## *An investigation into the effects of training programmes upon movement leading to dance with E.S.N. (s) children*

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# AN INVESTIGATION INTO THE EFFECTS OF TRAINING PROGRAMMES UPON MOVEMENT LEADING TO DANCE WITH E. S. N. (S) CHILDREN

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# ABSTRACT

"AN INVESTIGATION INTO THE EFFECTS OF TRAINING PROGRAMMES UPON MOVEMENT LEADING TO DANCE WITH E.S.N.(S) CHILDREN."

by JOAN W. LISHMAN

The study is designed to test the capacity of E.S.N.(S) children to respond to and learn from programmes based on the teachings of Rudolf Laban. Some perceptual motor models have been selected and are discussed. The contribution of dance within the Physical Education Curriculum for E.S.N.(S) children is examined.

A pilot study was conducted in order to establish content and procedures. The experiment proper required the design of training programmes over an extended period. Thus, a pre-test and post-test design were used, each child being used as his own control. The sample was drawn from an E.S.N.(S) Hospital School in Northern England. Tests were given to establish base lines in physical performance. Weekly training sessions were planned and executed over two years with 30 ambulant retarded boys and girls, ages 7 to 18 years in three groups. A combination of acknowledged physical education tests and tests for exercise and rhythmic body response were administered.

Characteristically this approach consists of an individual analysis of each child's movement behaviour and the application of multiple base line operations. Executing these skills is a matter of using these rules in a certain order. This programme focuses on the process of learning rather than product.

The use of videotape aided the analysis of the movement behaviour and demonstrated the individual development and the structure of the training sessions. Improvements of motor skills are identified as a result of mental practice, task familiarity and the maturation of the learner. There are individual differences in subjects' responses but these are not influenced significantly by age, verbal ability or sex variables. This study revealed that training programmes can lead to dance with E.S.N.(S) children.

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# CHAPTER ONE

## THE INTRODUCTION

# CHAPTER 1

## THE INTRODUCTION

Special Education for the handicapped in Great Britain is of relatively recent origin. As with ordinary education, education for the handicapped began with the individual and charitable activities. The intention of the 1944 Act was to make provision either in ordinary or special schools.

In spite of considerable expansion by the end of 1955 the needs of educationally sub-normal pupils remained unsatisfied. The special education of children in Hospital Schools had been safeguarded by the National Health Service Act of 1946. Section 62 empowered regional boards and teaching hospitals to arrange with a local education authority or voluntary body for the use of premises forming part of the hospital .....

> "The education of these children was seen as posing special problems deriving from the great variety of their medical condition and the nature of their treatment." (Report of the Committee of Inquiry into the Education of Handicapped Children and Young People - Special Educational Needs, 1978, p. 24)

Increasing concern about the practice of excluding large numbers of mentally handicapped children from school found expression in the Mental Health Act, 1959. But whilst the 1959 Act was a response to unhappiness particularly amongst parents, about the labelling of children as not being entitled to education and as being uneducable, it resulted in a widening of the system which led to segregation. The concept of special education was broadened to encompass needs hitherto regarded as beyond its reach. Co-operation between local education authorities and

health authorities are enforced by statute. On a more practical level, significant work on the practice of care of mentally handicapped children had been carried out in the late sixties (King and Raynes, 1968; Tizard 1971) and early seventies (King, Raynes and Tizard, 1971).

At the end of the sixties events seemed to be changing, at least in theory. The Seebohm Report proposed the abolition of the idea of ineducability, and the takeover of the existing "Junior Training Centres" by the education service. This was implemented in the Education (Handicapped Children) Act of 1970 which gave local education authorities the responsibility for educating all children regardless of handicap.

In practice over the ensuing three years there was a steady growth in local authority services for the mentally handicapped. There was a strong body of opinion led by Elliot (1972, 1975), Pilkington (1974) and Day (1974) for a unified service to supersede the roles currently undertaken by the social, education and health services. Others such as Gunzburg (1973) did not go as far as proposing new services, but stressed the importance of the "multi-disciplinary team" approach in dealing with the mentally handicapped.

The joint D.E.S./D.H.S.S. circular of January, 1983 offers advice to assist local authorities in reviewing and revising their procedures. The focus is on the child himself rather than the disability.

The history of service provision for the mentally handicapped seems to run at two levels, the theoretical and the practical; what is said and what is done. Yet there have been changes. Local authorities have improved their provision and as

increased accountability continues and the nurturing of team relationships develops, changes in the education of E. S. N. (S) children will be inevitable.

Various terms have been used to describe specialised programmes of physical education for special population groups. By definition many of the terms listed below overlap and/or are used interchangeably within the concept of adapted physical education. The terms corrective, developmental, movement, therapeutic, special and adapted have all resulted from the multi-disciplinary exploration of children's needs.

Children who are classified as severely educational sub-normal possess certain characteristics of which the physical educator should be aware. The child seems to have no concept of left and right and has significant problems with understanding positions in space. Motor skills may resemble performance levels of normal children of about 3 to 7 years of age. Manual guidance is often necessary to direct the child in movement in space. Basic objectives in adapted physical education concentrate on social awareness and locomotor skills.

A number of studies have proved that significant improvement in the mental and social functioning of severely educational sub-normal children can be developed by regular participation in selected physical education activities. Ross (1969) for example, upon exposing young educable mentally retarded children to what he suggested was an "intensive" programme of inter-sensory motor skills training (lasting 20-25 minutes per week) for a period of 6 months, described significant changes in the children. During the final testing period he claimed that the retarded children had reached levels near those evidenced by normals. In a number of studies Chasey and Wyrick (1971) have demonstrated that positive changes in the motor abilities of retarded children are

possible after a programme of physical development. They used the comprehensive Sloan (1951) revision of the Oseretzky test to pre and post-test their samples. Numerous investigators, including Oliver (1958), Soloman and Pangle (1966, 1967), Hayden (1966) and others, have shown that fitness changes may be elicited by groups of educable mentally retarded children who are exposed to appropriate exercises and motivating activities.

It appears that the effectiveness of a movement training programme upon the improvement of movement abilities is dependent upon the tasks presented to the children, the closeness between the assessed needs of the children and the programme content, and the duration of the programme.

Most severely handicapped individuals are deficient in some aspect of gross and fine motor development. Young severely retarded children fail to explore and move about the environment, and thus reduce sensory awareness and incidental learning. Numerous programmes have been directed at overcoming motor deficits, many of which have emphasised the crucial role of movement and stimulation (e.g. Bradley, Maurer et al., 1966; Bradley, Konicki et al., 1968). These studies have been characterised by the major work of perceptual motor theorists such as Kephart (1960), Frostig (1972), Le Winn, Doman, Delacato et al. (1966). Much of this research is based on the tenet that movement and planned training sessions result in greater motor development. Bricker et al. (1976) have developed a motor training programme in which each skill is taught or mediated through activities. It is the author's opinion that Bricker's research would be strengthened by adding more creative activities. This research therefore, is committed to an investigation of the contribution of Rudolf Laban to movement and dance, and

in reviewing such identifies approaches for the retarded child to learn through programmes of movement.

In the absence of data from large population studies it is difficult to speak with confidence regarding the extent of the effects of training sessions and programmes; nor are suitable data available for the establishment of national norms of movement and dance for these children. The present investigation was designed to obtain data on the effects of training sessions upon movement leading to dance with thirty E.S.N.(S) hospital children.

Brooks (1978) states that "successfully teaching a mentally handicapped child to lead a more normal life can be a most useful and rewarding experience". (p.8). If it is accepted that each child in the E.S.N.(S) (educationally sub-normal (severe)) school can be disciplined, then it follows that with practice and well organised activities he can be taught and educated in many varied skills. The use of movement and dance with the retarded child is dependent upon much personal experience of Laban's work. It is this understanding and sensitivity which the author demands of the team members involved in the training programmes of this research. It is the planning of the investigation and the moment to moment response to the individual child during the teaching sessions which is important. The development emerges as the child responds to the demands of the movement task.

The author believes that the work of Laban can contribute to the development of movement and dance with the E.S.N.(S) hospital child. Laban had a gift for seeing the variety of movement and its many interpretations. Sylvia Bodmer and Lisa Ullman who were followers of Laban in Germany and England were the prime movers in the founding of the Laban Guild in 1945. Dunn (1982)

refers to Bodmer and Ullman and their contribution to movement. This movement interpretation implies that movement was considered to be a springboard; the movement was not a form of drill, nor by dictation, nor by force, it was because they abhorred such methods that they left Germany. The followers of Hitler managed to eliminate this kind of work which had been growing and developing. It was through the work and growth of movement and dance inspired by Lisa Ullman that Laban's influence spread so widely throughout the schools and colleges of Britain. Michael Huxley in conversation with Lisa Ullman emphasised the international developments of Laban's work (Ullman and Huxley, 1982). Ullman described to Huxley that "for Laban, dance was dance whatever type or style" (p. 34). The central thrust given by Ullman was that dance will always be different. The reader is cued to the open ended Laban approach which can be appropriately used as a teaching technique for the retarded child, as dance exists at a particular time, and in a particular place, and has to have its own function.

Because no two mentally retarded children are identical no single system can be satisfactory. One pupil may respond more to a movement approach whereas another may gain more from task orientated schedules, yet others may benefit optimally from a programme which combined both styles of teaching.

In order to investigate these beliefs and expectations, a review of four aspects of the appropriate literature follows: perceptual motor theorists, behaviour modification interpretations, Laban movement and a summary review with implications for the present study. This review (Chapter 2) is intended to offer a comprehensive view of the field. Chapter 3, part I, describes the investigations, the administration, the adult participant, the observation schedules and the teaching

processes, part II includes (1) descriptive statistics, (2) formal standardised testing, (3) four case studies, and (4) a working video tape (Volume 2). In practice these four methods are not separated but are accomplished simultaneously. For purposes of discussion, however, it is useful to separate these four areas of data gathering. Chapter 4 integrates theory and teaching strategies and discusses such programmes for the E.S.N.(S) hospital child.

# CHAPTER TWO

## REVIEW OF THE LITERATURE

(A) PERCEPTUAL MOTOR THEORISTS

(B) BEHAVIOUR MODIFICATION INTERPRETATIONS

(C) OTHER WORK IN MOTOR DEVELOPMENT

(D) LAB AN MOVEMENT

(E) SUMMARY REVIEW WITH IMPLICATIONS FOR THE PRESENT STUDY

# CHAPTER 2

## REVIEW OF THE LITERATURE

The review of the literature is in four parts: perceptual motor theorists, behaviour modification interpretations, Laban movement and a summary review with implications for the present study.

The interest for this work stemmed from the writer's desire to attempt to elucidate Laban's theories and the principles on which they are based. Laban's influence on the introduction and development of modern educational dance is generally agreed. What is therefore necessary in this connection is that Laban's theories are subjected to careful sifting and examination so that problems of meaning be clarified, certain ideas re-interpreted and, as far as education is concerned, consideration for the inclusion of dance in the curriculum for the E.S.N.(S) child investigated. Laban himself claimed to stand for mobility. Many of his claims lack either empirical confirmation or rational justification and a good deal of the knowledge that he was in effect posing awaits further discoveries from, for example, psychology, anthropology and other related disciplines. However, his ideas have had a wider impact on education generally and on physical education in particular. Thornton (1971) and Foster (1977) attempted a survey of Laban's life and work tracing the reason for, and the growth of his influence. The focus of this research is an investigation of Laban, his work and influences, furthermore how such interpretations can be identified and developed in relation to movement education for the mentally retarded child albeit through innovatory training programmes of movement training, that lead to dance with the E.S.N.(S) hospital child. Bland (1978) writing in a follow up Study of Education in Hospital Schools for the Mentally Handicapped describes and examines conditions and practices and the focus which his study demonstrates is intervention with a team input.

Probably the most important influence in the process has been the Hester Adrian Research Centre and its associated projects, including the Schools Council Project on Teaching Language and Communication to the Mentally Handicapped (Leeming et al., 1979) and the Teaching of the Severely Subnormal (TASS) Project (Robson, 1981). Laing (1979) suggests that

> "if a handicap inhibits the child's ability to direct his own learning, then the teacher must take over the responsibility of initiating activities and the child consequently becomes the responsive member in the educative process" (p. 63).

Crawford (1980) reports how research findings support a structured approach and evidence from a number of sources indicates that the mentally handicapped do not learn spontaneously from a stimulating environment.

