and Bachas (1980) have strongly argued that culture plays a crucial 
role in cognitive function. Jenson (1969) has reported that blacks 
fall below white in abstract problem solving ability, but are equal or 
superior in memorisation. A study by Sharma (1976) has revealed 
that Indian children develop basic conservation abilities slightly 
earlier than British children.

**Socio-economic status**

Studies by Hetherington and Parke (1986) and Fams and 
Belkin (1989) have revealed that low SES children have IQ scores 
10-15 points less than that of the middle class children. Fontana 
(1982) and Walker *et al.* (1994) have reported that children from 
high SES families have higher mentioned abilities. But Zigler *et al.*
(1982) have reported that encouraging, supporting and optimal testing conditions enhance the IQ performances of economically deprived children more than middle class children. A study conducted by the National Council of Education Research and Training (1970) and Baroda Study (1970) conducted by the Department of child development of Baroda University show a high mean score in the upper middle class, urban lower class coming in between and the rural getting the lowest mean score.

2.2 Social Development

A child is not born social. He learns to be social. A socially mature child can adjust well with others, make actions which are beneficial both to himself and to the society (Leeladevi, 1975), will trust his classmates, solve interpersonal problems in an adaptive way and earn higher grades (Wentzel, 1991).

2.2.1 Definitions – Social Development – Socialisation

Hurlock (1972) defines social development as the ability to behave in accordance with social expectations.

In the views of Shamsuddin (1971) the child’s reaction and gradual adjustment to changing environments are known as social development.
Leeladevi (1975) defined social development as an organised all-round development of a person directed towards his adjustment to social groups.

According to Jupe et al. (1985) social development is the process of growing up to take one's full place in the society.

Acquisition of the ability to behave in accordance with social expectations. A less formal definition is learning the rules of the game (Vyas, 1994). It includes three components.

- *Learning how to behave:* This involve first of all coming to understand what the rules are and then learning to obey them.

- *Playing approved social roles:* Every group has its own defined roles, that people are expected to play.

- *Developing social attitudes:* Children realise the value of group membership and feel a need to join.

Social development means the ability to behave properly with others and capability of standing on one's own legs (Chaube, 1996).

According to Kuppuswamy (1974) social development is the process by which the child learns to interact with the expectations and obligations of various groups.

To Skinner (1996) social development can be defined as the progressive improvement, through directed activity of the individual in the comprehension of the social heritage and the formation of flexible conduct patterns of reasonable conformity with his heritage.
To Craig (1989) socialisation is the general process by which the individual becomes a member of a social group, a family and a community.

According to Thomas (1990) socialisation is the means by which children and young acquire the cultural pattern of their original society.

Zimmer and Witnov (1990) defines socialisation as the process whereby human beings 'take on' the values, customs and perspectives of the surrounding culture or sub cultures.

In the views of Panda (1988) socialisation refers to a process through which an individual child acquires traits, values, attitudes, beliefs and behaviour in conformity with social norms or standards.

Socialisation is a process in which the individual develops into a functioning member of the group, according to its standards, conforming to its mores and manners observing its traditions and adjusting himself to the social situation he meets and tries to command the tolerance (Gupta and Garg, 1977).

To Maccoby and Martin (1983) socialisation is the process by which a child's behaviour is moulded to fit with societies roles, beliefs and expectations.

Sharma (1998) defines socialisation as the process whereby an individual learns to behave in accordance with social tradition and mores.
Socialisation is the process of presenting alternate channels for individual behaviour together with positive and negative sanctions which will lead to acceptance of some and rejection of others. It emphasises the influence of social groups, formal and informal, upon the personality of the individual (Havighurst, 1947).

2.2.2 Aspects of Social Development

The various aspects of social development are trust, autonomy, initiative, industry, intimacy, generosity and integrity (Erikson, 1963), friendship, cooperative play, give and take relationship, team spirit and cooperation (Shamsuddin, 1971), negativism, aggression, quarrelling, teasing and bullying, rivalry, cooperation, ascendant behaviour, generosity, desire for social approval, sympathy, dependency and friendliness (Hurlock, 1972), sharing, cooperative play, imitation, identification, curiosity, asking questions, competition and sex appropriate behaviours (Livanway, 1972), Altruism, cooperation, sharing, friendship and helping (Wispe, 1977), dependency, autonomy, mastery, competence, friendship, cooperation and popularity (Craig, 1989) and to Milan (1990) it covers a variety of phenomenon like personality traits aggressiveness, altruism, dependent and assertive behaviour, motivation, incentives, the assumptions of rights and responsibilities, social responsiveness, sex and ethnic differences in temperament.
Negativism, blind imitation, rivalry, aggression, quarrelling, non-cooperativeness, ascendant behaviour, selfishness, sympathy, social approval, sex cleavages, companions, stability of playmates, social acceptability, substitute companions and leadership (Gupta and Garg, 1997; Devadas, 1996).

2.2.3 Theories of Social Development

(i) Albert Bandura’s Theory

Albert Bandura (1977), a leading social learning theorist points out that in daily life people notice the consequence of their own actions, that is they notice which actions succeed and which fail or produce no result and adjust their behaviour accordingly. Through such observed response consequences, they gain information, incentive and conscious reinforcement, they are able to hypothesise about what is appropriate in which circumstances and to anticipate what may happen as a result of certain actions.

(ii) Walters and Bandura’s Theory

According to Walters and Bandura (1963) just as people learn directly from experiencing the consequences of their own behaviour, they also learn by watching another person’s behaviour and its consequences. They derive basic principles from their observations and formulate rules of action and behaviour. All of us learn a wide
variety of behaviours from observing and imitating (or avoiding) the actions of others around i.e. imitation modelling and us.

(iii) **Vygotsky's Theory – Sociocultural Theory**

Russian psychologist Lev Semanovich Vygotsky (1896-1934) states that children acquire ways of thinking and behaving that make up a community's culture through co-operative dialogues with more knowledgeable, members of that society.

(iv) **Social Learning Theory (Skinner, Sears, Bandura)**

It states that development is the result of connections established between stimulus inputs and behavioural responses. It states that quantitative increase in learned responses due to reinforcement and modelling.

