A comprehensive review of past studies is necessary in any research endeavour. The main functions of citing review of literature are to provide base for developing a frame work and insight into the methodology. It suggests operational definitions of concepts so that basis for interpretation of findings can be worked out. The phrase ‘review of literature’ itself expresses the efforts to survey related literature, locate, read and to evaluate the past as well as the current literature. By this way it can prove to be quite helpful for further as well as the current literature & give a lead to systematic and scientific investigation in the concerned area of study.

The review of literature serves the following purposes-

1. It enables the researcher to define and delimit his/her problem.

2. It brings the researcher up to date on the work which others have done and thus enables him/her to state the objectives clearly and concisely.

3. It helps in avoiding unfruitful and useless problem areas. The researcher can select particular area in which his endeavour’s would add to knowledge in a meaningful way.

4. Through the review of related literature the researcher can avoid intentional duplication of well established findings.

5. It gives researcher understanding of the research methodology, tools, instruments and statistical methods to be used.
6. It helps to know the recommendations of previous researchers for further research.

Thus, this chapter is devoted to review of literature relevant to the topic of the study. An Attempt has been made to present here review of only such studies or pertinent literature which is likely to have direct or indirect bearing to this study. Keeping in mind the objectives of the study, the reviews have been presented under the following sub-heads

2.1 Effect of intervention programme / Portage training programme on development of young children.

2.2 Effect of early intervention programme on self help skills of young children.

2.3 Effect of early intervention programme on motor development of young children.

2.1 Effect of Intervention Programme / Portage Training Programme on Development of Young Children

Shearer and Shearer (1972) conducted an intervention programme on 75 pre-school multiply handicapped children living in a rural area. All instructions took place in the child’s home. Individualized curriculum was prescribed by a home teacher who visited each parent and child one day per week for one and half hours. During the week the parents taught the prescribed curriculum and recorded the child’s behaviour on a daily basis. The results of the project indicated that handicapped children could progress above their expected developmental rate, and the parents could initiate, observe and accurately record this change.
Another study was conducted by Schortinghuis and Frohman (1974) on 37 children, taking one group of 21 children and their parents served by para professionals and another group of 16 children served by professionals in the Portage-Project – a home approach to the early education of handicapped children in a rural area. The Portage Project, using a precision teaching model, offered an opportunity to compare gains made by children when they were served by a para professional or a professional. The results indicate that in this project, paraprofessionals were as effective in teaching specific behaviours as professionals.

'The Wessex Portage Project A home teaching service for Families with pre-school mentally handicapped child' was founded by Smith et.al. (1977). The team took measurements of children, parents, home teachers, supervisors and manager. Team showed that the objective of introducing a home teaching service for families with a pre-school mentally handicapped child was successfully attained. The results showed that all children made some gains in items on a developmental check-list and no one regressed. The parents were satisfied with the service provided by home teachers.

A comparison of the rates of development of 35 pre-school children in a Home Training Programme was done by Barna et.al. (1980). Those who developed most rapidly were the group of environmentally deprived subjects. The non-specific developmentally delayed and Down’s syndrome subjects progressed well during the study period.

A study on 'Evaluation of Portage home-training pilot project for pre-school handicapped children' was conducted by Daly (1980). The results indicated that carefully structured
learning situations could be successfully achieved by the parents of handicapped children in their own homes. The positive monitoring system where in trained visitors help parents to achieve good teaching skills had demonstrably worked.

Kohli and Dutta (1982) studied the effect of Portage home training intervention programme for pre-school mentally retarded children with motor handicaps. The results revealed that almost every child gained through portage service. There was a positive change in attitude of parents and they expressed their satisfaction with the programme.

A group of 38 developmentally delayed children (aged 5-45 months) who were receiving a home based training according to developmental ability and manifesting problems was studied. The effectiveness of 3 methods of teaching i.e. activity charts, target setting and suggestions was assessed under a balanced design on weekly skill gain. Suggestion proved less effective than activity charts or target setting. Activity charts were preferred by parents, although they were rated as being the most time-consuming (Bidder et.al., 1983).

An Analysis of the effects of early intervention services for infants and toddlers with moderate and severe handicaps was done in (1985) by Hanson. The features of this programme were combination of home and center bases, trans disciplinary team services for children with moderate to severe disabilities and discussion with their parents. Programme evaluation was conducted utilizing multiple methods like (i) Pre-Post test comparisons of child change as measured on the Bayley Scale of Infant Development. (ii) The Uniform performance Assessment system, (iii) A project curriculum objectives check list (iv) Pre-
Post test Comparisons of parent behaviour change as measured on the Parent Behaviour Progression Scale. The comparisons indicated statistically significant positive behavioral changes for both children and their parents. However, no relationship was found between amount of child developmental progress and parenting behaviour.