There is, today, among researchers and practitioners, a growing recognition of the potential of retarded children to learn and to develop, regardless of the severity of their handicapping conditions. Although retarded children start with disadvantages, it is worth noting that the following have all been treated successfully:- incontinence (Tierney, 1973); hyperactivity (Blank, 1972) and adequate social response (Whitman et al., 1970). Other important areas which have been tackled are language development (Jackson, 1974) and general classroom behaviour (Williams, 1974). Some movement education programmes have been devised and developed. Kephart (1960) and Tansley (1968) for instance have produced programmes with varying degrees of success. However, it is the writer's belief

that Rudolf Laban's work could be of value in the education of the retarded child.

Programmes of movement can be designed to require increased degrees of cooperation (Laban, 1948). Physical Education tasks are relatively concrete and retarded children function best in concrete situations. If physical education can be used in this way, then it is a very valuable aspect of the curriculum.

## A. PERCEPTUAL MOTOR THEORISTS

Professionals from many disciplines when working with children with special needs investigate motor skills as they are related to their specialisms. Piaget (1936) emphasises the importance of early sensory - motor learnings as the essence for later, more complex perceptual and cognitive development. Hebb (1949) stresses the importance of early motor learnings as a requirement of the composition of cortical cell assemblies. It is not surprising, therefore, to find a number of theory approaches which focus on sensory motor and perceptual motor development of the child.

Sensory-motor refers to a mixture of the input of sensations and output of motor activity. It shows what is happening in the child's nervous system.

Some writers prefer the term perceptual-motor development. The process of organising the raw data acquired through the senses and interpreting its meaning is called perception. Perceptual information, then, is a refinement of sensory information; and perceptual motor refers to the various channels of perception with motor activity.

Our present concern for sensory-motor and perceptual-motor development is a result of the work of Itard (1801), Seguin (1894), Montessori (1912), Piaget (1936) and Gesell (1943). The importance for motor development is a continuing fact throughout the history of special education. In this section four schools of theory representative of current sensory-motor and perceptual-motor approaches are briefly presented. They are: the visuomotor theory of Getman, the perceptual-motor theory of Kephart, the movigenic theory of Barsch and the patterning theory of neurological organisation of Doman and Delacato. These descriptions are not the only motor theories of learning disabilities, but they serve as a means for discussion of the key concepts of motor development.

The Getman model of learning is one of visual development and learning. Each level of motor learning is more precise and exacting than the previous system. Getman believes that the retarded child needs more experience in the basic levels of motor development. Several teaching programmes (Getman, 1968) have activities for six areas of development: general coordination, practice in balance, practice in eye-hand coordination, practice in eye movement, practice in form recognition, and practice in visual memory.

This visuo motor model has been criticised for presenting an over simple picture of the development of learning, and for over extending the role of vision and for over emphasising the role of visual perception (Myers and Hammill, 1969). The fact that Getman is an optometrist is reflected in the key role that vision plays while the role of movement and language is somewhat neglected. Empirical evidence to support this framework is lacking.

The perceptual motor theory put forward by Kephart (1960,

1963, 1967) postulates that normal perceptual motor development helps a child to establish himself. This approach examines the normal sequential development of motor patterns and makes reference to the retarded child. According to Kephart, learning difficulty may begin at the stage of motor responses as they have not evolved into motor patterns. The differentiation between a motor skill and a motor pattern is an important element of this framework.

A motor skill is a motor act which may have a high degree of precision but it has purpose. The motor pattern may have less precision, but it has more variability. The purpose of the motor pattern is broader and it provides feedback and information to the child.

When outside pressure is exerted upon the child a splinter skill may be acquired that is a skill which is not within his current sequential development. Kephart illustrates a splinter skill with the example of a child who was required to learn to write his name although all the fine movements involved were unrelated to the wrist or other parts of the arm or body (Kephart, 1963). Some people dance as though it was a splinter skill, with the movement of the legs and arms unrelated to the rest of their bodies. It is Barsch (1966) who takes a similar approach in his discussion of movement training when he says that movement training is not for arms and legs, "....it is for alignment and balance".

Implications of the perceptual motor framework are that as the child gains information through motor tasks the transference becomes meaningful and also he begins to learn to investigate them perceptually.

One test built upon this framework is the Purdue Perceptual

Motor Survey (Roach and Kephart, 1966); while a teaching programme developed from this theory described by Kephart (1960) includes the following skills:- walking board or balance beam, jumping and hopping, identification of body parts, imitation of movement, ability to move through an obstacle course, movement of arms and legs, stepping stones, chalk board drawings and visual achievement forms.

The movigenic theory of learning difficulties, developed by Barsch (1965, 1967, 1968) proposes that difficulties in learning are related to the learner's inefficient interaction with space. In developing the movigenic framework, Barsch deals with the theory of movigenics, the teacher and the goals of the programme. Movigenics is the study of the origin and the development of patterns of movement. Barsch (1967) believes that movement is the key to life and in learning to move efficiently, the child must learn to cope with space. While Barsch (1978) proposes certain attitudes towards learning are essential for a teacher of such a programme, the long range goal of the movigenic approach is that the child should not only successfully perform a task, but he should be able to do so with precision of movement. The implementation of the theory of movigenics results in a curriculum designed to improve motor efficiency. There are several goals that Barsch views as paramount in constructing an educational programme.

A major goal in planning the motor curriculum is to establish a state of awareness in the child about his surroundings and his movement in relation to these surroundings. Techniques that help pupils develop such awareness include: touching elements in the environment; locating and moving body parts. After the mechanics of movement are learned, the child should learn the relationship of time to movement. Three dimensions of time are considered: sequence, rate and timing. Sequence refers

to the order of movements in an action, as well as the counter balancing of other parts of the body during the movement. Rate is the rhythm involved in the activities such as walking, clapping and jumping. Timing is the final quality added to the movement that makes it efficient.

The "patterning" theory of neurological organisation developed by Glenn Doman and Carl Delacato has been among the most controversial of the motor approaches to learning problems (Delacato, 1966). Doman and Delacato maintain that there are six fundamental attainments of man: motor skills (mobility in walking upright and in cross pattern fashion), speech, writing and reading (visual skills), understanding speech (auditory) and stereognosis (tactile). The mastery of these six skills is related to and dependent upon the individual's anatomical progress toward neurological organisation. Advocators of the theory maintain that by measuring the level of neurological organisation, it becomes theoretically possible to prescribe activities that will improve neurological development and hence eliminate the problem. Those neurological stages that are found to be undeveloped are overcome by engaging the child in activities designed to develop those levels of neurological growth. For children who are physically unable to perform the prescribed motor activities, the activities are passively imposed on their nervous systems by moving their limbs. The "patterning" is to be carried out strictly and the plan adhered to is for five minutes at least four times a day, each day for seven days per week (Doman et al, 1967). The approach and techniques suggested have been tried, results are variable (Glass and Robbins, 1967). No data has been published yet undocumented claims have been made by supporters of this technique.

Overall the authors of the motor theories do indicate that movement and learning are reciprocal elements throughout the life of the individual.

Deficiencies and lags in basic motor development may lead to subsequent difficulties in other areas of training. Yet motor training alone will not transform a child. However, the use of selected activities from research will prove beneficial for the retarded child. Teaching strategies will need to be sub-divided into three areas: gross motor skills, body awareness and body image development, and fine motor skills (Lerner, 1971). Movement impairment is concerned with the inadequacy of an individual's physical responses to the every day demands of his environment. It is a condition which is evident in the retarded child's activities and performances. These performances reflect inadequate attempts to perform those motor skills which can be regarded as being essential or at least, desirable (Morris and Whiting, 1971).

Cratty (1974) believes that movement activities that expose the child "to the proper kind of sensory motor experiences can have a vital positive effect" (p. 23). On the positive side it appears that properly planned movement activities can have worthwhile outcomes. The data from Cratty's causal studies shows that physical activities can help the child to achieve success, especially when the performance level is easily recognisable both by the child and the observing teacher.

When properly applied various kinds of relaxation training involving the reduction of excess muscular tension may help to reduce hyperactivity in the retarded child. Rhythmic motor activities may aid some retarded children to obtain concepts of self-control and pacing. Harrison et al. (1966) for example, have demonstrated how rhythmic motor activities can enhance self-help skills of non-verbal, low ability retarded children. Physical education programmes, coupled with reasonable levels of exercise can aid the fitness of retarded children and can exert significant improvement upon basic skills such as walking and running. Acquisition of these skills in turn may enhance the

child's self concept to a significant degree. Cratty (1974) infers that the more basic coping and adaptive behaviours which lead toward better self-care skills in the severely retarded may be improved by basic movement experiences which will be specified.

Children who may be unable to perform a particular skill or movement are not automatically incapable of acquiring other skills where different abilities are involved. Mentally retarded subjects in the main would appear to demonstrate less motor competence (Malpass, 1960; Fish, 1961; Sloan, 1948; Whiting et al, 1969). Stott (1966) for example, has defined motor impairment as a failure to make the necessary adjustments to the environment in which he finds himself. With the retarded child the deficiency in the movement may be the result of a breakdown in already established skilled performance or an inherent inability to carry out successfully the skill which is demanded. Connolly (1968) suggests that failure or great difficulty on the part of a child to learn a given response has frequently been accounted for in terms of the child not being ready or not being able to learn the response at the time whereas more concern should be centred around the efficiency of the teaching techniques adopted.

Kohlberg (1968) elaborated three broad streams of educational thought:

1. Maturational Stream

   What is most importance in the development of the child is that which comes from within(i.e. the pedagogical environment ), an emphasis on innate patterning and maturation.

2. Cultural Training Stream

The learning of the cognitive processes and the rules of the culture should be taught by direct instruction.

3. Cognitive Developmental

The interactionist viewpoint which proposes that the cognitive and affective structures which education should nourish are natural emergents from the interaction between the child and the environment under conditions where such interaction is allowed for and fostered.

It would appear that those committed to compensatory movement education in its broadest sense must align themselves with the third approach. The primary emphasis then becomes experience in determining the extent of both cognitive, movement and motor development. This is brought by building up the mediating mechanisms between the environmental demands and the child's actions and the development of systems of internal relations, structures and rules for processing information or connecting experienced events. In summary, such an interactional interpretation assumes that experience is necessary for the developmental stages to take the shape they do, as well as assuming that generally more or richer stimulation will lead to faster advances through the stages involved.

On a broad basis, compensatory education procedures currently being used, in relation to motor impairment can be classified as "Direct" (in which more stereotyped movement patterns are practised by retardates - Kephart, 1960; Oliver, 1955, 1963; Oliver and Keogh, 1967; Cratty, 1969); and "Indirect" (freedom for experimenting with a wide range of movement patterns - Argyle, 1965; Bruce, 1969; Sherbourne, 1975).

Other workers have based their compensatory education procedures upon the recapitulation of development sequences:- Cruickshank et al., 1961; Gallagher, 1964; Kamii and Radin, 1967; Kephart, 1960; Sutphin, 1964; Wedell, 1964.

A further procedure has been to pay particular attention to particular characteristics and problems:-

Distractability: Cruickshank and Dolphin, 1951; Francis-Williams, 1964.

Disinhibition: Cruickshank et al., 1961; Strauss and Kephart, 1955.

Perseveration: Cratty, 1969.

Perceptual motor functions: Frostig, 1963; Strauss and Lehtinen, 1947.

Development of body awareness: Jakeman, 1967; Kephart, 1960.

Visual perception: Cratty, 1969; Frostig, 1963.

In the context of children with impaired psychomotor performance Morris and Whiting (1971) made the following statements some years ago that:

> "Each impaired child must be considered not as simply belonging to a homogeneous category, but as an individual: his sub-normal psychomotor functioning must be viewed not as an isolated phenomenon, but as part of his total situation - his condition is the result of a

> mutually inclusive amalgam of physiological, environmental and inter-personal factors" (p. 15).

This view was taken into account in the study which is described in Chapter 3.

Having made this kind of statement, Whiting (1975) says that the major concern of workers in the field of skill acquisition has been with the mechanisms involved with very little attention being paid to the way in which such mediating mechanisms are built up through experience and how their development may be accelerated or retarded by the nature of that experience.

In a similar way, Fiske and Maddi (1961) suggest that it may be changes in perceptual input rather than opportunity for motor response that is most important in the motivation of psychological development. The point to stress here is that, in accepting the suggestions of both Hunt and Fiske and Maddi, one is not denying the importance of movement because one of the main difficulties experienced in experimental attempts to support or refute such statements is that of isolating the contribution of the factors of sensory, perceptual and movement experience. They seem to either interact or are confounded as experimental variables. In restricting the opportunity for perceptual experience for example, it is generally necessary to restrict opportunity for movement.