(v) **Watson's Theory**

Watson (1925) developed a simple theory of learning. He finds the stimulus-response bondage as the basis of learning. He emphasised the importance of frequency or exercise in learning. He proposed that all our behaviour is learned by interacting with external environmental stimuli. He over emphasised the importance of environment in learning.
(vi) Hull's Theory

Hull's theory (1943) of learning is called drive reduction theory. To him, behaviours have its origin in the biological needs. He emphasised the importance of needs and need satisfaction in the learning processes. He believes that all learning is based on drive and drive reduction that is, learning occurs when a need is satisfied.

(vii) Dollard and Miller's Theory

According to Dollard and Miller (1950) drive (motivation), cue (stimulus), response (action) and reinforcement (reward) are the four fundamental factors in the process of learning. In addition to these, the other principles which are essential in the process of learning are extinction, stimulus generalisation, habit hierarchy of responses and discrimination. They also emphasised habit formation through learning.

(viii) Skinner's Theory

Skinner (1957) was interested in developing a science of behaviour. To him learning occurs as a result of reward and punishment.

(ix) Bandura and Walters Theory

According to Bandura and Walters (1964) the most fundamental and significant principle of social learning is the principle of reinforcement. To them, conditioning, reward and
punishment all contribute to social development. In their view behaviour is learned through conditioning, initiation and through observational learning. They also believe that the child's behaviour is affected by satisfaction and pleasure.

2.2.4 Social Development during Pre-school Years

Pre-school children are endowed with many social skills. According to Erikson (1963) the pre-school child is in the third stage (initiative vs. guilt) of his psycho-social development.

Three to six years old children are capable of interpreting (Santz, 1975), learn how to get along with others, how to give and take, how to co-ordinate and cooperate how to fight for what he wants (Asuri and Krishnamurthy, 1976) develop skills for positive and sustained interaction with peers (Romanello, 1987) resist adult influence, want to be independent, are more cooperative and friendly in play, learn to share and adjust, show negativism, aggression, make quarrels, are attention seeking, competitive and rivalries (Panda, 1988), enjoy pleasing others are responsive and engage in mutual imaginative and interactive play (Hendrick, 1990).

Speaker listener accommodation (Shatz and Gelman, 1973), fewer but longer quarrels (Garvey, 1974), curiosity, exploration of environment, interest in asking questions, interest in doing everything by himself, imitation of other's speech and action.
2.2.5 Factors Influencing Social Development

The host of factors influences the social development of a pre-school child. They are listed below.

Family

The family moulds the social behaviour of the child (Leeladevi, 1975; Pathy, 1982 and Lakhera, 1986 and Zinmer and Witnov, 1990). It directs later socialisation, shapes the child’s social relationship (Schewartz, 1976) teaches the child to trust others (Sundaran, 1985), develop punctuality and friendship, prepares the child for future (Pandy, 1987), gives security to the child and helps in making adjustments (Singh and Banerjee, 1992). The early experiences of the child at home (Leeladevi, 1975; Park, 1978) and the language spoken in the home (Panda, 1988) influence the child’s social development. Children reared in the permissive homes show more confidence, frankness, respect for personality and the ability to face reality (Sundaran, 1985).

Parents are key models for the child in social development (Deepshika, 1982; Sundaran, 1985). Parental attitudes and parental social participation mould the social development of their children (Leeladevi, 1975) give the children initiative (Sundaram, 1985) give room for positive ways of social interactions (Sigle, 1987) and help them to adjust to new and unforeseen circumstances (Singh and Banerji, 1992).
A child accepted by his parents has been found secure, confident, mature, free to grow and express his feeling (Deepshika, 1982) where as parental rejection (Deepshika, 1982, Tivari and Pal, 1986) and parental conflicts (Melogor, 1990) make the child aggressive, dependent and inconsiderate to others, destructive and inadequate in social relations. A study by Kapoor and Gill (1986) have reported that parentally accepted children from socially disadvantaged groups have positive self esteem but Gill and Kapoor (1989) have found both parentally accepted and rejected children from the socially disadvantaged group as dependent.

Differences in the parental expectation about the child's social development is also noticed. A cross cultural study by Okagaki and Sternberg (1993) reported that immigrant parents rated conformation to external standards more than autonomy, whereas American born parents favoured autonomy over confirmity.

Parent-child relationships become the prototype for the child’s interpersonal relationship (Levanway, 1972) and affect the adjustments of the child in the school. Studies on nursery school children have revealed that security attached children are social leaders, active in social participation, are sought out by others, rated by teachers are self directed and eager to learn (Atknison et al., 1987) show fewer behaviour problems and less hostility (Warther grossmann and Bowlic, 1994) whereas insecurely attached children are with drawn, hesitant, less liked by peers and teachers, perceived as more aggressive by classmates, rated by teachers as
less curious and less forceful (Atkinson et al., 1987) as less competent and have more behaviour problems (Cohn, 1996).

Father present children are reported to be more outgoing and self controlled whereas father absent children are reserved (Galati and Singh, 1987) and are more anti social in nature (Vernes, 1990).

Maternal warmth and proactive behaviours bring about desirable social traits (Stern, 1977) and co-operative behaviour (Holden and West, 1989) in their children and maternal sensitive responsiveness results in high sociability (Boom, 1994) of their children. A close mother child face to face exchanges are the prototype of later social adaptations (Kardiner, 1974; Stern, 1977) successful relationships (Holloway and Kichhart, 1990) mutual understanding (Tromek and Cohn, 1989) positive social behaviours and assertiveness in pre-school years (Denhan et al., 1991).

The style of parenting affects the feelings, competence, autonomy (Mussen, Conger and Kagan, 1986) pro-social behaviours, self-concept, internisation of moral values and social competence (Maccoly, 1984) of the children. Baumerind (1972) has reported that the permissive parents have rebellious, self indulgent and socially dependent children and authoritative parents have best adjusted, self reliant, self controlled, self confident and socially competent children. Studies have proved that children of nurturant, warm, loving and protective parents are mature, competent and independent (Mussen et al., 1973) are generous (Mussen et al.,
1980) achieve high scored in self concept, vocabulary, empathy and attention (Turner and Haris, 1984) are highly sociable to express themselves, to be confident, flexible (Singh, 1982) advances cooperation, conversation and complex peer interaction (Clarke et al., 1983).