The effect of early stimulation on developmental deficits of infants under ICDS Scheme was studied by Kohli & Saggar (1985). The sample consisted of 40 infants whose ages ranged from 1 to 4½ months. 20 infants formed the experimental and the remaining 20 infants formed the control group. The training programme lasted for 8 weeks. The home-advisor visited 4 handicapped infants and their mothers on every day for a week. During the week the mothers worked with their infants on the prescribed activity. Results indicated that almost every infant of the experimental and control groups gained in all the six individual DQ’s as well as $DQ_{comb}$. The experimental group, however, gained much more than the control group.

Positive impact of intervention on disabled infants and pre-school children has been reported in many studies. Bailey, Bricker & Hanson (1985); Anderson & Bower (1986) carried out studies to evaluate the quality and efficiency of early education programmes for handicapped children in Louisiana, covering approximately 5000 handicapped children in the age 3-5 years. The results were (i) quantitative outcome measures included children's developmental gains in skills areas, (ii) 40 percent children were placed in regular kindergarten (iii) communication and co-operation among related services staff and the classroom teacher were the factors associated with efficiency and effectiveness.
Azad (1986) worked on the topic 'effectiveness of Portage home-based training programme on cognitive development of pre-school mentally retarded children'. The results showed that (i) Portage service had been effective in improving the cognitive development of the subjects (ii) there had been a substantial gain in DQ_{comb} scores, and (iii) parents had been able to act as effective home teachers for teaching cognitive skills to their mentally retarded children.

In a follow up study of 42 (4-14 years age) children participated in a home based stimulation programme. The results indicate that approximately 66 percent of the participants (with serious developmental disabilities) were in full time special education programmes, 20 percent were mainstreamed and 14 percent were in regular class rooms (Widerstorm & Goodwin, 1987).

Early intervention Programmes have been effective in overcoming reading difficulties. This was stated and declared by Gray (1988). They reported that the students attending the programme acquired foundation skills of fine motor coordination, listening, expressive language and attention control as a result of early intervention.

Friedel & Boers (1989) have stressed the need for intervention. Results indicated positive impact of intervention and again the results from 8 years' follow up study showed that these children continued to perform average or better on achievement levels for their age group. The intervention effects were most salutary upon children moderately at-risk.

Effectiveness of portage training given to 120 developmentally delayed children belonging to urban slums was
evaluated by Kohli (1990). The impact of duration of training was also the focus of study. Findings confirmed the fact that portage training was significantly effective in gaining of skills in social, language, self help, cognitive and motor areas of development as well as in gaining of DQs in three different tests of intelligence. Results also testified the fact that longer the duration of training, greater is the gains in behavioral skills and DQ. Besides, 15 out of 120 children were having pseudo-developmental delays and became low average in intelligence after timely early stimulation.

The study 'Development of skills in a mentally retarded child the effect of home training' explored the feasibility of systematic training of parents in enhancing skill development in a mentally retarded child. This work was carried out by Narayan & Ajit in (1991). The home based training was conducted on a moderately retarded female child of 5 years of age. Training for the father of the child lasted about 45 minutes in each session. This training proved very effectively in this given case as the child has acquired and maintained the skills and the skills have been generalized, wherever possible. The study proved that the training of the parents to train their retarded children was promising.

Effect of early intervention on the overall development of the mentally retarded children was investigated by Dhoot (1992). Twenty five mentally retarded children in experimental group (below 6 years age) were given appropriate intervention and compared with twenty five matching MR controls that were not given any intervention. Overall development was assessed using four standardized scales. The findings of the pre and post results
in the experimental group and control group showed that the majority of the experimental group children made significant progress. The early intervention reflected the better outcome in mental (P=0.001) and social (P=0.001) development when compared to control group. Study recorded significant progress in experimental group during the intervention period and later it slowed down individualized sequential curriculum helped to achieve various functional skills.

Thapar, G. (1992) worked out the effectiveness of integrated intervention for enhancement of development of Pre-Schoolers in the Union Territory (UT) of Chandigarh. Results shows that the Portage classroom curriculum is a desirable model for enhancing the all round development of children who belong to different levels of intelligence and different socio-economic status families. The results show that the children belonging to disadvantaged families are better in self help and large motor skills but lay behind in cognitive and fine motor skills.