An attempt to assess the role of movement experience as against perceptual experience was made in two animal studies. In a study of rats reared in small cages restricting body movement but not perception, Hymovitch (1952) showed that such animals performed much better in maze learning than comparable animals who had been reared in enclosed activity wheels (i.e.

with minimal visual and auditory perceptual cues). Indeed, if the cages were moved from time to time, the rats did as well in perceptual tests as those brought up in a "free" environment. Forgays and Forgays (1952) found their free movement group much superior to rats raised in mesh cages which severely restricted movement experience. This, taken with the importance of distance cues for maze learning suggested by Hymovitch, and supported experimentally by the Forgays, points to the conclusion that movement in space plays a real part in the development of visual function.

Although it is difficult to separate out the respective contributions of movement and perceptual deprivation, the fact that in the Hymovitch Study, rats restricted in cages, but whose cages were moved about were indistinguishable from animals who had been free to move about in the environment leads to the suggestion that it is not movement restriction per se but the fact that the animals are being deprived of opportunity for varied perceptual experience. Voluntary movement is one means of varying perceptual input and moreover, the method that is usually employed. While this is one of the interpretations that might be put forward, movement and proprioception are intimately related. Two interesting reports in relation to such an interpretation are provided by Bernhaut et al. (1953) and Kulka et al. (1960). The former worker maintains that kinesthetic stimuli are even more important than visual or auditory for reticular excitation. Kulka and his co-workers have proposed that rocking and head banging and other such rhythmic movements which are seen in infants with prolonged deprivation may be an attempt to gratify their own kinesthetic needs, that is to raise their low 'arousal' level.

The importance of movement in space for the development of perceptual abilities is further cited in the studies of Held and

his colleagues. They have shown that behavioural adjustments to rearranged fields (by use of distortion spectacles incorporating for example prism lenses) significantly improved when the individual was permitted to "voluntarily" initiate movement within the distorted environment. After extensive investigations, these workers were led to the conclusion that the same mechanism was probably involved in the individual's adaptation to a rearranged visual field as was involved in the original acquisition of spatial behaviour by the child and that in either case, movement with its concurrent feedback is a vital ingredient in the development of spatially coordinated behaviour. Held and Hein (1963) in a particular neat experiment, attempted to show the importance of feedback information from self produced movement on the integrity of the visual - perceptual mechanisms of kittens. Early deprivation of such self produced movement in a structured environment appeared to adversely affect perceptual development. The implication of the work of Held et al. is that an "active" test is performed on the input.

Gibson (1966) has elaborated his contention that the senses should be considered as perceptual systems and in so doing confirms some of the suggestions being made about the interrelationship between movement and perception. Gibson differentiates between "passive receptors" (for example, the retina of the eye, the cochlea of the inner ear) which respond to stimulus energy impinging upon them and perceptual systems which actively seek information. In those terms the infant, from birth (or even before) starts to select information from his environment. His perceptual systems (for example, eye in head, head on body) cannot be exactly oriented at first and his attention is imprecise. Never-the-less, he looks at things, touches and mouths them and listens to events. As he grows and develops psychologically, he learns to use his perceptual mechanisms more skilfully and his attention becomes educated to

stimulus information. Yet he does learn to perceive, but he does not have to learn to translate, or convert sense data into perception. With this kind of interpretation, it is possible that movement may not so much be an intrinsic value in development of perception as that of serving the purpose of getting the individual into the right situation in order to be able to select the appropriate information. Thus, one might think of gross movement as a means of getting a person into a particular position which is only to be reached by locomotion or at the other extreme, one might think of fine movements of the eyes in focusing towards particular parts of a display while maintaining a static postural position.

A number of developmental psychologists have maintained that a child's early awareness of "self" is based on active exploration of himself and his near space and on his reactions to objects around him. It is clear that a major function of early movement behaviour is that of developing a self-image - of learning to separate out "self" from others. Early tactual experience with the mother together with auditory and visual experience and gross movement of the arms and legs serve as base line information on which differentiation of bodily structure and function is based. While Kephart's (1960) suggestion that early tonic neck reflex positions are the beginning of the establishing of laterality is debatable, it would seem apparent that the checking of movement (visually and kinesthetically) across the mid line of the body would serve this function.

The infant's early exploration of objects in his environment, of his own body, and the bodies of others is the beginning of the development of a "sense of self" as separate from the world around him. At the same time he begins to build up a spatial representation of his environment which will serve as a mediating mechanism in all his later skilled actions.

An original "global impression" of the body gives rise not only to a cortical representation of the external environment, but to an awareness of the parts of the body, the way in which they inter-relate in structure and function and their potential for displacement in the environment. That is, towards differentiation of inner structure and function and towards an appreciation of spatial concepts such as "back and front", "top and bottom" in relation to the body as a frame of reference (Whiting, 1975). A concept will be developed of the body as having definite limits or boundaries and of the parts within as being discrete yet inter-related (differentiation/integration hypothesis) and joined in a definite structure (Witkin et al., 1962).

By involving retarded children in the basic motor patterns in which some motor ability is already established, such children can experience success and achievement which encourages their participation. At the same time, in response to the stimulation of the rhythm and mood of the music they can exhibit more appropriate qualities of energy (Barsch, 1966).

Older retarded children need to reorganise their existing co-ordination and the simplest exercises must be repeated again and again to revise these particular muscular patterns (Holle, 1976).

## B. BEHAVIOUR MODIFICATION INTERPRETATIONS

The techniques of behaviour modification can be used to benefit the retarded person if proper organisation and evaluation of teaching is used; the techniques can be misused and need responsible discussion of goals; lastly, if the techniques are to fulfil their promise there will need to be further research.

The techniques of behaviour modification do have a place in physical education (Drowatzky, 1971) and in this Laban movement programme structure is a feature of most successful programmes. With children who have acute learning difficulties because of their handicapping condition sequenced logical steps, supplemented by the teacher's patience and flexible handling of the situation, demonstrate that intervention and innovation is essential (Reynell, 1973).

> "The basic rule concerning materials, and methods is: never be final or complete and always retain the highest measure of adaptability and flexibility" (Morgenstern et al, 1966, p. 13).

Behavioural training procedures have also been used in overcoming motor deficits in the severely retarded. Task analysis, use of developmental norms for assessment, and systematically applied reinforcement contingencies, characterise the methodology utilised to shape motor behaviour.

Adaptive physical education methods have been combined with a behaviour modification approach to motor development (Auxter, 1971). Auxter reported difficulty in eliciting the target behaviours because the subjects were exceptionally withdrawn and unwilling to engage in increased motor activity. Positive gains were made although the extent of the improvement was not stated.

Physical education programmes have been employed in improving the physical fitness of the muscle tone of trainable retarded boys (Campbell, 1974).

Numerous other programmes demonstrate the effectiveness of an operant conditioning approach in the development of

ambulation. (Loynd and Barclay, 1970; Macaulay and MacMillan, 1970; Wilson and Parks, 1970.). One such report describes the efficacy of contingent music on the independent walking of an eight year old severely retarded boy with special health problems. In this programme the number of steps taken independently was measured as the outcome variable. The training period lasted twenty eight days.

The sensory motor training theory espoused by Kephart and Doman Delacato has had limited success in accelerating motor development. On the other hand, a behaviour modification training approach, stressing the critical role of stimulus support, reinforcement, contingencies and multiple environmental stimulation has been effective. Behaviour problems loom large in all special schools. Bruce (1965) speaking of her observation of children in a great many special schools says where a teacher can use her own knowledge of the children to bring about movement in the individual, movement and dance can be regarded as an appropriate vehicle. (p. 53)

In E. S. N. (S) schools, children are not incapable of making relationships with others although sometimes they seem simply unwilling to risk too much involvement for fear of failure; they dislike new tasks and meeting new people.

It was with this in mind and personal experience of the enjoyment of movement and dance by retarded children in a variety of special schools and in remedial classes of the primary and secondary school that the writer set up an investigation into the effects of training programmes for movement and dance with the E. S. N. (S) hospital school child.

The pioneering work in this field, now called learning disabilities, can be traced to the initial investigations in the late

1930's and early 1940's of Heinz Werner, a psychologist, and Alfred A. Strauss, a neuropsychiatrist; they worked together before the publication of leading literature of Piaget and Hebb. However, their study served as a basis for much of the consequent thinking connected with perceptual motor development in which a new category of exceptional children was created - "Brain injured children". They have previously been classified in various exceptional categories such as mentally retarded, emotionally disturbed, autistic, behaviourally maladjusted and asphasic.

A behaviour modification movement training approach stressing the critical role of stimulus support, reinforcement and multiple stimulation as outlined by Wehman, alongside some of the skills used by Cratty, Kephart, Doman and Delacato are interwoven; thereby providing a starting point for Laban's principles to be merged, modified and developed. The motor activities and tasks therefore need to be sufficiently novel and the skills to be presented in small behavioural increments. Drowatzky (1971) believed that the instructional model was appropriate:

(a) Giving the appropriate verbal cue.

(b) If there was no response, model the task.

(c) If there was still no response, physically guide the child through the target behaviour.

(d) Using backward chaining so that the child completes the task from the point at which he or she was able to do it independently. (p. 42)

For similar or different reasons Piaget, Delacato, Kephart, Frostig and others emphasised the primacy of motor development. Piaget was not only concerned with the emergence and consolidation of sensory motor patterns, but also with the

special developments that arise from the child's initial reflexive adaptation patterns. These developments include the ability to play, and imitate in play the understanding of the characteristics of objects, and the development of the concepts of space, time and causality. For Piaget, sensory motor abilities have a very special and useful role, whereas for Delacato the neurological development stages were emphasised and the skills reached were very dependent upon the individual's anatomical progress. According to Kephart, the learning difficulty may begin at the stage of motor learnings - muscular and motor responses because the child's motor responses do not evolve into motor patterns. Additionally, perceptual disturbances are important factors in the failure to learn. Frostig identifies five visual perception functions:

> visual motor coordination,
> figure ground perception,
> perceptual constancy,
> perception of position in space, and
> perception of spatial relationships.

Retarded children live in a warped perceptual world. They do not hear, see, feel or integrate sensory stimuli in their environmental surroundings the way normal children do. The abnormality is not in the sensory organ itself but in the perception resulting from stimulation to the sensory organ. Auditory perception takes place in the brain - not in the ear; similarly, visual perception takes place in the brain - not in the eye. The widely used term perceptually handicapped child stems from the abnormalities such children have with perception (Lerner, 1971). Kephart said:

> "Motor patterns are the foundation for more complex learning, because motor patterns provide the basis for meaningful orientation." (p. 2).

He suggested that all intelligence developed primarily from motor functions and that, if intelligence had not developed fully, it was necessary to engage in training for the basic motor functions. The controversial Doman Delacato programme now in wide use with brain damaged children is based upon this thesis.

Dunn (1968) recommends concentrating on the specific areas of learning difficulties found in the children. Strang (1968) and others acknowledge that compared to diagnosis and testing, remediation and treatment have received little attention.

Tansley and Stanley (1980) developed a detailed diagnostic tool for children aged six to seven years with neuro-motor problems. It highlighted specific difficulties found in such children like difficulty in holding arms forward with palms downwards, inability to perform a movement on one side of the body and general clumsiness, all of which are common problems with the E.S.N.(S) child. The reader is reminded of the focus to health and posture in the early days of physical training and education. This link was in the 1920's and in 1946 the Chief Medical Officer of the Ministry of Education recorded that experiments in modern dance which had started during the war should be developed. He commended its value in developing a feeling for an understanding of 'movement'. (R.C.M.O. 1946-47) (i.e. the Annual Report of the Chief Medical Officer of the Board of Education. After 1922 they were published under the title 'The Health of the School Child'.) Henceforth, 'movement' was the key of the official evaluation of physical education just as "posture" had been in the nineteen-thirties. Such a period of growth and change was conducive to the development of new ideas and the spread of Laban's work was undoubtedly helped by this changing scene.

At this period it was recognised that it was physical education that could help the child to relate, and that hesitation and the lack of confidence in the classroom might be transformed to skill and certainty in a movement activity (D. E. S. 1952). It was now recognised that children need more than activity, they want to develop mastery and do things in different ways (D. E. S. 1953).