School

Teachers play a central role in socialising the children (Jackson and Lahaderne, 1968). Positive contact with teachers stimulate self-socialisation (Schewartz, 1975) social competence (Golden et al., 1979) and promote positive social behaviours (Sample, 1984) in children. Children with positive and cooperative contact with class mates develop autonomy (Schenartz, 1975) have advance social consciousness (Pettit et al., 1988) and are more sociable. It has been proved that the children with enough love and support (Down, 1974) with feelings of trust (Gordeer, 1978) who are popular (Mohan et al., 1982; Black and Zogan, 1995) and children with better communicative skills (Hazen and Black, 1989) have better social development, whereas children of unskilled manual workers, disobedient children (Mehta, 1983) those with fear (Thompson et al., 1988) malnourished children (Usharani, 1990) and children with academic failure (Skinner, 1991) have poor social development. The physical environment of the classroom also affect the development. A teacher in classrooms with fewer children (15 or 20 pupils per teacher) spend less time in disciplining and more
time providing their pupils with individualised attention will help in the development of children (Smith and Glass, 1979). The school curriculum which is having enough opportunity for participation will help, better socialisation (Berk, 1996).

Culture

The influence of culture on social development is very extensive covering the personality traits, says Milon (1990). Some cross-cultural studies have revealed that black children have stronger self concept, more satisfied with their image (Recce, 1974) more friendlier (Tunha and Halliman, 1978) and make more cross race relationship (Hallivan and Teixeiva, 1987) than the white children.

2.3 Physical Development

Physical development is an integral part of the total growth and development of the individual (Skinner, 1996). It is one of the more overt and impressive indications of children’s development. It has an important impact on motor and other aspects of development. Hurlock (1954) states that the child’s physical development has a marked influence on the quality and quantity of his behaviour. Physical development is an important aspect of development, because it influences the child’s behaviour both directly and indirectly. Directly, it determines what the child can do
and indirectly it influences his attitudes towards himself and others. Physical growth as an outcome is important because of the evidence linking poor growth to subsequent morbidity, mortality and lower performance in work capacity and school achievement (Martorell, 1995).

2.3.1 Definitions

The term physical development applies to all aspects of growth of the human organism. Growth refers to the natural changes in size resulting from multiplication of cells or increase in intercellular substances.

According to Suriakanthi (1989) physical development refers to increase in bodily tissues and it denotes height and weight changes, changes in body proportions, bone growth, muscular development and development of the nervous system.

Sharma et al. (1990) defined physical development as the series of anatomic and physiologic changes, taking place in an individual.

Physical development is a series of coherent changes leading to maturity (Hurlock, 1983).

Physical development is the increase in the size of the body, otherwise known as growth.
2.3.2 Physical Development during Pre-school Years

The major physical development taking place during pre-school years are:

During early childhood the average increase in height is 7.5 cm annually. By the age of five, the average child measures from 101-102 cm. The child's weight increases at a slow rate during this period with an average of 1.7 kg annually. An average child weighs 14-15 kg by the age of five. Body proportions change and the baby look disappears. By the time children are six years old, they have the body proportion of an adult. Bone development consists of growth in bone size, change in the number of bones and change in their composition. Bone development is relatively slow during this period. Most of the primary milk teeth have erupted by his third birthday. The growth of the brain and the nervous system is very rapid. The muscles play a major role in regulating the vital organs of the body such as the heart, the organs of the digestive system and the glands. The muscle fibres grow in length, breadth and thickness. Childhood is a period of consolidation, because the gains during infancy are consolidated during childhood.

2.3.3 Assessing Physical Development of Children

Because children are constantly growing and changing, it becomes important for health care professionals to assess their
progress periodically. Various measures of physical growth are valid indicators of past and present nutritional deprivation, and of future outcomes of functional significance, such as school achievement or employment.

A complete assessment of nutritional status includes the collection of anthropometric data (Krause, 1980).

According to the Central Technical Committee on Health and Nutrition (AIIMS) various anthropometric measurements of the body can be used to determine growth.

Nutritional anthropometry is concerned with the measurements of the variation of physical dimension and the gross composition of the human body at different ages (Morley, 1976). Body weight and height indicate body size. In addition, the head, chest and mid-arm circumferences give an idea of growth and development, especially of small children (0-5 years) (Reddy, 1988). Physical measurements reflect the total nutritional status over a lifetime. Some measurements, such as height and head circumference, reflect past nutrition or chronic nutritional status. Others such as mid-arm circumference, weight and skin fold thickness reflect present nutritional status and are used to assess the skeletal energy reserves both as fat and as protein.

(a) Weight

Pre-school years are marked by steady increases in height and weight. It can be considered as the key of anthropometric
measurements for assessing malnutrition, because it could be appreciated not only by health personnel but also by the less educated parents for whom it is useful as a source of health education (Jelliffe, 1966). Weight in children is a sensitive measure of growth and can be an early clue to growth problems and nutritional inadequacy. It reflects more recent nutrition of the child or adult than does length or height (Krause Skinner, 1996). Weight is the simplest measurement of growth and nutritional status (Swaminathan, 1986). It is a measure of total body mass and hence is sensitive to changes in body fluids, fat muscle mass, the skeleton and other organs (Gopalan and Chatterjee, 1989).

Ford (1964) has suggested that 66% of the standard weight should be regarded as the malnutrition line, but this has the disadvantage of including only obvious and advanced cases.

Gomez et al. (1955) mentioned the degree of malnutrition by weight that 90-75% of standard is suggestive of 1st degree malnutrition, between 75 and 61% as second degree and 60% and below as third degree. Jelliffe (1966) suggested another classification for grading of malnutrition on the basis of weight for age. He considered 90-80% Harvard standard as first degree, 80-70% as second degree, 70-60% as third degree and 60% and below as fourth degree of malnutrition.