Mothers of 80 children of mild and moderate mental retardation were selected by 'Kya aur Kaise Sikhayen', a home care programme for mentally retarded children developed by PGIMER, Chandigarh implemented by Verma et.al. (1992). Half of the mothers were trained, and the other half formed the control group for the study. The experimental and control group were matched for age and I.Q. of children and age of mothers. The women also did not differ significantly on baseline material adjustment, parental attitude scores and experienced social burden. After the training, a significant increase in IQ and improvement in behaviour of children was noted in experimental group. Also, there was a significant improvement in material
adjustment score, parental attitude and social burden felt by the mothers in the same group while no significant change was observed in the control group in any of those variables.

Das (1993) presented a paper on efficacy of portage in early intervention through home based service delivery. It was a case study of delivery of home- based early intervention services by an NGO and was implemented in three phase manner. A door to door survey was conducted by teachers regarding use of portage. In the third phase parents of 21 children were selected for attending a programme to create awareness among them. With the permission of parents, assessment of the child was carried out. A multidisciplinary team assessed the children. The home worker administered the planned curriculum and progress was monitored by multidisciplinary team. Portage checklist was implemented in four step process-demonstration, understanding, activities and effective time utilization.

A study on 'Home-center based training programme to reduce developmental deficits of disadvantaged young children' was conducted in 1993 by Kohli. In the initial study, Out of 3000 children belonging to Urban slums and 200 ICDS centers of Chandigarh, with an age range of 0 to 6 years, one hundred and twenty children were given portage either home or center based training. In the study, follow-up was done of these children who had already been trained approximately 18 months back. It primarily followed descriptive survey methods to know the recent position of the already trained children in two different areas of development.

'Effect of individualized training programme on communication skills and certain associated variables in the
mentally retarded' was highlighted by Pillay (1993). The main objective of the study was to find out the effect of the traditional training method and individualized training programme in teaching the persons with mental retardation. The experimental group was exposed to the ITP and controlled group to the traditional method of teaching for a period of 24 weeks. The pre-test and post-test scores were compared. A significant difference was found favouring experimental group of students in achieving communication, motor and social skills.

Martis (1994) in his study investigated the use of test in finding interrelationship of intelligence and creative thinking abilities, physical features and emotional behaviour of mentally retarded children. A total of 220 mentally retarded children from eight schools in Dakshina kannada district were selected for the study. To collect the data, three intelligence tests, and one creative thinking test along with an observation schedule was used. Study found significant relationship between the scores on intelligence obtained from (i) Draw-a-man Test and Seguin Form Board Test (ii) Seguin Form Board Test and Coloured Progressive Matrices. (iii) Colored Progressive Matrices and Draw-a man test. Results indicated significant relationship among fluency flexibility, originality & total creative thinking abilities. Further, form significant relationship was found between the scores on (i) Seguin from Board Test abilities (ii) Colored Progressive Matrices (iii) total creative thinking abilities.

Mathur (1995) framed the objective of the study to evaluate the role of aanganwari workers in detection and prevention of disability in children below 6 years of age. Aanganwari workers identified disability in 126 subjects out of 1545 children, and
disability was confirmed in 118 cases by pediatricians. Visual in 4790, mental disability in 4790, mental disability in 2654, orthopedic in 583 and speech and hearing disability in 518 cases was found in 1,00,000 population. So the results emphasized the need of in service orientation and training can help in early detection.

'The effectiveness of portage programme based on behavioural principles to promote development in infants and children of Palestine who displayed general cognitive and related disabilities' was worked out by Oakland (1997) for a period of five years. He found that, the children of three lowest levels of ability made little change in their rates of development while those in the two highest levels displayed great change in their rates of development.

The efficacy of Pharmacological, parents training and behavioral interventions designed to manage the disruptive behavior of Pre-School children with ADHD was evaluated by McGoe, Eckert and DuPaul (2002). It has resulted that Pharmacological intervention has received the most attention, was found to be generally affective. Parents training methods were found to be effective in home setting, but minimal informal has been collected in the generalization of these finding to the school setting and very little research has been devoted to the use of behaviour management in the school setting.

Goldstein, et. al. (2003) declared that Children with disabilities, who receive early intervention services show 'Significant developmental improvement after only one year'. According to the Department of Education, 24th Annual report of congress on the progress of special education. Just a year after
receiving such services, many infants and toddlers reached milestones in motor skills, self help, communication and cognition, the September 10 report says the children's families also reported feeling better able to help their children learn and cope.