> "The best of what has been called 'activity methods' are the attempts of teachers to use natural ways of learning so that the children give their full attention to what they are doing and use all their desire to explore and find out, putting out their maximum effort." (Primary Education 1959, p. 53.).

The Plowden Report in 1967 called mainly for a change in attitudes towards Physical Education. In particular, the committee stressed that "finding out" should replace "being told". In one respect the Plowden Report revealed a change of concept and the guide lines had been replaced first, by posture and then by movement. Drill had disappeared and given way to therapy, to self discovery and body awareness.

The writer's focus is on the severely retarded who experience frequent failure and need to experience success in a quick and an obvious fashion. Their success needs to be obvious to their teachers, their peers and themselves. One receives immediate feedback in physical education - success is obvious to the performer and to those observing.

It follows that in designing a programme that "assessment should be aimed at providing a basis for a training programme" (Shakespeare, 1970, p. 532). While it might be argued that movement is a natural activity for the child, the retarded child

must have the time to develop and, above all, a chance to move about. The natural movements must be developed through a natural progression. Experience with older retarded children has shown that if a formerly unused movement can come into use, there is a possibility that this movement may become part of the child's daily movements in a natural way. This method requires body awareness and co-operation on the part of the child. The retarded child will need to be trained and given the opportunity for repetition (Holle, 1976).

Piaget (1970) takes as his starting point motor activity, initially of a simple reflex kind, which the child is said to display in the presence of objects. This leads him to emphasise sensory motor activity, involving the manipulation by the infant of inanimate objects. He goes on to suggest that knowledge, then, originates in activity; originally overt activity of the infant is shown in the physical manipulation of objects, and this leads later to the performance of operations which, as a result of internal processes of organisation (equilibration), are not self-evident in the infant observable behaviour. The primary emphasis is, however, active interaction between the organism and his environment. However, with the retarded child who is unable to respond to communications which adults take for granted as "basic" such as the gesture of pointing towards an object which is clearly visible in his field of view, the child gradually achieves such competence, but only - it is now believed - as a result of being positively involved in numerous experiences of reciprocal activity with other human beings. Through such dialogues of action, the infant becomes thoroughly familiar with the role of a skilled communicator, participating in forms of communication long before he is able to understand the full content of what is being communicated.

Physical activity is an important factor in the learning process; it makes objects available to the child and enables him to learn

about himself. This knowledge is called body image and reflects the awareness that the child has about his characteristics, what he can do with his body, how much space it requires and the like. Body image is believed to be both an aspect of the personality and an influence of the child's behaviour. Successful experience in physical activity is believed to enhance the development of a favourable body image while sparse or unsuccessful experience contributes to the formation of a poor body image (Drowatzky, 1971).

Educational programmes for the mentally retarded revolve around the importance of the child's performance and functional abilities. Physical Education is a vital part of the educational programme which contributes to the child's perceptual motor development. Researchers (Bruce, 1965; Cratty, 1969; Hollis, 1976; Kephart, 1960; Russell, 1958) suggest that motor patterns can be developed and improved through physical movement which can contribute to the child's success.

Drowatzky (1971) has attempted an analysis of the nature of mental retardation, the relationship between perceptual motor training and other aspects of physical education. From the development of training programmes Drowatzky found that physical activities greatly help children to learn about themselves and it has been suggested that much of the learning in the cognitive, affective and motor skills domain is directly dependent upon early locomotor and manipulative experiences. In remedial movement other researchers such as Cratty (1969), Frostig (1960) and Kephart (1960) would accept that a systematic step by step experience can help to produce a positive response. When movement is viewed in this way it becomes a basic activity by which experience can be enlarged.

This study (referred to at some length is in Chapter 3 of this

thesis) indicated that dance could have an effect upon the physical and social training of E. S. N. (S) children.

Most of the evidence with E. S. N. (M) children points to a significant relationship between physical ability and social relationships. Groves (1967) describes reactions of E. S. N. (M) girls to lessons in movement and found that such lessons helped to develop awareness, self-confidence and sensitivity towards others. Bruce's (1965) work in dance with handicapped children in this country and America is perhaps the best known. She said that in her experience,

> "often a child with a leg or arm in a plaster or with a missing limb can perform in her own way using the sound and active parts of the body". (p. 53).

Bruce and Groves (1981) suggested that since dance offered the possibility of success it has a very positive effect upon the total development of retarded girls. Others have made similar claims for dance. Alvin (1965) wrote that moving to music can help handicapped children become much more conscious of the relationship of their body to both their surroundings and to other people, and help their social adjustment. Oliver (1977) attempted to draw the attention of the physical education profession to the need for more research into suitable programmes for retarded girls in both normal and special schools. The experiment in this research is an attempt to discover if the effects of training sessions upon movement can lead to dance with E. S. N. (S) hospital school children.

In the case of the mentally handicapped child the primary educational goal should be modest, but realistic: to assist in the maximum development of his social potential and to enable him to function as competently as possible. Special education

attempts to deal systematically with this task (Younghusband et al, 1970; Gulliford, 1971). Brooks (1978) states that a handicapped child can respond by encouragement, by the determination of the teacher to be consistent. The evidence of the 1977 report "Mentally Handicapped Children: a plan for action" suggests a reappraisal of needs in the light of changed circumstances and an interprofessional approach to the problems of these children. Hope for the future must be set in the context of changing attitudes towards residential care for the mentally handicapped and for opportunities to develop a constructive working partnership (D. E. S., 1975). This study explores a movement approach with E. S. N. (S) hospital pupils; a genuine multi-disciplinary approach was adopted and the institution encouraged teachers, nursery nurses, other professionals and aides to work as a team. Using existing resources the researcher was able to delegate some of the assessment work (Chapter 3) to teachers and others, the time saved could be devoted to more specialised work such as devising individual programmes. For as Clarke and Clarke (1974) maintain, carrying out elaborate assessment procedures can be overdone, an ongoing programme for remediation, progression and stability is essential. Simultaneously, it allows the innovatory educational programmes which are devised for the individual children to be continued by teachers, nurses, therapists and aides which is the ethos of the Warnock Report (D. E. S., 1978).

In this study thirty pupils between seven and eighteen years were placed on this intervention programme. (Chapter 3 describes the innovation.) They were ambulant and disturbed in their behaviour, varying from marked withdrawal to passive impulsiveness and hyper-activity. Bizarre behaviour was commonplace and the teacher or trainer was faced on one hand with evoking a minimal response and on the other with containing wildly uncontrollable behaviour. The group presented a

diverse and complex array of educational need, varying with ages and with degree of handicap.

A movement training programme was devised with specific goals for these children which supplemented the normal time-tabled physical education lessons. Individual schedules and group work developed, sometimes focused upon the child with motor problems, the child exhibiting moderate clumsiness or the child with obvious signs of moderate or severe cerebral palsy and the non-physically handicapped retarded child. The programme included tasks to aid the child with poor self control and to develop little used muscles. Through movement and a variety of accompaniment with the teacher's guidance to interpret music in the form of dance the retarded child was exposed to training sessions. Sometimes the mentally handicapped child's intuition was to copy the movement pattern. Whilst this was useful and a successful accomplishment, the innovation design encouraged the child to remember a certain sequence of movement belonging to a particular piece of music. The movement could be initiated by the child or the teacher. Overall, the training sessions encouraged each child to move independently to the music, interpreting it in his own way. Lofthouse (1970) suggests

> "that through its repetition, it becomes more meaningful... (and) through the rhythm and the personal contribution to the activity, the movement can take on an intensely personal character" (p. 5).

This activity might be termed dance. Some individuals in the three groups in the experiment were participating and achieving some rhythmic and skill patterns. (Chapter 3).

> "The mentally handicapped child has a good deal of physical energy, and movement and music is an

interesting way for him to gain exercise and release some energy." (Brooks, p. 106).

Even if the child was unable to make the prescribed sounds to music himself, it seemed that enjoyment was displayed by listening and watching the sounds made by others. Making sounds with the mouth:- "ooo" (push out lips), "ah" (wide open mouth), "br", "eeh" (show teeth), "humm" were useful and worthwhile. Additionally, making sounds with the body:- like slapping legs, stamping feet, clapping hands, clicking fingers and tapping the floor were favourite activities.

Whilst it may seem contradictory to vary the routine for movement sessions with the retarded child, the difference is that the needs of the E.S.N.(S) hospital child require additional support, understanding, sympathy and a tolerable amount of patience from his teacher.

Davidson (1984) discusses interactional elements in teaching the child with severe learning difficulties. Her concern was with the following:

(1) the communicative act and verbal/non verbal strategies,

(2) the teaching strategy of the adults and its match with the learning/receptivity style of the child.

The observation schedules used in Davidson's study were from Halliday's (1973) model and provided a basis for setting up a coding system. The non verbal items had to be categorised under broad headings, but again were sub divided: Eye to eye contact; touching; demonstrating; watching; head movement; facial expression. There is overlap in this framework and the categories used for observer reliability in the main experiment of this study (Appendix III).

The basic objective measures used in many hospital schools for the E.S.N.(S) child are the Gunzburg Progress Assessment Charts (1977). These charts have the added value that they have been used for many years as a guide to programming as well as a record of progress. The Gunzburg Progress Assessment Charts are familiar to the writer and were used for initial placement by the hospital school authorities and used for continuous assessment. "The criteria for placement (for the individual child) are physical size, motor ability, mental age, developmental level, specific impairment, behavioural pattern, reaction to other children in a particular group, reaction to particular teachers and special needs or interests" (Bland, 1978, p.16). Appendix IV provides Gunzburg profile information on the subjects in the pilot and main study.

Kaslow (1973) interpreting the focus of movement for the retarded child looks to the body as the primary target of therapeutic intervention. Although many activities encourage freedom of expression Kaslow believed that a structured environment with clear directions and limits must be given so that the children do not become bewildered or unsafe.

Drowatzky (1971) looks at the goals that physical education furthers and reflects on the particular contributions that may be made to the individual's development through participation in physical activities. In-as-much as instruction for retarded children is often necessarily corrective or adaptive in nature, their physical education programmes may often include a remedial aspect.

Perceptual motor skills are basic to physical education activities; hence, the main movement skills like walking, running, climbing and the like are essential to the programme. Closely allied with these are the various perceptual motor skills

comprising spatial relations, coordination, temporal relations. Without a strong emphasis on the fundamentals and improvement in the skill level, however, there will be no progress for the retarded child in the physical education programme.

Many retarded children have such low levels of strength and endurance that it is necessary to develop their physical fitness (Clarke et al, 1963). Similarly, through this medium the social skills can be developed in the retarded child. Play and physical activities can be structured to teach the retarded child to develop security and self-confidence. Adams (1965) and Jordon (1961) list the two principles which are basic to a physical education programme for the retarded. First, experiences which lead to concepts must be emphasised. That is, each skill must contribute to the child's understanding of his body, space or objects; each skill must be reduced to its smallest component, taught piece by piece and reconstructed into the total skill. The child must then be taught how to combine the small steps of instruction into a meaningful total. Second, the experiences must be well organised and integrated. The programme should consist of a continual, gradual change as each new activity is presented. This method contrasts with the teaching technique in which the whole activity is presented first and then broken into parts for instruction when children experience difficulty in learning.

The Cheshire Education Committee in their programme of physical education for retarded children in 1973 have made a compromise as they claim that all children like to be successful and that the regular practice of a movement often results in success. It is a discreet mixture of motivation and accomplishment which produces the most satisfactory result. The main advantages of providing a child with opportunities for experimenting with a wide range of movements lies with the assurance

that what he learns is more likely to be transferrable to other situations. Cratty (1970) is particularly keen to ensure this positive transfer of learning which he observes has a greater chance of occurring if several training tasks are employed in the learning of a skill. He records the advantage of employing a number of activities which call for similar movement responses believing that learning and maturation combine as the child adapts and progresses. However, with the retarded child, responses are acquired through conditioning, and extinguished when conditioning no longer occurs. The process of responding to stimuli, is called generalisation, while the process of differentiating between stimuli, is called discrimination. Generalisation and discrimination also occur with responses. The psychologist most concerned with types of conditioning has been Skinner who referred to classical conditioning as "respondent" conditioning, to emphasise that it was largely reflexive in nature since the organism simply responds to the stimulus.