Weight measurements are evaluated by comparing it with various norms. ICMR (1981) recommended that the mean weight
for normal Indian boys should be 11.8, 13.5 and 14.8 kg for third, fourth and fifth year respectively. The mean weight for normal Indian girls should be 12.2, 12.9 and 14.5 kg for third, fourth and fifth year respectively. The children falling below these normal standards should be labelled as malnourished.

(b) **Height**

Height is a measure of chronic malnutrition or undernutrition (Krause, 1980). It is another measure of the growth of the child. The extent of height deficit in relation to age may be regarded as a measure of the duration of malnutrition (Waterlow and Alleni, 1971). While weight for height is an index of current nutritional status, height for age gives a picture of past nutritional history (Srivastava et al., 1980).

ICMR (1981) suggested standard heights for Indian boys should be 88.8, 96.0 and 102.1 cm for third, fourth and fifth year respectively. The standard heights for Indian girls should be 87.2, 94.5 and 101.4 cm for third, fourth and fifth year respectively.

Using height and weight for specific age groups as an indicator, various workers reported a number of indices to assess malnutrition (Meenakshi and Singh, 1970; Rao and Singh, 1970; Sen et al., 1980; Rao et al., 1981).

ICMR (1972) also suggested a chart of height for weight to assess growth.
(c) Mid-arm circumference

The mid-arm circumference gives an idea of the size of the arm muscle and fat layer below the skin. Poor muscle and muscular wasting are cardinal signs of PEM, especially in those of early childhood. According to Harvard Standards (1987) the mid-arm circumference of boys should be 13.3, 14 and 14.1 cm for the third, fourth and fifth year respectively. The standard mid-arm circumference of girls should be 12.9, 13.7 and 13.9 cm for the third, fourth and fifth year respectively.

(d) Head and chest circumference

Head circumference is mainly related to the size of the brain and to a small extent to the thickness of the scalp tissues and the skull. The size of the brain rapidly increases during the first year. Head circumference is slightly affected in the second year. The chest/head ratio is of value in detecting PEM in early childhood. The head circumference may also be used as a rough additional guide in age assessment. The standard mid-arm circumference of pre-school children should be 50, 50.5 and 50.8 cm for the third, fourth and fifth year respectively (Harvard, 1987).

In well-nourished children the circumference of the chest becomes larger than that of the head after the first six months of life. In PEM the chest does not develop well probably due to
wasting or poor growth of the pectoral muscles (Jelliffe, 1966). If chest circumference to head circumference ratio is less than one between six months of age and five years, the child is under nourished and needs special attention. The standard chest circumference of pre-school children should be 52, 53 and 55 cm for the third, fourth and fifth year respectively.

2.3.4 Factors Influencing Physical Development of Pre-school Children

Heredity

Physical development is influenced to a certain extent by genetic factors (Hurlock, 1972; Kuppuswamy, 1984; Skinner, 1996; Panda, 1997). Tall parents usually have tall children and short parents have short children. Therefore, the tendency to be tall or short seems to be largely hereditary when one parent is tall and the other short, the children may be tall or short or midway between. This occurs because the heredity pattern is complex and other factors are often involved (World Book Encyclopaedia, 1992).

Hormones

Hormones produced by glands in the body modify growth. Secretions from the pancreas, thyroid gland and pituitary gland particularly affect growth. These secretions—insulin, thyroxin and growth hormone—greatly influence cell size and cell number. Too
little of any of these hormones can slow growth. In hormone deficient patients treatment with the particular hormone increases growth. Growth hormone affects the development of almost all body tissues, and thyroxin influences brain growth and body size (Berk, 1996; Srilakshmy, 1998).

**Nutrition**

Nutrition is the science that deals with foods and the way the body uses them. A balanced diet provides all the food substances needed by the body for healthy growth and development. Good nutrition also includes eating the proper amount of food each day. Children who manage to survive extreme forms of malnutrition grow to be smaller in all body dimensions (Galler et al., 1985; Swaminathan, 1986). In addition their brains are seriously affected. Malnutrition probably interferes with myelinization causing a permanent loss in brain weight. By the time these youngsters reach middle childhood, they score low intelligence tests, show poor fine motor co-ordination, and having difficulty paying attention in school (Galler et al., 1985). A child who suffers from nutrient deficiencies exhibits physical and behavioural symptoms: the child is sick and out of sorts (Sizer et al., 1994).

**Exercise**

Exercise helps keep the body healthy and fit. Vigorous exercise strengthens muscles and improves the function of the
circulatory and respiratory systems. Physical fitness benefits both physical and mental health (Gosh, 1985). It enables the body to withstand stresses that otherwise could cause physical and emotional problems. It produces superb results in terms of health, and it improves the heart's capacity to do its work. In the body, nutrition and physical activity go hand in hand (Sizer et al., 1994).

**Rest and Sleep**

Rest and sleep help overcome fatigue and restore energy to the body. Pleasurable and relaxing activities help the body shed tension and remain robust (World Book Encyclopaedia, 1992).

Life style and quality of food is vital for the physical development of a child (Sharma, 1990). Prevention of undernutrition in infants and young children is critical because growth deficits are generally recouped, even with adequate feeding in later years (Martorell et al., 1995).

**Stress and Emotional Disturbances**

Frequent stress and emotional disturbances can interfere with physical development even in the foetal stage (Panda, 1981). Emotions influence the secretion of digestive enzymes. Fear and depression decrease secretions and inhibit blood flow and the motility of the elementary canal (William, 1988). Emotional
satisfaction stimulate hormonal secretions that contribute to health (Halstead, 1990).

Diseases and Infections

Diseases and communicable infections can interrupt growth (World Book Encyclopaedia, 1992). If the children are not immunised against infectious diseases, they fall an easy prey to disease, and this in turn, is a major cause of malnutrition and through it, affects physical growth. Illness reduces appetite, and it limits the body's ability to absorb food cleanliness that children do eat (Berk, 1996).

Immunization controls the growth of bacteria and other germs that can cause disease (Ramsey and Solimano, 1985).