The research undertaken by Venkatesan, S. (2004) on a sample of 109 children with developmental disabilities with single/multiple diagnostic conditions of mental retardation, autistic disorder, cerebral palsy, delayed speech and language, sensory impairments etc. Each child underwent a baseline assessment of activity checklist for pre-school children with developmental disabilities before a short list of behavioral objectives were given for parents to work on a regular basis for a home. Programme supporting verbal and written guidelines and other instructions on how to train the child on chosen target behaviours was given, a follow-up ranging 3-6 weeks was given for a period of six months and behavioral achievements of each child was recorded. The result of the study showed that 2443 behavioral activities (mean=22.41) from ACPC-DD were achieved by the overall sample of the children.

The home instruction programme for preschool youngsters (HIPPY) is a home based programme in which paraprofessionals from the community teach parents how to use structured educational material to enrich the education of their four and five years of all Children Brett (2005). HIPPY was developed in 1969 by Dr. Avima Lombard of the national council of Jewish women research institute at the Hebrew University of Jerusalem. It has since become a national programme in Israel for disadvantaged families and their pre-school children.
A pilot study undertaken by Kumari and the staff in (2009) from the Jai Vakeel school for children in need of special care, Mumbai, with a view to examining the effects of training offered by parents of children with severe learning disabilities and complex needs on their emotional, social, language, cognitive and motor skill development. Using a parental involvement scale it was seen that children with lower parental involvement had less improvement in the above areas whilst children with higher parental involvement showed greater improvement.

Shin et.al. (2009) conducted a study to examine the impact of a one year intervention for children with intellectual disabilities in Vietnam. 90 Pre-School aged (3 to 6 years) children with intellectual disabilities were selected as a sample for the study. Sixteen were assigned to an intervention group and 14 to a control group. This intervention is based on the Portage curriculum. Findings indicated that the intervention was promising Children in the intervention group improved significantly in most domains of adaptive behaviours, and also performed significantly better than the control group in the areas of personal care and motor skills.

In low-income rural communities, access to early intervention and support services is restricted and resources needed to support children and families are limited. In her study Aine (2012) explore the role of local non-professional women, recruited as community home-visitors (CHV's) to assist trained professionals in supporting parents with educating their child in their home environment. Structured questionnaires were developed and completed by interview. Three portage staff, four trained CHVs, and a convenience sample of ten parents with
children (aged less than 6 years) participated. Findings show that the CHVs are satisfied with the training received, are passionate about their job, and engaged parents with ease and as friend.

Study regarding Parent involvement in early intervention was conducted by Kellar et.al. (2014). They compared levels of parent involvement in early intervention services for children under three, which were delivered in community settings, (childrens' home and child care programmes) and specialized settings (early intervention centres and providers' offices). They reported the highest level of parent's involvement in children home, while parent’s attendance, communication were maximum in providers offices.

### 2.2 Effect of Early Intervention Programme on Self Help Skills of Young Children

Hundziak & associates (1965) reported that the operant or experimental group was superior to both traditional training group and control group on acquisition of self help skills and was superior to the conventional group in transfer of the activities learnt.

The efforts of Karen & Maxwell (1967) on strengthening self help behaviour in retardates by the use of tangible reinforcer combined with a social reinforcer (verbal praise) were fruitful in resulted in improvements in general dressing behaviour.

Another work done on the effectiveness of operant conditioning procedure in teaching a variety of self care skills to severely and profoundly retarded institutionalized children by Roas & Oliver in (1969), found that the group trained by operant conditioning procedures showed significantly greater improvements than the traditional group.
A study conducted by Anthony et.al. (1970), showed an increase in self help skills as measured by Eairhlaw self help scale and an increase in mental age as measured by Stanford Binet scale.

Barton et.al. (1970) using the technique of time-out, developed appropriate eating behaviour in severely retarded subjects. Time-out consisted of removing the meal tray. Unwanted eating behaviour such as using hands, throwing food and stealing food were effectively reduced.

A shaping technique with positive reinforcement to develop self-feeding skills in 14 Institutionalized boys was developed by Berkowitz & Graziango (1971). The task of feeding self with spoon was divided into seven discrete steps. Success on the completion of the programme was 100 percent and about 75 percent after a four-year follow up.

Nelson et.al. (1975) in compared the use of modeling versus physical guidance in the training of correct utensil use. He found that physical guidance, completed with praise, produced significant improvements.

Heifetz (1977) tested the effectiveness of behavioural training for parents to retarded children. The twenty week treatment emphasized the training of parents in teaching their children in self help skills. The treatment groups were statistically superior to the control groups. But between the treatment groups there were no significant difference.