Instrumental conditioning is the learning process concerned with voluntary processes. Instrumental conditioning relies upon the presence of reinforcement, either positive or negative. Consistency in reinforcement or non-reinforcement is the major criterion in acquiring or extinguishing voluntary responses. Shaping new behaviours is based, especially with the severely retarded child, upon rewarding responses that occur in a series of successive approximations progressing from an initial crude approximation to the refined final response. Cratty and Drowatzky believe that once concepts and perceptions have been formed through classical conditioning, cognitive styles of learning can be used. It seems that the responses are guided and selected from information provided in current situations. Thus, as the child grows and develops, the learning of a new skill is seen less frequently. Rather, observation produces the blending together of practical sequences into some new motor skill

pattern. The way that styles of learning are merged and blended is described by the child's developmental patterns. Learning, with the retarded child, modifies behaviour only during periods in which there is some response to one's surroundings; learning depends upon activity. Drowatzky (1970) has reported that trainable retarded subjects may not respond to practice conditions in the same manner as the less severely retarded persons. His results suggest that trainable mentally retarded persons may be penalised by mass practice during the initial stages of learning. Large numbers of retarded subjects participating in his study were unable to learn a tracking task under massed practice. This failure appeared to be caused by their continued inability to make appropriate postural and attentive adjustments, coupled with the inability to develop the proper response set. Apparently a distributed schedule of practice allowed the retardates to overcome these problems. Although there are several different theories of learning, most investigators agree that motor skills for the retarded form the basis for self-help and safety activities; they assist in the development of a favourable self-image and help the child achieve some level of independence (Cratty, 1971).

For the purpose of this research, learning will be defined as the modification of behaviour which results from training procedures, or environmental conditions acting upon the individual. The stimulus - response (S-R) theorists have been concerned with learning and behaviour patterns that are mechanistic in nature, with a given input or stimulus. Trial and error is typical behaviour which is a typical kind of learning. In contrast, the cognitive theorists noted that there are choices, and in the responses available, it is possible to select behaviours that are appropriate to different situations. The differences between these two approaches is minimal although there are

several different theories of learning, most investigators agree that motor skills and motor activity are essential for any degree of educational achievement. The behaviour modification approach assumes that behaviour is controlled by its consequences not simply during learning of new responses but all the time. Desirable behaviour must be rewarded frequently if it is to be maintained. It is not enough to have a rich environment for learning, a rich maintenance or living environment is also required (Kiernan, 1973 and Kiernan and Jones, 1982).

There are several steps in the practical application of these principles to behaviour modification. Kiernan (1976) and Williams (1976) agree that the first step involves careful assessment of base-line behaviours including the identification of rewards and punishments. Kiernan at Queen Mary's in London and Williams at Lea in the West Midlands have used direct observation and specially designed test procedures in order to establish initial behavioural capabilities. In general they find that assessment procedures need to be detailed, and need to allow for the description of problem behaviour, in order to be useful in the planning of training programmes for individual children.

In a study of an individual child at Lea Hospital School, the researcher designed and implemented a movement-motor schedule for 18 weeks (2x 50 minute sessions). The Laban focus in the programme was useful in controlling the movement responses of the severely retarded child (Lishman, 1977b).

## C. OTHER WORK IN MOTOR DEVELOPMENT

A great deal has been written about perceptuo-motor difficulties in children, but there is little agreement about terminology. The confusion about terminology arises from several sources. Concern about children's perceptuo-motor difficulties started, largely independently among workers with different professional

backgrounds such as education, psychology and medicine. This is seen in the work of Getman, Kephart, Barsch, Frostig and Doman-Delacato. All were concerned to explain the apparently inconsistent behaviour of children and attempted to do so from their own theoretical standpoints. A second source of confusion is the limited knowledge of the nature of human perceptual processes. While a good deal is known about very specific aspects of perceptual function, more comprehensive accounts still take the form of hypothesis and 'models', each of which tends to be limited to the particular aspects of behaviour in which its proponent is interested. Within the educational field itself, different uses of terminology have arisen from the particular special educational emphases adopted by educators. Some, it seems, have been concerned about children's disorganised disabilities. Others have stressed the children's confusion in visual discrimination and have been interested in visual perception.

The functions concerned with discrimination will be referred to as "sensory organisation" and the functions concerned with making the appropriate actions as "motor organisation". The retarded child can copy in spite of ocular impairment and it can indicate that a child's sensory and motor organisation were adequate. On the other hand, if the activity is copied inadequately with say short bouts of movement coinciding with his involuntary movements, the quality of his copies shows that he was still able to organise his movement in spite of the inefficiency of his muscular coordination. As Wedell (1972) says, the organisation of movement has to be seen as distinct from effector "deficiency" - the adequacy of reflex and lower level muscular coordination. Conceptual processes are only one facet in the perceptuo-motor performance.

Motor organisation refers to the individual's capacity to

organise his movements according to his intention. In the course of development or in the acquisition of a skill, movements come to be grouped into sequences or into what Connolly (1970) calls "sub-routines" which, in turn, are themselves then organised into sequences. Perception and motor skills integrate as routine increases and with persistent repetition the retarded child will develop some powers of recognition and recall. Although attainment in perceptual motor skills is closely related to maturation and general development there are wide variations in individual children's abilities in the stage at which they attain fine perceptual motor skills.

Connolly (1970) and Provins (1967) have stressed the hierarchical character of motor organisation. In the course of normal development it seems that sub "routines" or sequences of movements become automatic and can become units which are, in turn, organised into further sequences.

A major difference between sensory and motor organisation disabilities lies in the opportunity for compensation for the child. A normal child uses the whole range of sensory information open to him in building up his concepts about the environment, supplementing for example by tactile perception what he cannot achieve by visual perception. This suggests that the degree of the disability in any one sensory channel does not entail a corresponding disturbance of the whole system of the sensory organisation. Motor organisation, on the other hand, constitutes the path to voluntary action. Although such activity is shown in different ways - for example, in speech, gesture and locomotion - it is still dependent on the process of motor organisation. Any degree of deficiency in motor organisation is consequently more handicapping to the child.

Brenner and Gillman (1966) made a study of the perceptuo-motor skills of eight year old Cambridge school children in normal

school. They mainly used tests involving motor as well as sensory organisation and found that many of the children who showed specific disability were described by their teachers as untidy and clumsy in gross and fine motor movement. Brenner et al. (1967) made a closer study of fourteen children showing specific disability. Only one of these children expressed any interest in hobbies requiring fine motor control (such as woodwork, craft or sewing), compared with eleven out of fourteen of the control children. Gubbay et al. (1965) also described a group of fourteen children who showed difficulty in dressing and pattern copying among other problems. Children with these disabilities are often dubbed as stupid by other children and by adults since they show no physical handicap which might account for their inadequacy.

One of the most commonly found types of motor organisation disability is confusion in using and identifying limbs on either side of the body. In a group of children identified as being excessively clumsy, as measured on the Oseretzky scale, Yule (1967) found 64.5% to have difficulty in right-left discrimination, compared with 32% of his control subjects. The children were aged between nine and eleven years. Left-right discrimination was measured by asking the child to carry out lateralised movements (for example, "point to your nose with your left hand") and by asking him to point to the examiner's body (for example, "point to my right hand"). Performance of this task is, of course, also dependent on language comprehension, but it seems likely in Yule's study the children were too old for this to be a limiting factor.

A study which attempted to isolate some of the effective components in treatment of poor left to right discrimination was carried out by Hill et al. (1967). They gave mentally retarded children training in left-right discrimination, and

compared its effectiveness when given with verbal formulation and when given without. Equal improvement was found under both conditions and the authors concluded that the disability was not secondary to the language defects.

Disability in copying lateralised movements has been ascribed to defects in "body image". Defective "body image" has been ascribed to unestablished lateral hand, eye and foot preference (Delacato, 1963). Yet Robbins (1966) found that lateral preference of second-grade children (7 to 8 year olds) was less developed after four months of treatment advocated by Delacato than it had been before.

Both lateral preference and left-right discrimination are, of course, found to increase with age in the course of normal development. Wedell (1973) suggests that disabilities in both may be independent consequences of developmental delay in other functions.

Disorganisation of movements involving limbs on either side of the body does appear to persist in an isolated form, even in children who are only moderately awkward. Kephart (1960) described children who have difficulty in alternative hopping, and J. F. Keogh (1968) described children who have difficulties in tapping alternatively with one finger of each hand. In this context, body image represents a constant element which emerges from the sensory motor feedback of the child's movements in space.

Disorganisation of movement may also show itself in a wider spatial context. Case histories of children who get "lost" in their school or home area are familiar. B. J. Keogh and J. F. Keogh (1967) investigated a related aspect of children's performance. They asked E. S. N. boys (IQ 51-77, mean

C. A. 10. 3) to "walk" a pattern as presented to them as a diagram on a card. The mean score of the E. S. N. group was slightly lower than that of the six year old children in the control group. Seventy-six per cent of the E. S. N. group children scored less than the average six year old control child. The authors report that the E. S. N. group's poor performance was not due to failure to understand the task, since all the children managed to walk the trial circle presented before testing. All the subjects were also asked to copy the patterns, and their patterns were scored for accuracy in a similar way to the "walked patterns". The E. S. N. children's performance on the copying patterns was also poorer but they found the walking task particularly hard. The Keogh's walking task involved a multiplicity of skills, but their description of how E. S. N. children set about it indicates that difficulty in spatial orientation presented a major problem. The E. S. N. boys seemed to have difficulty in planning their actions. The Keogh's state that they walked about without any clearly defined reference points, seemed unsure when a directional change should be made or when they should stop. Some became confused and walked about the room at random.

An interesting feature of this orientation task is that the child has to relate each successive movement to all his previous movements, since the spatial relationships between himself and his environment alter with his successive positions.

One might expect that studies of the effectiveness of sensory and motor organisation training programmes would provide a useful source of information about the relevance of sensory and motor organisation skills to behavioural adequacy. Unfortunately, evaluatory studies although increasing in number are still relatively few.

However, the training programmes themselves do not make

evaluation easy. Training programmes may be divided into two main categories.

(a) Training programmes aimed at the improvement of specific skills (for example, the discrimination of reversed figures) as ends in themselves. These objectives tend to be too specific to provide evidence of the sensory and motor organisation disabilities to behavioural adequacy and the studies do not usually include any investigations of more general transfer effects.

(b) Programmes which, while aimed at more general behavioural or educational adequacy, are more particularly directed at skills which are presumed to underlie behavioural adequacy. These programmes imply that improvement on the specific skills will transfer to the "target" behaviour. Frequently, demonstration of improvement in the skills at which the programmes are specifically directed - for example, the performance of certain movements - seems to have been regarded as sufficient validation.

A project aimed at applying operant conditioning to movement defect is reported by Connolly (1968). He was concerned to improve the accuracy of reaching movements in a cerebral palsied child. Connolly produced an apparatus that consisted of a clown's face with a large hole for a mouth. The size of this hole could be made progressively smaller. It was planned that the child should learn to put his hand in the clown's mouth with increasing accuracy as the hole was made smaller. A successful reaching movement would be rewarded by the clown's eyes lighting up. Connolly saw the main skill that the child was to acquire as the ability to reach accurately without visual monitoring of the movement, through the increased use of kinesthetic feedback.

Both Connolly and Kephart in their programmes aim at the improvement of the child's general sensory and motor organisation by activities which are intended to affect his neuro-physiological efficiency. Delacato (1963) and his associates postulate that human neurological development follows the sequence of phylogenetic development. Their programme requires the child with sensory and motor organisation disability to proceed through stages of exercises in successive postural positions. A central feature of the programme is the establishment of asymmetrical motor skills (such as the alternating movements of arms and legs in crawling). Delacato's method involves intensive work with children and their parents, with the aim that treatment should be continuous. Delacato cites studies of the effectiveness of his method. His theoretical standpoint has, however, been criticised and systematic evaluation studies (Kerscher, 1968; Robbins, 1966) have not supported the claims made for his methods. Robbins, for example, in the study cited earlier, found that after four months of training, a group of second grade (seven to eight year old) children showed less lateralization of motor skill than at the start. Kerscher's study of retarded children showed that an experimental group given five months of Delacato training were slightly better at creeping and crawling than the control group who were given a general physical education programme, but that there was no difference between the groups' performance on the Oseretzky Motor Development Test (a general test of motor skill). The effectiveness of the Delacato method thus seems open to question. One might argue, moreover, that such an intensive programme would, if it were effective, hardly be likely to lead to such conflicting findings. These studies do not throw light on the interaction between sensory and motor organisation and behavioural adequacy. The latter theorists claim that their training exercise can reorganise the neurological structure of specific areas of the brain by activating new electrical paths to the organs and the brain. Such a claim is hypothetical and impossible to substantiate owing to the restricted experimental

evidence at present available. Doman and Delacato have come under attack from many prominent sources for these and other aspects of the work. Other theorists (for example, Barsch, Getman and Kephart) do not advocate manipulation of the children's limbs or movement without active participation from the child, as is advocated by Doman and Delacato. Opinions differ on the value of this method. Also it is particularly difficult to assess, because very wide ranging claims are made as to its efficacy, and the demands it makes on the adults concerned are exceptionally heavy and may therefore, not always be fully and correctly carried out (Beasley and Hegarty, 1974, p. 22).