Socio-economic Status

Socio-economic status is a general factor whose effects are seen in the development of children, physical or mental, because they are directly related to nutrition, health and early stimulation (Panda, 1981). Poverty and stressful living conditions make the impact of poor diet even worse. The passivity and irritability of malnourished children reduce their ability to evoke sensitive care giving from parents whose lives are already severely disrupted. For this reason interventions for malnourished children must improve the family situations as well as the child's nutrition. Even better are
efforts at prevention—providing food supplements and medical care to at risk mothers and children before the effects of malnutrition is at their course (Berk, 1996).

2.4 Interrelationship between Intellectual, Social and Physical Developments

Many studies proved that there exists a close correlation between physical and mental development during childhood. Evidences support the connection that healthy physical growth and healthy mental developments go together. Terman (1925) found in his study of geniuses that the physical development of such persons who have slow mental development is also slow. In a study by Hollingworth (1926) and Katz (1940) it was found that very superior girls in IQ were taller and had more weight than superior girls, and superior girls were taller and weighed more than average girls.

If the child is not physically healthy, it is difficult for him to get adjusted with others. So the child should be provided with a balanced diet (Berk, 1996).

The intimate relationship between physical growth and psychological development is particularly evident in the first years of life. This helps explain why prenatal and early childhood nutrition interventions—without a psychosocial component—can also have an impact on psychological development (Martorell, 1997). Likewise early psychosocial stimulation programmes to improve cognition may also have effects on physical growth (Super
The most significant factor is that children who receive combined nutrition and stimulation programme perform better than those who receive either type of intervention alone. For both nutrition and psychosocial interventions, earlier appropriate interventions appear to have greater impacts than later interventions (Pollit et al., 1993; Hussaini et al., 1991; Wabber et al., 1981; Granthan-McGregor et al., 1991). Better nourished and physically developed children tend to be more active and exploratory and more able to elicit interactions from parents (Chavez et al., 1975) and teachers, which all contribute to social and intellectual development.

Most cross-sectional studies have found significant associations between height-for-age and children’s cognitive development (Jamison, 1986). Young children who are low in physical development have been described as more quiet, reserved, withdrawn, and timid, with great difficulty making up their minds and a fear of novel situations and thus, having a low social development (Chavez, 1979). Under weight children tended to be more anxious, less imaginative in their problem solving approaches, and less environmentally involved than children of normal weight (Barret et al., 1994) and these lead to low intellectual development. Cognitive function is more likely to be detrimentally affected by short term hunger in stunted children than in non-stunted children. Stunted children have higher levels of stress hormones (Cortisol) and higher heart rates, implying that they may be less able to cope
with environmental stresses and may have heightened arousal of hypothalamic-pituitary-adrenal or autonomic nervous system, which will affect their social and intellectual development (Cravioto et al., 1966).

Social and emotional adjustment is important for a child’s capacity to learn and develop, as well as for cognitive, motor and physical development (Engle et al., 1997). Children who are most vulnerable to growth faltering are also at highest risk of disruptions in social and psychological development (Beaton, 1982).

2.5 Integrated Child Development Service Scheme (ICDS)

Integrated child development service scheme is one of the most comprehensive, schemes of the Government of India for early childhood care and development. The scheme has because the single largest childhood intervention programme, presently covering projects spread all over the country. It encompasses human resource development namely health, nutrition education.

Several child welfare programmes launched at different intervals highlight the priority and development which is the responsibility of the state. In purpose of the National Policy for children which laid emphasis on the integrated delivery of early childhood services for expectant and nursing women and based on the recommendation of the inter-ministerial study teams set up by the planning commission, the scheme of Integrated Child
Development Service (ICDS) was evolved to make a co-ordinated effort for an integrated programme of delivery of packages of such services. The blueprint for the scheme was drawn by the Ministry of social welfare, Government of India in 1975. The scheme called for co-ordinated and concerted effort by different ministries, departments and voluntary organisation. It was launched on October 2nd 1975, the 106th birth anniversary of Mahatma Gandhi in the 33 blocks in the country.

Kerala has an excellent record in the field of women and child development. The ICDS scheme started in Kerala, in the year 1975-76 with the establishment of a project in Vengara of the Malabar region. Ever since there was a steady growth of the implementation of ICDS in Kerala. In the first 5 years, 18 projects were established, while in the next 5 year another 53 projects were added. By the year 1991, the total number of projects grew to an impressive 91. By the year April 96, Kerala had 120 projects sanctioned all of which are currently operational. However, a number of small towns and municipalities remained uncovered by ICDS. ICDS III Project (2000) will bring universalisation of ICDS programme in Kerala by including remaining 80 blocks which is not covered by ICDS.
Figure 2.1. The Structure of ICDS
2.5.1 Objectives

The objectives of ICDS scheme broadly are:

- To improve the nutritional and health status of children in the age group of 0-6 years.
- To lay the foundations for proper psychological, physical and social development of the child.
- To reduce the incidence of mortality, morbidity, malnutrition and school dropouts.
- To achieve effective co-ordinated policy and its implementation, amongst the various departments to promote child development.
- To enhance the capability of the mother to look after the normal health and nutritional needs of the child through proper nutrition and health education.

2.5.2 Selection of the Project Area

From the NIPCCD Manual (1984) the administrative unit for an ICDS project will be the community development block in rural areas, tribal development block in predominantly tribal area and a ward (s) or a group (s) of slums in urban areas. In the selection of project areas, preference is to be given to areas predominantly inhabited by backward tribes or scheduled castes, economically backward area, draught prone areas and areas in which nutritional deficiency is rampant and is poor in the development of social services.
A rural project is assumed to have a population of 1,00,000, a tribal project is assumed to have a population of 35,000 and an urban project is assumed to have the same demographic characteristics of a rural project (ICDS Manual, 1999).

Figure 2.2. Convergence of services

2.5.3 Functionaries of ICDS Team

Child Development Project Officer (CDPO)

CDPO is the leader of the projects. He/She supervises and guides the work of supervisors and Anganwadi workers through periodical
field visits and staff meetings. The CDPO is preferably a graduate in child development, social work, home science, nutrition or any allied field.

**Supervisor**

Supervisors are responsible for supervising the working of Anganwadi centres through regular field visits. She acts as a friend, philosopher and guide to Anganwadi worker. The qualification of supervisor is graduation.