Kramer & Whitehurt (1981) tested four children who were diagnosed by a school physician to be 'developmentally retarded children'. With in these four subjects there were equally as many
girls as were boys. The age of the subjects ranged from 0-5 years and from 5-8 years. Subjects were chosen based on previous observations which determined these subjects to have little or low ability to perform the function of buttoning when dressing dolls, as well as parental voluntary participation; it is classified as convenience sampling. Experimental tests showed that button sizes had a significant effect on performance of buttoning functions. Data showed that it took less time for the subjects to button the top button than it did for the middle and bottom button. Subjects took the longest with the middle button and the majority of the time the subject asked for assistance with the bottom button.

Alternate formats were compared by Brightman (1982) for training parents of retarded children to teach self help skills and manage problem behaviours. Sixty-six families with moderately to severely retarded children (3-13 years of age) were assigned for 3 months to group parent training (N=37), individual parent training (N=16) or delayed training control (N=13) Measures administered before and after training evaluated parents knowledge of behaviour modification, a behaviour sample of parent teaching and child self help skills and behaviour problems. Trained families gained significantly more than control families on parent-measures but not on the children self help skills measures. Group and individually trained families demonstrated almost identical gains. At a six-month follow-up group and individually trained families continued to show equal performance.

Howard, Whitney & Young (1986) examined the effectiveness of 'acquisition and fluency training procedures' on
dressing abilities of two 'mentally retarded, multiply handicapped pre-school children' were observed. The researchers wanted to see how specific training and guidance helped subjects with independent dressing skills. This study is important because it identified what effect, if any; specific training has on independent dressing skills. Developing children, regardless of their disability need to gain the necessary skills of life in order to be autonomous. It was surprising during the follow up that both subjects had retained all accurate dressing skills.

An individual case study design with pre-post and follow-up assessments was adopted by Aniah (1989) to study 10 institutional mentally retarded children with deficits in self help skills. A pre-intervention assessment of each deficit self help skills was made. A behavior modification package, individually programmed was given for one month. A post intervention and a follow up assessment were also made. The results showed that the behavior modification programme used in the study were effective in the training of self help skills of each children.

Lowenthal (1996) focused on methods of teaching toileting and independent eating skills to children with disabilities. Methods for teaching toileting skills include timed toileting, Scheduled toileting and the rapid technique. Methods for teaching self feeding include systematic instruction, positioning techniques and adaptive modifications. Outcome was that, both skills enable these children to be more independent and facilitate their acceptance in inclusive setting.

The effectiveness of reinforcement based toilet training intervention to three children with autism was evaluated by Cicero & Frank (2002). As a result of this intervention all the
three children reduced urination accidents to zero and learned to request bathroom use spontaneously with in seven to eleven days of training. Gains were maintained over six months and one year follow ups.

McManus, et.al. (2003) studied an evaluation of an in-school and home based toilet training programme for a child with Fragile X syndrome. Their training showed significant result by the subject during the intervention period and afterwards. The results demonstrated that a toilet training treatment could be instituted in the school setting.

A sample of fifteen moderately mentally retarded was undertaken by Choudhari (2004) to train in dressing and communication skills. The group consists of six girls and nine boys in age group of 12 years to 18 years. Sample was taken using purposive sampling technique from Gayan Prakash development center. A pre-test, post test design was used. Tools having functional Ability Assessment scale (FAAS) developed by the researcher in 1993 were applied. Results show that the learners exhibited significant improvement in overall dressing and communication skills at the end of the study.

Hatcher & Squibb (2010) found that getting dressed provided opportunities for the students to learn about sequences and different winter clothing. Teachers created a dressing chart with pictures of clothing and the sequence of how to put them on. Children were able to locate their items to put on, but needed assistance with dressing. Teachers shared in their interviews that they tried creating instructional strategies for dressing details of these strategies were not mentioned.
Interaction between the child and the teacher occurred throughout the dressing process; however it was not always directed one on attention. To conclude, there are interventions and strategies that can help improve the role of independent dressing skills of children. It teachers familiarized themselves with these dressing intervention and strategies, time spent getting dressed could be decreased.

Sanz et.al. (2010) studied the effectiveness of two types of early intervention programmes for babies with Down’s syndrome. Evaluation of self help early intervention programmes was done with two types of training with the parents. In the first, the parents learned the training programme by observing the clinician, and in the second the parents were taught self help skills through described instructions. A sample of 16 Down syndrome babies was used. The analysis of the results established positive changes. Differences were seen in the self help skills development of Down syndrome babies whose parents were exposed to observed early intervention.