Ayres (1968) also proposes a motor training programme aimed at improving neuro-physiological function. Her approach is based on physiotherapy, and traces poor motor organisation to inadequate inhibition of infantile motor reflexes. Her aim is to improve children's neuro-physiological function in order to make them more adequate in the behavioural and educational achievement required of them. Ayres studied the progress of groups of eight year old children in special classes of an ordinary school who were given her programme additionally and compared it with the progress of children who were not given the programme. She found no overall benefit for the children who were given her programme. She measured the progress of her experimental and control group children on the Illinois Test of Psycholinguistics Abilities (I.T.P.A.), the Frostig Developmental Test of Visual Perception and on her own battery of tests (The Southern California Battery). Children given her treatment showed only slightly greater improvement than the control children in bilateral motor coordination, imitation of positives, crossing the mid-line, motor accuracy, form board performance and Visual Decoding (I.T.P.A.). However, the teachers reported that the treated children were more competent in their play, and were noticeably more confident. While these relative improvements noted by teachers were not objectively assessed, they indicate that teacher ratings do provide valuable data.

The relationship between a relatively unsophisticated body concept and motor impairment is implicit in the attempts made by those concerned with compensatory education in this area to provide opportunities for enhancement of the body concept. An increasing concern with workers in the field of compensatory education is reflected in the variety and number of studies on 'Body Concept'. Variations in terminology and emphasis by different writers on the theme of 'Body Concept' make precise definitions difficult to come by. Some workers use the term 'Body Schema' (Fisher, 1966; Freedman, 1961; Piaget, 1952; Schilder, 1935). Others use related terminology such as:

Body Image - Diabiase and Hjelle, 1968; Fenichel, 1945; Fisher and Cleveland, 1958; McKellar, 1965; Ritchie-Russell, 1958; Wright, 1960.

Body Awareness - Morison, 1969.

Body Concept - Frostig and Horne, 1964; Witkin et al., 1962.

Body Sense - Allport, 1955.

Body Experience - Jourard, 1967.

Moreover, while there is a degree of overlap in such varying concepts, they are by no means clearly defined. The term 'Body Image' is probably the most utilised in literature. It is first met in Schilder (1935), a German Neurologist who was one of the earlier writers on this topic. The term infers that the problems are not in dealing with more sensations or imagination, although it seems reasonable to suppose that such will effect bodily actions. Further overlap is indicated in a description of the body image by Wright who defines it as:

"...the aspects of the self-concept which pertain

> to attitudes and experiences involving the body." (p. 125).

Fenichel is more explicit in his interpretation stating that the so-called body image constitutes the idea of self, and is of basic importance for the future formation of ego. Although some of the evidence on which 'Body Image' develops is, according to the sources discussed, obtained as a result of feedback from the individual's own movement behaviour and is in fact somehow essentially personal, the idea of an effective value loaded concept of the body as described by Wright implies interaction with others. A concern with the movement characteristics of body image is apparent in Ritchie-Russell who defines the 'Body Image' system as:

> "... that which makes it possible for appropriate bodily movements to be performed in relation to different stimuli." (p. 8).

An intact 'Body Image System' is necessary for such appropriate action to take place - there must be an awareness of the position of the body in space. Benyon (1968) describes 'Body Image' as:

> "... an overall concept of one's body and its movements" .... and "with some relationship to varied environments" (cited in Morris and Whiting, p. 124).

Drowatzky (1971) believes that successful experience in physical activity enhances the development of a favourable body image while sparse or unsuccessful experience contributes to the formation of a poor body image.

The body is extended even further in the physical education literature. Russell (1965) and Bruce (1965) equate the term 'Body Awareness with general kinesthetic Sensitivity'. Most of the

writers quoted would agree that kinesthetic information plays some part in the formation of 'Body Concept', while other sources of information are considered to be of some importance. It is possible to define 'Body Awareness' in terms of general sensitivity to kinesthetic information.

Dickinson (1970) has drawn attention to the limitations in a definition of this kind and quoted research evidence for the relative specific nature of the kinesthetic sense modalities.

The 'Body Concept' has been associated by writers in a variety of terms:

(a) the ability to make movements appropriate to the demands of the environment,

(b) bodily sensations,

(c) imagination - mental imagery which is not purely represented,

(d) ego-development,

(e) affective development,

(f) cognitive development,

(g) the development of movement boundaries,

(h) kinesthetic sensitivity.

All of these possibilities would seem to be significant in relation to compensatory education. However, dealing with such an all embracing concept is difficult. Argyle (1969) reflects this difficulty in suggesting that the body image in certain respects overlaps the various usages of concepts like ego and self-relating to attitudes towards the body. Without at this stage

becoming involved in the development of the 'self' which has much wider implications, it is worth noting Argyle's differentiation between two aspects of the 'self'.

1. "I" - the conscious subject - the decision maker.

2. "Me" - reacted to others as being a particular sort of person. Such reactions give rise within the individual to concepts of:

   (a) self image - referring to the perception of the person by himself - what sort of person he is in a descriptive way.

   (b) self esteem - how favourably he regards himself.

Between them they form a cognitive system which like other cognitive systems exerts a controlling effect on behaviour. Body image within such a framework would be classified as part of self image. Frostig (1975) has described body concept as the knowledge that a child has of his body and of the functions of the different parts. Cratty (1969) has employed a more direct method to encourage actual performance on specific tasks in terms of expected performances. Cratty (1971) has made the point that children who lack the success of their peers, tend to underestimate their own capabilities. The ultimate objective is to blend the different ideas and approaches that are concerned with the child as an efficient mover. Education, perceptual motor training, movement training approaches are dealing with the individual retarded child; through practice the participant is able to adequately follow prescribed routines and schedules. 'Body Concept' and information processing lead to a more selective information intake from the environment. The

concept of 'Body Awareness', as Morison (1969) interprets, has been re-interpreted by Dickinson (1970) in terms of present theories of attention and it is noted, that information from the internal and external environment leads to a build up of the 'Body Concept'. The linking aspect of body concept in one form or another is not a new idea.

In terms of the information-processing model presented, it will be appreciated that information from the external environment which is not the result of the individual's own actions, (exafferent), together with reafferent information (which is the result of his own actions) will contribute towards the development of the 'Body Concept'. The establishment of such a conceptual framework within the memory systems reflecting both cognitive and affective information, will serve as a mediating mechanism between stimulus and response. A reciprocal relationship would appear to exist. Information from the internal and external environment leads to a build up of the 'Body Concept' and the presence of such a frame of reference leads to a more selective information intake from the environment.

Weber (1966) in a novel approach to the study of 'Body Concept' has coined the term 'Sensotype' which implies a pre-disposition to attend to one class of input information rather than another, as in some cultures more emphasis will be placed on proprioceptive information in development, while in others the visual way will be considered to be of primary importance. The resultant mediating mechanisms would lead to a bias towards a particular class of information. It seems possible that hierarchical systems of selection might also be established. This would be consistent with the effects of experience on the development of perceptual analysers (Treisman, 1969). It is not clear to what extent primary emphasis on a particular class of sensory input will facilitate or handicap development within a particular culture, and to what extent such a means will limit the transferability of an

individual across cultures, or to different task performances within a particular culture.

Biesheuvel (1963) has discussed the limitations imposed by lack of opportunity for learning particular skills in relation to African populations. He suggests that failure to provide the right psycho-motor experience at particular maturational stages will prevent the full realisation of potential ability. It seems while the maturational concept might be questioned, he does raise the interesting proposition as to whether limited opportunities for learning certain basic movement habits in the tribal or Urban African environment may be responsible for the difficulties which Africans experience in acquiring the manual dexterities needed for certain skilled trades. The discrepancies which exist between the performance of tribesmen and educated white or African is evident for a two handed co-ordination task.

Biesheuvel suggests that this is a positive case for providing African children with more opportunity to manipulate, to diversify their motor responses and habits and to exercise these basic skills continually. This problem is perhaps reflected in Abercrombie's and Tyson's (1966) discussion of the difficulties encountered in "switching" or "changing" attention when particular modes of information processing are not clearly established. This might have considerable importance in developing compensatory education programmes for motor impaired children in relation to the concepts of hyperactivity and distractability:

> "The descriptions of this 'troubled' behaviour resulting 'apparently' from alternating attentiveness to positional or musical cues are reminiscent of the behaviour of some cerebral palsied children....." (cited in Morris and Whiting, p. 130).

Morris and Whiting (1971) speculate that those children, like Witkin's subjects, are such children that they are alternating in attentiveness to the visual field at one moment and in time to their bodily sensations at the next moment. This might be thought of as an undeveloped 'differentiation' in Witkin et al.,'s terms or be looked upon as inability to discriminate between relevant and irrelevant sets of signals in Dickinson's (1970) terms.

> "The linking of body-concept in one form or another with information processing is not a new idea."
> (Morris and Whiting, p. 130.).

Fisher (1964) discusses body image as a source of 'selected cognitive sets', suggesting that an individual's body experiences produce effects upon his cognitions. Others (Hinkley and Rethlingschafer, 1951; MacFarland, 1958) have attributed the level of the muscle tonus, degree of autonomic arousal and body crippling to the reception and elaboration of particular stimuli. Helson (1958) also points out that bodily sensations contribute to the general adaptation level and hence, have influence on the way judgements are made. In his paper, Fisher assumes that there are forms of bodily experience which serve as signals to direct the individual to reception or rejection of certain classes of information. The individual's body scheme contains landmarks which repeatedly inform him that certain things are important and others are not. Such arousal is increased by bodily sensations that contribute to the general adaptation level and hence, have an influence on the way which judgements are made.

In relation to the concept of 'Arousal' the importance of kinesthetic feedback has been stressed by Bernhaut et al., (1953). They suggest that such information is more important than visual or auditory stimulation from reticular activities. Kulka

et al. (1960) have proposed further that rocking and head banging and other rhythmic movements which are seen in infants with prolonged deprivation are attempts to satisfy kinesthetic needs in arousal terms. Giacobbe's (1972) work with brain injured children reports how tapping the rhythm from the accents are a successful means in arousal terms. The writer uses this particular model in the experiment, furthermore, with two particular children a positive response becomes apparent (Chapter 3 .... case studies of Ben and Helen describe tapping and rhythmic activities). Selective attention has figured in Witkin (1962) who attempts to relate the degree of sophistication of body concept to the mode of perceptual functioning termed field dependence/independence. Field independent perceivers are considered to have a relatively articulated impression of the body as distinct from its surrounding field and of the parts of the body as being separated but inter-related in a clear structure. This factor is related to Witkin's concept of articulation that is of 'physical differentiation'. Differentiation refers to the complexity of a system structure and the way a system functions. A highly differentiated system is highly specialised, an undifferentiated system is not. Man is a very highly differentiated being, compared to the rest of the animal kingdom. When used to describe an individual's psychological system, specialisation means a degree of separation of psychological areas, as feeling from perceiving, thinking from acting. In a highly differentiated psychological system Witkin states that:

> "...specific reactions are apt to occur in response to specific stimuli as opposed to diffused reaction to any of a variety of stimuli" (p. 133),

or again,

> "...Parts of a perceptual field are experienced as discrete, rather than fused with their background." (p. 133).