**Anganwadi worker**

The Anganwadi worker should invariably belong to the same village. The worker is responsible for organising pre-school activities in Anganwadi arranging supplementary nutrition, giving nutrition and health education to mothers, making home visits, assisting the Primary Health Centre Staff, etc. The worker must be a matriculate in urban projects and may be a matriculate in rural/tribal areas.

**Helper**

Bach Anganwadi worker will be assisted by a helper who would invariably be a lady belonging to the same village and well versed in cooking and processing the food, cleaning of Anganwadi utensils etc. A helper needs to be literate.
Additional personnels

The additional personnel provided from the ICDS funds are:

Rural Project : 1 Doctor
               : 2 Lady Health Visitors (LHV)
               : 3 Public Health Nurses (PHN)
               : 4 Auxiliary Nurse Midwives (ANM)

Urban Project: 1 Doctor
               : 2 ANMS

Tribal Project: 1 Doctor
               : 2 LHVS/PHNs
               : 3 ANMS

Figure 2.3. The role of key project staff
2.5.4 The Programme, Services and their Delivery Systems


1. Supplementary nutrition
2. Immunisation
3. Health check-up
4. Referral Service
5. Treatment for minor illness
6. Nutrition and Health Education to women
7. Pre-school education to children in the age group of 3-6 years.
8. Convergence of other supportive services like water supply, sanitation etc.

From the NIPCCD manual (1984) the strategy adopted in ICDS is one of simultaneous delivery of early childhood services in an integrated manner so that the overall impact is much greater, as the impact of a particular service will depend upon the support received by it from related services. While the health component constitutes a major part of the package of service, the ICDS programme is much more than a mere health programme. Immunization, supplementary nutrition, pre-school activities for children and supplementary nutrition, and nutrition and health
education for mothers also constituted an important part of the package.

Each Anganwadi centre covers a population of 1000 in rural areas and 700 in tribal areas. In 1987-88, it was estimated that 23 percent of the country's population was covered by the ICDS. In 1995-96 ICDS projects achieved 40% universalisation.

Figure 2.4. Services and Beneficiaries
2.5.4.1  Supplementary Nutrition

Several studies have indicated that malnutrition among children is the single largest contribution to high rate of infant and child mortality and morbidity in India. Protein energy malnutrition is widely prevalent and a survey conducted by the National Nutrition Monitoring Bureau (1981) has revealed that about 85% of the pre-school children have body weights below 75 percent of normal weight for their age. Of these, 5 percent suffer from severe malnutrition. 5 to 10 percent have vitamin-A deficiency and run the risk of possible blindness. 40-60 percent pre-school children are anaemic and 25-30 percent expectant women suffer from nutritional anaemia particularly in the last trimester of pregnancy.

The factors responsible for malnutrition are poverty, poor environmental sanitation and personal hygiene, prevailing, ignorance and prejudices in making the best use of locally available foods, and repeated infections and worm infestations diarrhoea and respiratory diseases. 3-6 years children are given a noon meal which provide 300 Kcals of energy and 10 g protein for 300 days a year. In Kerala the food commodities are as follows:

WEP provides Soya Fortified Bulgar Wheat (SFBW), Corn Soya Blend (CSB) and salad oil. SFBW and salad oil is given to mothers and, children between 3 to 6 years. Corn soya blend is given to children below 3 years. For mothers and malnourished
children they give 130 g SFBW and 18 g of oil. For normal children they give 65 g SFBW and 8 g oil. They give all this free of costs.

Besides this, State Government provide rice and green gram for noon feeding for pre-school children. They allow 40 ps/child/day for this purpose. Now panchayats have taken the responsibility of distributing mid-morning or mid-afternoon food to children in Anganwadis.

2.5.4.2 Immunizations

The natural resistance of the body of children to fight diseases is of the low order with the result that children fall an easy prey to diseases. In order to protect the children against these diseases, immunization is done. NIPCCID manual (1984) states that immunization is a process of production of immunity to an infectious disease by artificial means that is other than by an attack of disease itself.

Immunization of a child against six killer diseases, diphtheria, whooping cough, tetanus, poliomyelitis, tuberculosis and measles would ensure effective control of childhood morbidity and mortality caused by these vaccine preventable disease. It would also indirectly help to prevent the child from sliding into lower grade of malnutrition. Immunization against the vaccine preventable diseases is half the protection from malnutrition as well.
The immunisation against the six killer diseases for all children under one year of age and immunisation against tetanus for all expectant mothers in the ICDS project areas has been envisaged under the ICDS Scheme. The immunisation is to be carried out by Public Health Centre/Urban Health Unit and its subordinate health infrastructure.

2.5.4.3 Health Check-up

As per NIPCCD Manual (1994) this service includes ante-natal care of expectant mothers, post-natal care of nursing mothers and care of new borns and care of children under 6 years of age. The health check-up and medical care will be rendered by ANMs and LHVIs under the guidance of the Public Health Centre. Primary health care of a simple nature is also supposed to be rendered by the Anganwadi worker. For this purposes Anganwadi worker would be given a medicine kit which will be replaced at regular intervals after checking the expenditure register.

2.5.4.4 Referral Services

The purpose of referral services is to provide medical care of an appropriate standard according to the seriousness of the disease as well as follow-up care of cases that have been treated or given medical attention at appropriate levels.
The Anganwadi worker has to fill in a referral slip for this purpose. The counterfoil of the slip remains with her for the follow-up. A medical kit is also supplied to each Anganwadi. The kit contains primary medicines required to treat minor ailments like simple fever, eye conditions, dressings, worm infestations, and scabies. Iron, folic acid tablets for children and mothers are also kept available for distribution to the beneficiaries as a prophylactic measures against nutritional anaemia. Vitamin A solution is given to children of 1-5 years age as prophylaxis against nutritional blindness.

The Scheme of referral has to function effectively to be purposeful. The State/Union Territory Health Department would do well to identify the district/taluk's city hospital which will function as the first referral hospital for the ICDS project area. Referral services should be so as to elicit good response from the community.