Individuals with developmental disabilities often experience challenges in acquiring toileting skills, which highlights a need for effective toilet training strategies that can be readily disseminated to caregivers. Katherine & Pat (2012) expressed the purpose of this multiple baseline study, which evaluated the effectiveness of a rapid toilet training workshop provided to the parents of six children with developmental disabilities. In the workshop, partners were taught to implement an instructional protocol that included increased fluid intake, positive reinforcement for correct toileting, scheduled toilet sittings, scheduled chair sittings to teach initiation, neutral
 redirection for accidents, and procedures to enhance maintenance and generalization. Following the workshop, parents, implemented the toilet training protocol at home with their children for 5-8 days, with telephone support from a researcher. Results indicate that the workshop resulted in increase in toilet, urination and defecation and decreased accidents for the five children who complete the study.

Singh, Agarwal & Singh (2013) found that computer aided instruction helps in remediating self help skill deficits among children with mental retardation and this help is same for both boys and girls with mental retardation. The quasi-experimental pre and post test design was used for the study. The results obtained through ANCOVA were in favour of Computer Aided Instruction (CAI) and equally for both boys and girls.

2.3 Effect of Early Intervention Programme on Motor Development of Young Children

Delmare (1975) after carrying out a study on 'The effect of two retention time intervals and three levels of over-learning on the retention of a Gross Motor Skill by institutionalized moderately retarded Males' concluded that over learning is an important factor to be considered in the retention of a gross motor skill among institutionalized moderately retarded males.

A study on 'Motor creativity of mildly mentally retarded pre-school children' showed children more original and fluent in their movements after the four-week guided discovery programme. The findings seemed to indicate that mildly mentally retarded pre-school children could benefit from experience in movement exploration programmes in a mainstream setting. Their motor creativity seemed more like that of the normal children than unlike it (Rowe, 1976).
After his study on 'A comparative profile of pre-school handicapped children who profited from early identification and intervention', Stewart (1977) concluded that the (i) low socio-economic level children made significantly larger gains on the gross motor subscale than middle to high socio-economic level children (ii) black children made significantly larger gains than white children on the gross motor, language, and cognitive subscale (iii) boys made significantly larger gains than girls on the gross motor and fine motor skills.

The work done on 'The Effect of knowledge of results upon Motor Skill performance of the trainable mentally retarded' by Thomas (1977) showed that (i) gross motor performance of the trainable mentally retarded children significantly improved with receipt of verbal and visual knowledge of results (ii) verbal knowledge of results was more effective in improving gross motor performance and (iii) knowledge of results did not significantly affect retention of motor performance regardless of treatment or subjects etiology.

The findings that (i) the level of perceptual motor development could be enhanced in trainable mentally retarded children as a result of perceptual motor training, (ii) trainable mentally retarded children became more socially and emotionally adjusted as a result of perceptual motor training and (iii) development self-concept and academic achievement of trainable mentally retarded children did not appear to be affected by participation of supplementary perceptual motor training programme were endorsed by Futten (1980) by his study on 'Effect of a supplementary perceptual Motor Program on Trainable Mentally Retarded Children'.
Proctor (1982) carried out 'An investigation of the Effect of a 12-week Physical fitness training and Maintenance Program on the performance of selected mentally handicapped students'. It was concluded that (i) the AAHPERD Health Related Physical fitness Test was found to be suitable for the 75 trainable mentally handicapped subjects as an initial measure of their fitness level; (ii) the random assignment of students to the two groups prevented any unequal internal differences which could have affected the outcome of the study (iii) a six-week training programme produced significant gains on the measured components of the test among the trainable mentally handicapped students.

The efficiency of using motor activity and multi component training packages in strategy generalization research with educable mentally retarded children was studied by Werner (1983). The results provided empirical support to this study.

Kohli & Dutta (1986) studied the effect of Portage home-training intervention programme for pre-school mentally retarded children with motor handicaps. The sample consisted of ten mentally retarded children. It was divided into two groups 'A' & 'B' of five children each. Group 'A' received weekly visits from the home-advisor and training was imparted to them during the week by their mothers. Group B was provided specialized training by home adviser daily. Results indicated that almost every child gained through portage service.

To investigate, firstly, whether gross motor gain scores achieved during intensive intervention were maintained, once intervention was withdrawn and to investigate, secondly, whether fine motor skills which were not a focus of intervention, had been
affected by the gross motor intervention a study was conducted by Fewell (1988). He found that Pre to Post test gross motor gains failed to continue once the intensive programme was withdrawn. However, quotient scores were maintained without significant declines during the testing period. There were no significant differences between pre and post test scores for fine motor quotients for either year. These findings suggest the need for longitudinal studies of therapy and motor skill instruction.