The concept of differentiation is most often used in a developmental context. In the early stages of development, an organism is comparatively undifferentiated and becomes more differentiated as it grows. Differentiation of the body concept is not well developed in very young children. As the child grows older he develops a more differentiated body concept as a result of his experiences with his own body and the bodies of others. Witkin calls this the ability to see the body as having definite boundaries and the parts of the body as separate, yet joined together into the whole as 'Articulation of Body Concept'. Witkin hypothesised that children with an analytical field approach would tend to have a more articulated body concept than children with a global approach. This, Witkin believed, could be measured by studying children's human figure drawings. Children with a differentiated body concept or an articulated 'Body Concept' would make more sophisticated drawings and this indicated an analytical field approach. Children with an undifferential body concept or unarticulated body concept, would make more primitive drawings and perhaps have a more global approach. Witkins (1965), Oliver (1963) and Sherbourne (1979), are concerned with, in Witkin's terms, the articulation of the 'Body Concept'. They point out that the 'Body Concept', or 'Body Image' develops in the young child as a result of movement, experience of the body and experience with the bodies of others. In most children this is a relatively natural process and to some degree seems to be genetically programmed. In the case of retarded or disturbed children this may not be the case. They may not have had the experiences in infancy and childhood necessary to develop the body concept to a very sophisticated state. This may have been due to genetic, organic or physical causes. Sherbourne's approach could be of value in helping such children develop an articulated body concept. The importance of touch is stressed by Sherbourne (1979) and Morris and Whiting (1971) state that:

> "....development of 'touch' is the development of differentiation, and .... the establishment of body boundaries", (by this means) "should not be denigrated" (p.123-133).

A syndrome termed 'touch hunger' has been noted in relation to maladjusted children where the close contact which normally exists between parents and off-springs has been missed. Kydd (1962) in discussing this phenomenon elaborates such a relationship and suggests that it is worth looking at situations, perhaps, taking a look at a really loving mother with her baby, and young children; they worship each other through their senses; and again, it is worth watching the mother stroking the baby's legs, listening to her descriptions of her four year old's strength, simultaneously observing who is able to receive the comfort from merely holding his mother's hand. Aspects of development of this kind tend to be overlooked, they make a bigger impression in relation to, for example, the education of blind children. In this respect the contribution made by touch to the education of people like Helen Keller cannot be over-emphasised.

Jourard (1967) has been particularly active in pointing out the limited use of touch within Western Societies in particular. He suggests that there may be a connection between "body experience" (what some one perceives, believes, imagines, feels and dreams about his body) and physical and mental health. He points out an increasing number of psychotherapists are interesting themselves in techniques for awakening a benumbed body consciousness.

Particular programmes for training retarded children should include activities which give them many experiences of orientating their attention to the position of their own bodies

in space relative to that of other objects, as well as directing children to make responses with specified body parts. Tansley (1967) in reporting on the education of neurologically abnormal children whose difficulties lie in three main areas of dysfunction:

(1) abnormal neurological development,

(2) perceptual disturbance,

(3) language dysfunction,

comments further of the particular experimental school with which his report is concerned and says that training is given in such things as eye-hand coordination, form perception, visual discrimination, movement training of both a specific and of a more generalised nature, the latter being particularly concerned with improvement in the child's 'Body Image'. Both encouraging and spectacular results are reported in the cognitive development of these children. Horne (1974) describes a test devised by Giles and Horne (1974) which has materials from Kephart, Delacato and Cratty which include: laterality, balance, locomotion, hopping, skipping, rhythm, copied arm movements, overflow movements in fingers and wrists and coordination. Horne says from this type of diagnosis and assessment one can obtain a profile of the child's level of development. This diagnostic tool was used at Springfield House, in the West Midlands, an Assessment Centre where the children all had mild to severe learning disabilities. The sensory systems in the development of body image have not been emphasised although it is important to note possible differences. Allport (1955) points out that the body sense (coenaesthesis-stimuli from muscles) is one of the first feedback systems to be encountered in the development of awareness. He considers that while coenaesthesis remains an anchor for self-awareness, it does not account for the entire sense of self.

Wober (1966) has coined the term 'sensotype' to represent the pattern of relative importance of the different senses by which a child learns to perceive the world and in which pattern his abilities develop. Within different cultures, it is not surprising to find that emphasis on particular modes of information processing should differ. He reports on individual differences in a Nigerian population in relation to their cognitive and analytic approach to perceived material. He found in such cultures an emphasis on proprioceptive and auditory information rather than visual and suggests that such a 'sensotype' is different from that of an 'individual skilled in the visual world'. Jourard (1967) has drawn attention to cross-cultural differences in the use of touch as a means of communication and contact. Sherbourne (1965, 1979) recognises the need for the teacher to divorce herself from the formal and direct approach by working "with" the children, establishing a close personal relationship and winning their confidence. The use of rhythmic movement is a significant feature of her work which suggests that movement is not just a physical activity but involves the whole person.

Kephart (1960) was one of the earlier workers in the field of compensatory education to realise the value of perceptual motor training on integrated development. He emphasised the relationship between the development of body image, the development of lateral and directional awareness and feedback in perception to learning disabilities.

The concept of laterality as an aspect of body image has been considered to be critical in a motor hypothesis of school achievement but results have been imprecise. O'Connor (1969) for example, in comparing the effects of a traditional physical education programme and physical activities in the form suggested by Kephart (1960) on motor, perceptual and academic

achievement of first graders (7 to 8 year olds) reported in favour of the Kephart method for measures of motor ability and internal lateral awareness. No significant differences were found between the two methods on measures of academic achievement, external lateral awareness and lateral preference.

Hill et al., (1967) investigated the effect of a systematic programme of exercises on the development of retarded children's awareness of right and left directionality. The period of observation and assessment varied from one month to five terms or longer, if it was felt necessary. Horne describes investigations at Springfield where a normal school day routine operates in which the teachers aimed at giving the child success which they had previously been unable to savour. For one quarter of the day the school was 'cross-classified' and children were carefully grouped to receive intense training in their weakest area. Horne writes that "the children did not feel unhappy about this because everyone in their group had a similar problem and in fact they helped one another" (p. 60). The areas which were highlighted in Horne's study allowed the child to overcome his educational difficulties in some of these areas:-

1. Gross Motor,
2. Fine Motor,
3. Auditory Perception,
4. Visual Perception,
5. Language Development, and
6. Attention Span.

An important point in compensatory education programmes which is often missed, is that of integrating all phases of a particular programme. Radin and Sonquist (1968) reporting on the Gale pre-school programme gives examples of such

integration in stating that within the programme when the children worked at classifying two sizes they were encouraged to use sentences practised in the language programme, i.e. "These plates are big and these plates are little ". Not only were such kinds of integration attempted, but the children were considered to be undergoing the programme the whole time they were in contact with the teacher or the aide.

Hostler (1966) refers to some of the compensatory education programmes used, referring to it as play with a purpose which would fit the approach and philosophy of Sherbourne (1975). Highlighting the importance of a sophisticated body concept as it relates to further learning, Schilder (1935) as quoted in Morris and Whiting states:

> "... when the knowledge of our own body is incomplete or faulty, all action for which this particular knowledge is necessary will be faulty. We need the body image in order to start movement " (p. 138).

This demonstrates that the development of awareness of the body in children is important which is one of Sherbourne's main concerns. Another worker in the field of movement for the retarded child is Cratty (1974) who believes that physical ability is a component which can be changed. A change of strategies from the inappropriate to the more appropriate.

> "The first principle we incorporate into our programme is integration of parts of the body"....

and then

> "We help children to integrate body parts, when

> appropriate, with various tasks, (and) at the same time when appropriate, we help them to focus tensions on a specific body part "
> (Cratty, 1975, p. 278-279).

He believes, at least in part, that teachers should develop their programmes from the responses of the children being taught. Sherbourne's activities are repeated often by the children, and because the teacher takes her cues as to which activities to do with the children, from the movement observations of the children, the activities are liked by the children. Cratty believes that movement activities can help to develop a child's personality:

> ".... according to how well they are applied by a sensitive teacher". (p. 12).

The writer (Cratty) is concerned with the social complexity of the programme. He has found that the performance on a task may vary, depending upon the social pressure. The person who has poor relations with the child may cause the performance of that child to suffer. This has an application to Sherbourne's work in that she believes the child should not be under any undue pressure from the teacher or class mates and that activities should be non-threatening, thus allowing each child to perform at his own level in a play-like atmosphere. Cratty does not place movement as the primary basis for mental, social and emotional development but considers it one facet in the child's total development. The question arises as to whether or not one perceptual system is preferable over another, or whether any well planned programme of physical educaction activities would have the same benefits. Unfortunately, the recognition of the importance of movement has sometimes led to an over-emphasis. Like the movement education approach, perceptual motor training

programmes provide multisensory experiences. It is important, therefore, in the formulation of any programme of compensatory education to find out what the difficulties are and the manner and extent to which they may handicap educational development. Assessing the body concept Friedmann-Wittokower (1971) conducted research into the influence of movement on culturally deprived children which had some relevance to the work of Sherbourne and to the movement principles of Rudolf Laban.

She worked with two groups of culturally deprived children from an elementary school in Israel. The two groups of nine and ten year olds were carefully matched to form an experimental group which had four lessons of movement and dance a week for two years and a control group were monitored. It is not clear from these articles exactly what the movement education lesson consisted of or what was included in the regular physical education lesson. It appears from the brief report that the movement education activities engaged in were more task orientated than those of Sherbourne's. However, many of the aims of the programme are based on Laban's principles of movement and the focus is particularly slanted to the qualitative element which the researcher attempts to develop in the experiment (Laban, 1948; Laban and Lawrence, 1950). The general approach has some similarities, for example, imagination in doing the tasks was stressed and the teacher was to act as a guide for the children, allowing for freedom and creativity, within the limits of the task. The method of investigation included a battery of tests in the area of motor performance, scholastic achievement and psychological tests. The psychological tests included the Bender - Visual - Motor Test (Bender et al, 1976), and the Draw the Man Test (Goodenough, 1926) to show the mental age and body image concept. The movements of each child in each group were also carefully observed and evaluated. Classroom teachers were asked to restrict their observations to the following: self-confidence and self respect, concentration, creativity and cooperation. As can be seen these are some

of the same qualities that Laban's interpretation of movement tries to demonstrate and develop through movement education. The experimental group were reported as showing a marked rise in I.Q., in body and space awareness, and in their relationship with others.

Again there was a great emphasis on the effect of "success" upon the self-esteem of the children. The increase in self-confidence which arose from experience of success appeared to increase children's readiness to tackle both physical and mental tasks. It is claimed that the children in the experimental group found through body awareness the difference between weight, heavy and light, sustained and sudden qualities. The children gained self-confidence and self-respect through the success of their own movements as well as improving their ability to concentrate. Although this study was concerned with culturally deprived children it has application to the mentally retarded child. It would seem that mentally retarded children are culturally deprived in many ways. Francis-Williams (1970) shows the results of working with distractible children and emphasised the value of the following:

1. the importance of a well defined and limited framework,

2. the use of teaching materials that intensify the stimulus in terms of figure and ground,

3. the use of materials that help the child to relate isolated parts of form to a patterned whole.

Cruickshank (1960) was concerned with a child's functioning in a learning situation and the means of improving his rate of progress. He advocated that the principles of leading the child, through the things he cannot do - step by step up the developmental ladder, are the means to success. This work

of compensatory education was aimed to begin at the level where the child was able to succeed. Tansley believed that this tendency to repeat familiar activities helps to provide an increased sense of security. Working on similar lines of informality and spontaneity through the medium of human movement, Sherbourne (1975) recognises the place of interest, the physical needs, the rhythm of effort and relaxation in her work with brain damaged children. The use of music, rhythm and uninhibited movement are significant features of her work; Sherbourne believes that movement is not just a physical activity but an education of the person as an integral being - educating mental, intuitive, physical, emotional and social aspects. Kephart was one of the earlier workers in the field of compensatory education to realise the value of perceptual motor training on integrated development. In particular, he emphasised the relationship between directional awareness and feedback in perception in learning disabilities. Piaget says that the child's development of perception is almost entirely the product of any interaction of the sensory and motor systems (Myers, 1969). The first period is characterised by the development of perceptions, proximity, separation order, enclosure or surrounding and continuity. During the second period of development vision is coordinated with grasping and manipulation which results in the development of size and shape constancy. In the third period of development, the child learns through systematic observation of, and experimentation in, the environment. The study of the latter is seen in Kephart's work which places particular importance on the development of four broad motor patterns which he distinguishes from skills in that they have less precision and greater variability. Although the first two periods of development pass naturally and rapidly for the normal child, these processes may be entirely different for the retarded child. Kephart, in particular, emphasised the relationship between the development of body concept, or image, the development of lateral and directional

awareness and the feedback in perception to learning disabilities (Piaget, 1967). The essence of Kephart's learning theory is a sequence of learning stages through which a child progresses.

There are four basic aspects of motor organisation which he regards as of particular significance: posture and maintenance of balance, locomotion (moving from one point to another), contact (manipulation) and receipt and propulsion (catching, and the child's relation to moving objects in general). He provides an extensive battery of activities to foster these.