2.5.4.5 Nutrition and Health Education

Nutrition and health education component of the ICDS scheme aims at effective communication of certain basic health and nutrition messages with a view to enhancing the mother's awareness of the child's needs and her capacity to look after these within the family environment. Nutrition and health education is required to be given to all women in the age group 15-45 years and other members of the family. A special follow-up has to be made for
mothers whose children suffer from malnutrition and from frequent-illness.

2.5.4.6 Non-formal Pre-school Education

NIPCCID Manual (1999) prescribed that materials and equipment to be used in Anganwadi for non-formal pre-school activities should be of indigenous origin and inexpensive. Materials like sand, clay, seeds, leaves, twigs, water, etc. have immense possibilities. Slides, sandpits, resting frames, crayon and brush drawings and paintings, paper cuttings, beads, etc. have been found to be more popular with pre-school children than sophisticated dolls, toys and other equipment. Similarly picture books are of great interest and importance to young children. They develop reading interests in children and facilitate their language development.

The Anganwadi worker is responsible for organising pre-school activities for about 40 children in the age group of 3 to 5 at the Anganwadi. She is given 3 month's compulsory initial training. At the training time of her initial job training, the Anganwadi worker is fully equipped for performing various tasks of the Anganwadi. It is expected that the training would have equipped her with basic knowledge about child growth and development, appreciating individual differences in the rate and nature of growth and development, understanding the value of play as a medium of learning and importance of learning by doing. Importance is given
to thematic approach of teaching children. She is also expected to acquire skills in organising different kinds of play activities suited to meet the needs of children and collecting and improvising suitable play equipment from indigenous and inexpensive materials. She has to perform not the role of a teacher but that of a friend, or elderly playmate, a guide and a mother or a sister substitutes. While conducting pre-school activities in the Anganwadi, the Anganwadi worker has to be careful that activities are not monotonous and repetitive.

The early learning component of the ICDS is a significant input for providing a sound foundation for cumulative life long learning and development. It also contributes to the universalisation of primary education.

2.5.4.7 Adolescent Girl's Scheme

For the first time in India, a special intervention has been devised for adolescent girls, using the ICDS infrastructure. This intervention focuses on school dropouts, girls in the age group of 11-18 years, with a view to meet their needs of self-development, nutrition, health education, literacy, recreation and skill formation. Special emphasis is placed on reducing nutritional anaemia among this group. This scheme has been sanctioned in 507 blocks covering all states and union territories.
Chart 2.1. Co-ordination mechanisms in the ICDS
2.6 Balwadi

The services of the Indian Council for Child Welfare are delivered at the Balwadi, which is children’s centre. Indian Council for Child Welfare is one of the Pioneering National Voluntary Organisation promoting child welfare in our country. It was established in 1952 (Chowdry, 1985) children of 3-5 years of age are covered in this programme. The council undertakes multifarious child/welfare development programme all over the country through its state/union territory branches and corporate members. Balwadi nutrition programme is implemented since 1970-71 through five national level voluntary organisations. The children in the age group of 3-5 are given supplementary feeding, 270 days a year.

2.7 Impact of ICDS on Child Beneficiary

Nair (2000) did a comparative study of skill development status of Anganwadi pre-school children and with a private nursery school in Kerala (Trivandrum Dist.) by using the Nursery Evaluation Scale Trivandrum (NEST). Quality of pre-school environment is also measured by HOME (Home Observation for Measurement of Environment). Inventory associates their moods with colours. It revealed a significant difference. The private nursery school children showed higher score.

Shariff (1998) conducted a study entitled “Women’s Status and Child Health.” The study revealed that child nutrition varied by
state, but narrowly among social groups. Chronic under nutrition declined with increasing age.

Kapil and Nayar (1997) conducted a study entitled “ICDS Scheme—A Programme for Maternal Health and Child Development.” The study revealed that it is the largest national programme for the development of mother and children in the world.

A study by National Institute of Nutrition (1995) showed that ICDS beneficiaries attained the psychosocial developmental milestones at an earlier age than the non-ICDS children. The number of milestones attained by them was also greater. NIN (1999) compared beneficiaries with non-ICDS beneficiaries and found out that beneficiaries scored higher in cognitive test.

A study by Sood (1992) has reported that the exposure to ICDS enhanced overall developmental status of the pre-school child. In the school performance also, the exposed group was ahead of non-exposed group. Children attending Anganwadi centres performed significantly better than children not attending Anganwadi centres on sequential thinking and time perception aspects of cognitive development (Gopal, 1980).

The study was conducted by Adhish et al. (1990) entitled “Impact of ICDS on Pre-school Education and Development of Children in Aligarh District.” The study revealed that the intellectual status of the children in ICDS villages was definitely better than that
of the children in the non-ICDS village and higher intellectual status in ICDS areas was due to the impact of pre-school education and better nutritional status of children.

Chaudhary and Jayaswal (1989) conducted a study entitled "Infant and Early Childhood Mortality on Urban Slums under ICDS Scheme." Twelve Anganwadi centres situated in urban slum were selected from Patna. The major finding of the study indicating the closes of death were established on the basis of clinical and corroborative enquiry from the parents. The birth rate was 29.25, death rate 13% and infant mortality rate 64.65/1000. Neonatal and post-neonatal mortality rate were 49.42/1000. The major cause of infant mortality followed by respiratory infection (11.76%) and diarrhoea (8.82%). Mortality in males was higher than females in infancy. Risk factors associated with infant mortality included extremes of maternal age, multiparity and illiterate mothers.

Lal (1988) conducted a study entitled "National Programme on ICDS." The study revealed that ICDS provided nutrition supplements consisting of 300 calories and 10 g of proteins for all 60-72 month old children and 500 calories and 20 g of proteins for pregnant women in the last trimester and for nursing mothers during the first six months of lactation. It has developed and distributed nutrition and health education materials in local languages through the Anganwadi centre. The finding of the study indicated that malnutrition rates were 60% lower in ICDS areas than in non-ICDS areas. Infant mortality fell to 88.2 as compared to national average
of 110 for planning education activities combined with improved health care in ICDS areas brought about a reduction in the birth rate to 24.2 whereas the national average stood at 33.3.