A study was undertaken by Katiyar, Kejriwal & Upadhyay (1988) to find out the relationship of mental and motor development of children with maternal education, IQ and age at which the child was born. One hundred and twelve full term single term born healthy children from 3-30 months were assessed for development. IQ of mothers of these children was recorded. Analysis of the data demonstrated that maternal IQ had significant correlation with the motor and mental development of children. Maternal education had positive effect on the mental development, whereas maternal age has not effect.

A Comparative study of gross motor Development skills of normal, hearing-impaired and Down Syndrome children was taken in (1995) by Sule. In this study he compared motor development in 48 normal children (ages 3 to 6), 12 children (ages 5 to 7) with Down Syndrome and 33 children (ages 3 to 7) with hearing impairment. The motor development section of the Portage Early Childhood Educational Program checklist was administered to all the children. Results revealed that motor skills developed more slowly in the hearing impaired children and the Down Syndrome children than in the Normal children. In comparison with the normal children, the hearing impaired
children seemed to perform more poorly in skills associated with balance and general coordination than in other skills. The Down Syndrome children demonstrated poorer performance than the normal children in all motor skills. Results support the systematic inclusion of physical education activities in programs for children with disabilities.

Mohan, A. et. al. (2001) examined the capacity in individuals with Intellectual Disability (ID) by utilizing bilateral transfer and interference paradigms. Right handed subjects with ID (IQ=55-76) and controls matched for age and sex were tested for bilateral transfer of motor skills in contra lateral hands with a mirror drawing task. The findings indicated that people with ID are significantly deficient relative to matched controls in bilateral transfer of motor skills from their non-preferred hand to preferred one.

The influence of a 12-week (24,45-min motor sessions) motor skill intervention on fundamental motor skill (FMS) development of disadvantaged preschools was examined by Goodway & Branta (2003) Pre-and post intervention measures of the Object Control (OC) and locomotors subscales of the Test of Gross Motor Development were obtained for both groups. Compared to the Control group, the motor skill intervention group revealed significant higher locomotors and OC scores following the intervention than prior to the intervention.

A comparative study on the consistency of the Short Form (SF) and the Long Form (LF) of the Bruininks-Oseretsky Test of Motor Proficiency (BOTMP) in identifying preschool children with Motor Impairment(MI) was undertaken by Fotini et. al. (2007). One hundred and forty-four Greek pre-school children
participated (74 males, 70 females, mean age 5 yr 2 m [SD 5m] range [4yr 6m-5yr 6m]. Although total SF and LF scores were highly correlated (r=0.85), paired t-test indicated significant differences (t=27, 466, p=0.001). SF Total scores (mean 47.38 [SD 9.43] SF had low sensitivity (13.6%) and negative predictive value (72.5%) for identifying M1, The BOTMP – SF does not appear to be a valid test for the identification for M1 in 5 years old children.

Kirby et.al. (2007) reported that Attention Deficit Hyperactivity Disorder (ADHD) is commonly co morbid with movement difficulties, including Developmental Coordination Disorder (DCD). Compartmentalized service provision may result in children with ADHD not being screened and assessed in necessary for DCD and vice versa. Sixty-nine Children attending an ADHD clinic were screened for movement problems, using the parent, completed movement assessment battery for children checklist. The results showed that 19 percent of the children with ADHD were defined as having a movement problem with a further 16 percent defined as 'at risk'.

A study on the motor co-ordination and social-emotional behaviour in pre-school aged children with the objective to investigate the relationship between motor co-ordination, emotional recognition and internalizing behaviours in young pre-school children was carried out by Piek et.al. (2008). Forty-one, K.G children, twenty two boys and nineteen girls, were assessed on Mc Carron Assessment of Neuromuscular Development, the emotional recognition scales, the Wechsler pre-school and primary scale of intelligence, and the child behaviour checklist. Motor ability was positively related to a child's emotion
comprehension. However, the expected correlation between motor ability and anxiety/depression was significant with a moderate effect size. The result indicates that further investigation is required on the relationship between motor ability and social emotional development in pre-school-age children.

Yukselen, A. et.al. (2008) studied the effect of exercises for fundamental movement skills in mentally retarded children. The purpose of this study is to test the effects of physical training on motor skills of mentally retarded children. Throughout this process various types of motor skills are used. Twelve mentally retarded children aged between 3-6 years participated in this study between March and June, 2006. This study was performed in a pre-test-training – post test design. Children were trained and then scored on 11 fundamental movement skills based on the motor development part of the Portage Early Childhood Education Program control lists by a single observer. An exercise program was recruited for those children and they participated in this program during 26 sessions. Statistically significant differences were found in walking, running, jumping, balance, trampoline, rope-ribbon tests and obstacle set skills in pre and post-test results (P<0.01) in this sample and setting, training of the fundamental movement skills support motor development of mentally retarded children.

The results of the work on the relationship between motor performance and executive functioning in children with intellectual disabilities' suggested that children with intellectual disabilities have motor problems and higher order cognitive deficits. Motor performance and executive functioning are positively co-related. Intellectually challenged children are
impaired not only in qualitative motor skills but also in higher order executive functions (Hartman et.al. 2010).

Venetsanou, F. & Kambas, A. (2010) highlighted the effect of environmental factors on motor development of Pre-Schoolers. They emphasized that the process of development occurs according to the pattern established by the genetic potential and also by the influence of environmental factors. The study revealed that family features, such as socio-economic status, mother’s educational level and the existence of siblings can affect children’s motor competence.

Children with high intellectual disability had significantly more motor problem than with low intellectual disability and there is an association between the degree of ID and motor performance. These results were highlighted by Vuijk et. al. (2010).

The study regarding improving fine motor skills in young children provide evidence to the fact that primary movement programme had a significant effect on improving the fine motor skills of the children. This was stated by Brown & Carol (2010).

Shala et. al. (2011) studied the difference in gross motor achievements among children of four to five year of age in private and public institutions in pristhine, Kosovo. They revealed that there is a significant difference in the development of balance among the children from public and private institutions. The children from public institution performed better than the children from private institution in their gross motor achievements.

Draper et.al. (2012) studied the impact of the little champs programme for motor development on (1) the gross motor skills, and (2) Cognitive function of children in the programme. In first
study, 118 children from one Early Childhood Development Centre (ECDC) were tested using the test of Gross Motor Development-2, and in study second, 83 Children were tested from six ECDCs using the Herbest Early Childhood Development Criteria Test. The results showed that children exposed to eight months of little champs had significantly better overall scores for locomotors (P less than 0.005) and object control (P less than 0.01) skills as compared to the control group. There was a statistically significant improvement in the cognitive scores of children who participated regularly in the programme (P less than 0.0001). These findings suggest that even limited exposure to a low intensity programme for motor development can positively impact gross motor skills and cognitive function is disadvantaged pre-schoolers.

Since Piaget, the view that Motor and Cognitive development are interrelated has gained wide acceptance. However, empirical research on this issue is still rare. Few studies show a correlation of performance in cognitive and motor tasks in typically developing children. Similar study was conducted by Eva (2012). Results contribute important information about specific association between components of motor coordination and executive functions.

Nonis & Jernice in (2014) advocated motor interventions for children with mild learning disabilities, to improve there gross motor skills. They investigated the gross motor skills of fourteen children who have mild learning disabilities. The results revealed significant difference between MLD and normal group of children.
2.4 An Overview of Review of Literature

The review of related literature discussed illustrates that different researchers have given different views on some issue, while on others they are quite unidirectional and advocated the same line. The researches can draw following inference on the basis of the cited literature:

1. The goal of a programme must be clearly articulated, which is quite important for the success of a programme.
2. The programmes designed should be properly utilized by parents and other resources involved.
3. The training of parents of handicapped children and paraprofessionals do help the child in a positive way to achieve the goal.
4. A closer contact between school, parents and community is more fruitful than handling the matter alone.
5. Centre based intervention programme has a positive effect on the various developmental aspects of intellectually challenged children.
6. Portage model is not only successful in foreign social and cultural setting but also effective in Indian social and family settings.
7. Portage as an intervention is effective even if applied on a group of more than 100 children, by either home or center based training.
8. Communication, motor and social skills have improved if the subject is provided training by traditional training method or individualized training programme.
9. Detection and identification of intellectually challenged can be quite easy if inservice orientation & training of
Aanganwari workers is being scheduled in their activity work chart.

10. Disruptive behaviour of an ADHD child can be corrected by the parents' training and their behavioural intervention.

11. Almost all of the intervention brings an improvement in all the developmental areas irrespective of the area (developmental) for which intervention has been applied.

12. The baseline of each subject should be selected after smooth application of the diagnostic tools preferably in home environment.

13. The social and economic status of the intellectually challenged child may be correlated with his handicapping condition but the training/intervention brings almost same or greater outcome when he is compared with children of middle or high socio-economic level.

14. The intervention for motor skill enhancement is directly related to the developmental status of the child in all areas of development. So, the results are also proportionally expected.

It can be concluded on the bases of research studies quoted in the chapter that early intervention can be a valuable resource for optimizing all round development of children with the involvement of the professionals, para-professionals and non professionals. They are made to know what is expected out of them and how they have to go about it. They all need assistance with the developmental process and should effectively collaborate with each other in assessing health and development of preschool children.