Subramaniam (1987) conducted a study on the impact of ICDS programme, who found that the mothers of ICDS areas were better informed of the care during pre-natal period, importance of supplementary feeding, growth services to children and to improve the capability of mothers to meet the help and nutritional needs of their children through proper nutrition and health education. The ICDS has led to a reduction in the infant mortality rate and the prevalence of severe forms of malnutrition, improvement in the immunization status of children and an increase in the uptake of health services by pregnant and lactating women.

A study by Srivastava and Singh (1987) in Uttar Pradesh showed that ICDS beneficiary children were heavier and taller, as compared to children in the non-ICDS group.

In a study by Sharma (1987) on pre-school component in ICDS blocks showed that development of the children attending Anganwadies was found to be better than the non-ICDS children in the four areas of competent studies, i.e. motor skill, conceptual and readiness skills, and language skills. National Institute of nutrition evaluation compared ICDS and non-ICDS beneficiaries and found that beneficiaries scored higher on cognitive tests than non-beneficiaries (1999).
In a study by Sahmi and Agarwal (1984) substantial changes were reported in the cognitive ability of 100 children attending Anganwadies in an ICDS block in Hissar. The impact of problem solving abilities was demonstrated in the completion of a task. In a study ICDS children took less time as compared to non-ICDS children in completing the task (Shrivastava and Shrivastava, 1985). Khosla (1985) conducted a study on the impact of pre-school education component of ICDS in 300 Anganwadies in North India. The result showed that children attending Anganwadies performed significantly better at tasks of listening, comprehension, object vocabulary, sequential thinking and time perception.

Gupta (1982) reports that a majority of children both from ICDS and non-ICDS areas had mean values of various anthropometric measures below the standards prescribed by Indian Council of Medical Research (ICMR) which is indicative of poor health situation. However, the study reported that the mean value was the lowest for the non-ICDS groups.

Positive impact of nutritional input has been demonstrated in several studies which have reported that a higher percentage of normal children was found in ICDS areas than in non-ICDS areas (Singhal, 1981; Gupta, 1982; Masood, 1984; Thakan, 1984; Sharma, 1985). Devadas (1982) found that there was a significant improvement in the average height and weight of children during the repeat survey, which is indicative of the general improvement in physical development among children.
A comparative study of child health in-ICDS and non-ICDS blocks (0-6 years) was conducted by Bilquees, Safoora and Ruf (1986) in Srinagar and a study conducted by Gupta, Shyam and Bihari (1982) in Uttar Pradesh also showed a high score for ICDS children.

2.8 Evaluation of Literature and Relevance of the Present Study

The review of literature has focused on the definitions of intellectual development as given by Terman (1921), Woodworth and Marquis (1948), Wechsler (1958), Mangal (1990), Kuppuswamy (1990), and Feldman (1997). Aspects of intelligence have been given by Thurstone (1938), Hurlock (1978), Flavel (1985), and Zanden (1989).

In the review, theories of intelligence like that of Thorndike's anarchic theory, Spearman's two factor theory (1904), Guilford's structure of intellect theory (1956), Thorndikes theory of combination of several capacities (1927), Hebb's theory (1948), Piaget's theory (1950), Bruner's theory (1973), Cattel's theory (1971), Sterberg's Triarchic theory of intelligence (1985, 1988), and Gardner's theory of multiple intelligence (1983) have been given.

According to Piaget (1970) the pre-school child is in the pre-operational stage of thinking and there is a significant and continuous development and use of internal images and symbols. The pre-school children acquire certain concepts like concept of
number, shape, size, colour, distances, self and they prefer music with definite tune and rhythm, and they can associate their moods with colours (Hurlock, 1981; Caig, 1989; Hendrick, 1990).


Social development has been variously defined by Hurlock (1972), Shamsuddin (1971), Leeladevi (1975), Jupe et al. (1985)


The different theories on social development given by Bandura (1977), Walters (1963), Gygotsky (1934), Watson (1925), Hull (1943), Dollard and Miller (1950), Skinner (1957), and Bandura and Wallers (1964) gives brief idea of how social learning and behaviour develops in an individual.


Factors that hinder social development are given by Deepshika (1982), Tivari and Pal (1986), Meloyol (1990), Sternberg (1993), Cohn (1990), Atkinson et al. (1987), and Baumerind (1972).

The review of literature on physical development has focused on the definitions which give a picture of the meaning of physical
development (Sharma et al., 1990; Suriakanthi, 1989; Hurlock, 1983). Physical development during pre-school years shows the standard growth to be expected in a pre-school child. In order to measure overall physical development assessment of nutritional status is important and it includes collection of anthropometric data (Krause, 1980; Morley, 1976). The main anthropometric measurements which are useful in studying 0-5 year old children are body weight, height, head, chest and mid-arm circumference (Reddy, 1988).

There are many factors which influence physical development. They are: Heredity (Hurlock, 1972; Kuppuswamy, 1984; Skinner, 1996; Panda, 1997); Hormones (Berk, 1996; Srilakshmy, 1998; World Book Encyclopaedia, 1992), Nutrition (Galler et al., 1986), Exercise (Gosh, 1985); Rest and Sleep (World Book Encyclopaedia, 1992); Stress and emotional disturbances (Panda, 1981), Disease and Infections (Ramsey and Solimano, 1985), and Socio-economic status (Panda, 1981; Berk, 1996).

Many studies prove that there exists a close correlation between intellectual, social and physical development.

ICDS is the first countrywide programme anywhere in the world, functioning on a large scale and involving co-ordinated efforts for providing an integrated package of services for the young child and the mother. This inter-sectoral programme, meant for the deprived sections of the society has generated considerable interest among academicians, planners and representatives of implementing
agencies. There have been consequently a large number of studies on the ICDS programme. These include surveys, microlevel studies, postgraduate and doctoral dissertations, which have attempted to study the various aspects of ICDS implementation and evaluate its impact on beneficiaries. The review indicated that these studies covered isolated aspects of the scheme. Further most of these studies were limited to small geographical and cultural regions. But no single investigation covered all the three aspects of the intellectual, social and physical development in the child; Nor was any attempt was made to find out the interrelationship between them. So the investigator decided to study all these aspects, and the study was found to be highly relevant.