Frostig's programme (Frostig and Horne, 1964) while recognising the basic relevance of movement in general, is directed primarily at visual and visuo-motor activities. A later programme published by Frostig and Marlow (1970) is aimed at more general movement. Frostig postulates five main processes of visuo-motor function; eye-motor coordination, figure-ground discrimination, form constancy, position in space and spatial relations. However, transfer where studied, has been related mainly to educational achievement. Frostig stresses the need to train for transfer the specific skills which are included in her programme. Bruce (1969) recognises the creative art of movement and recognises it as a medium of communication. On the basis of insight, an observant teacher may have the skill of identifying the deficiencies in a child's movements. The suggestions that are given by Lamb (1964) rely upon this type of observation. On the basis of such analysis, rhythmic movement sequences have been devised to help the individual. Laban and Lawrence (1967) in their study of human movement are concerned with the development and maintenance of this sense of proportion within the factors of motion for movement education. Mosston (1965) refers to developmental movement, presenting it

as an integrated concept of movement that is designed to achieve total physical development. The movements are arranged in a graduated manner so that an individual can identify his present level of performance and progress to higher levels according to his needs.

Bernstein's (1967) observations of the roll of the integrative functions in movement suggests movement education as a means of influencing and improving several integrative functions simultaneously. Dalcroze (1930), Laban's teacher, emphasised that his methods of movement education, which he called "Eurhythmics", can speed up reaction time, develop the ability to concentrate and pay attention, teach self-direction skills, heighten self-awareness and a feeling of identity, and at the same time develop independence and separateness from others. Frostig (1975) believes that Dalcroze did not overstate his case and he reiterates that no aspect of the output system, be it gross or fine body movement, gesture or language, can function without the simultaneous functioning of the input system.

The development of the body concept is a general acceptance of the hypothesis that during the various stages of a child's development there are critical periods. These are characterised by the individual's maximal susceptibility to particular types of stimulation. During these periods certain abilities are developed and specific skills are taught and acquired which have a direct influence upon his future behaviour.

The theme of freedom for experimentation is the essence of the physical education programme recommended by Tansley and Gulliford. Cratty recommends the more positive approach of 'teaching for transfer' to encourage the maximum transfer of learning from one activity to another. Oliver's (1963) theory is reflected in the following comment:

> "There is an optimum time in the child's physical development when conditions are more favourable for certain skills to be learned " (p. 89).

The accent is laid upon greater freedom of natural whole body movements. The aim here is the development of body concept, body control and body awareness. The purpose is to search out and exploit the potential of each child. In recognising the limitations and difficulties that a child may have in understanding the requirements of a task, Oliver has adopted the principle of concentrating upon guiding the child in his learning, through small progressive steps. This ensures that he understands how a movement is performed and is able to achieve a measure of success at each stage in learning the skill. In this approach each successive stage in the performance of a movement is clearly indicated to the child and where necessary, his body is helped through the movements. The exaggeration of effort qualities such as quietness and loudness, lightness and heaviness, was also used with observed effect of automatically correcting and refining certain movements. Oliver and Keogh (1967) working with small groups of E. S. N. children both in England and America have had a considerable amount of success in using these methods in their physical education programmes. Practice in basic skills is, at least, appropriate preparation for the demands of living. Each child's profile of perceptual motor abilities is unique and highly specific, weaknesses and strengths are common features so it is unrealistic to present a blanket approach. In order to enhance development, it seems that a Laban approach is able to reinforce the child's efforts by movement praise, eye contact and touch if it is used through a series of stages. The activities are immediate knowledge of results to the child. The teacher can use this immediate feedback to reinforce the child's efforts. It has been reasonably well established that the mentally retarded as compared to normal children are inferior in the acquisition and reception of information; but are

comparable in retention, once they have really learned.

Few long term physical education programmes for mentally retarded children have been studied intensively. The physical education programme of longest duration to be evaluated was conducted in Kansas City (Oliver, 1967). Oliver and Keogh reporting on clinical observations of educationally sub normal boys, found that the majority of them had considerable difficulties with coordination and rhythmic movement. They felt, however, that the relationship between motor performance and intellectual ability was difficult to establish. They did establish a significant relationship between physical abilities and social development.

Perhaps the reason for this relationship may lie in the fact that retarded children do not readily pick up rules of play; the practice of copying, playing together with others which affords much useful social and physical training, would also be missing.

Oliver (1958) in the earliest of the British studies with retarded children using physical education, found that there was an improvement of I.Q. scores following an intensive physical education programme. In the "Packwood Experiment" he took twenty boys aged thirteen to fifteen who were in a residential special school and gave them two hours forty minutes physical education per day, over a period of ten weeks. They were compared with a control group following the normal school programme of three physical education sessions a week including one of games. Both groups were given a series of tests before and after the experimental period. Very high significant gains were shown by the experimental group in tests of physical achievement. More interesting were the significant gains made by the experimental group in tests of

intellectual and emotional development.

Several writers (for example, Moran and Kalakian, 1974) criticised Oliver's findings on the grounds that no attempt was made to control a 'Hawthorne' effect. Oliver acknowledged the probable effect of a feeling of importance amongst the boys in the experimental group, but attributes the gain to a combination of

(a) the effect of achievement and success,

(b) improved adjustment,

(c) improved physical condition as well as 'Hawthorne' effect.

Soloman and Pringle (1967) attempted to repeat Oliver's study but were unable to confirm the improvement in mental and physical characteristics. Oliver suggested that testing conditions were unsuitable in this experiment. Corder (1966) and Lowe (1966) attempted to reproduce the Packwood experiment, while making an allowance for a 'Hawthorne' effect. Their results were similar to those of Oliver. A more recent and wider investigation was carried out by Rarick and Broadhead (1967 and 1968). This study examined the role of physical education in the modification of the motor, intellectual, social and emotional behaviour of 275 educationally mentally retarded and 206 minimal brain damaged children of elementary school age. One group of children followed an art programme in an attempt to cater for the 'Hawthorne' effect. Two groups followed special activity programmes and one group, acting as a control "group", followed its normal programme. The children were all taken for their special activity by their own class teacher for thirty minutes each day for twenty weeks.

The following findings were reported:-

1. Children who participated in one of the specially planned experimental programmes were subject to significantly greater positive changes in their motor, intellectual and emotional development than were the children in the control group.

2. Children involved in the physical education programme showed greater improvement in motor performance while younger children in the art programme showed greater improvement in emotional behaviour.

3. An individually orientated programme of physical education was more successful than a group orientated programme in producing changes in motor, intellectual and emotional behaviour.

4. Older boys showed more positive changes in behaviour than younger boys and than girls in any age group.

Few studies show improvement amongst girls following an experimental physical education programme.

Corder carried out a study with educationally sub-normal girls using a 'fitness' programme similar to that used in a number of boys studies. Thirty girls were randomly assigned to an experimental group and control group. The experimental group received one hours fitness training per school-day for six weeks. The difference between the pre and post-test results show no significant changes in I.Q. gains between the groups, but, of course, the period was very short.

There appear to be four threads interwoven into the fabric of today's physical education. These threads represent movement

education, perceptual motor training, the traditional programme, and a mixture of approaches. Experienced teachers often suggest that enthusiasm is one of the most important characteristics of effective teaching and there is a substantial body of research evidence to support this judgement (Rosenshine, 1970). The contributions of leaders in the area of movement classification reveal a deliberate mixture of directions and approaches. Mosston (1966) takes the 'three dimensions' of movement. One dimension is the matrix of physical attributes (strength, agility, flexibility, balance, rhythm, endurance). The second dimension is of the anatomical divisions of the body. It focuses on the part of the body or region which is being developed by the given movements (for example, the lower leg, the neck). The third dimension involves the kind of movement which is being used to develop the desired attitude in a particular part of the body (for example, walking, leaping, turning). Rhythms are patterns of movement joined together in a synchronised way to produce efficiency in movement.

## D. LABAN MOVEMENT

The Laban influence can be seen in education, therapy, theatre and recreation (Redfern, 1982). Perhaps it is not surprising that Laban could make such an impact as a large proportion of innovators in the field of education and teaching have not been professional educationists:

> "Commenius worked in and organised schools but he was a theologian and philosopher. Rousseau never held classes and had a strange history of unconcern with regard to his own children. Froebel was a chemist and a philosopher, Montessori, Decroly and Claperède were doctors of medicine and the latter two were also psychologists. Dewey was a philosopher,

> and more latterly, Piaget is a zoologist termed genetic epistemologist. Also in recent times, real impact on education has been made by sociologists, neuro physiologists, linguistics and paediatricians. Piaget himself has studied this phenomenon and asks the question, "Is the reason inherent in the nature of pedagogy itself, in the sense that its lacunae are a direct effect of the impossibility of achieving a stable equilibrium between its scientific data and its social applications?"
> (cited in Foster 1977, p.74, (Piaget, 1971)).

Piaget concludes that the truth about education and its professional implications have not been achieved or attained in society today. In physical education and other disciplines, the literature is often first written by laymen. Guts-Muths was a geographer, Veth a teacher of mathematics, Jahn and Ling were philologists and Laban was an eclectic whose interests were centred on a variety of the arts.

What was important about Laban, a newcomer to English Physical Education, was that he had powerful contacts who were able to present his ideas to physical educators.

It was during 1932 that the work of Laban came to Britain. Lesley Burrows had just returned to England after completing her training at the Mary Wigman School in Dresden and had established a dance studio in Chelsea. Joan Goodrich, about to take up an appointment at Bedford College of Education, had been given permission to spend a year at the Lesley Burrows Studio. She spent two months, at the end of that year, at the Mary Wigman School, where the work centred around the development of the body as an "instrument

of expression" (Thornton 1971, p.7). It is of interest to note that Mary Wigman, one of Laban's pupils, was, even at this time, developing her own movement analysis. Diana Jordon, after expressing an interest in the work of Laban, was recommended by Joan Goodrich to attend the Lesley Burrows Studio. Before embarking on the three years' training, Diana Jordon went to the Mary Wigman School during the summer of 1935. The value of the work in Dresden was, in her opinion, of enough value to encourage her to embark on training from 1936 to 1938 under Lesley Burrows. During this period of training Burrows was joined by Louise Solberg, an American, who had trained under Laban. Laban's effective work in Germany was brought to an end in 1936. He had been responsible for all the movement which had been staged in connection with the Olympic Games and had choreographed many movement groups. The enthusiasm that was Laban's, was not shared by the Nazi Government and Laban's work was declared "staatsfeindlich", "against the state". Laban arrived in England in January 1938 and went to the Jooss Leeder School at Dartington Hall. This school had two of Laban's former pupils on the staff; Kurt Jooss, as the Director, and Sigurd Leeder, as the Principal Movement Teacher. They were soon to be joined at the invitation of Jooss, by Lisa Ullman. Prior to this Lisa Ullman had, in 1935, established at Plymouth the first movement choir in the country, under the auspices of the Workers' Educational Association. ("Movement choir" is the terminology used by Laban for a group of dancers performing simultaneously.)

Lisa Ullman, as Principal of the Laban Art of Movement Studio, was the steering force in interpreting Laban's ideas into a workable system. Laban was apt to make little distinction between what were matters of opinion and what were matters of fact - or, at least, experimental in principle. However, the growth of "movement education" in Britain is indicated by the

use of this term which is due to the spread of the work of Rudolf Laban.

At the beginning of the twentieth century there were two systems of physical education in England, the Public School system of organised games and the elementary system of physical training. The one concentrated on character training and the other on discipline and the physiological effects of systematised exercise. A more serious obstacle was the distinction which grew up between training and recreation first officially stated by the Board of Education in 1901 but still persisting in the title of the Physical Training and Recreational Act of 1937. The issue of Circular 1445 "Physical Education" on 13th January 1936 was the result of a growing concern for physical education and was not confined to schools but indicated the ways in which the Board of Education was prepared to help in promoting physical education.

The recommendations of Circulars 1445 and 1450 were not enough to satisfy the growing concern for national fitness. Schemes were afoot for physical training and recreation. Furthermore, the Government White Paper on Physical Training and Recreation in 1937 stressed the training and therapeutic side of the Bill.

The work of Rudolf Steiner must be mentioned if one examines the ideas which are contained in Laban's books published in the 1920's. Sometimes referred to as an anthropomorphist, but mainly regarded as a social philosopher and educationist, Steiner was a disciple of theosophy, that branch of philosophy professing to attain to a knowledge of God by spiritual ecstasy, direct intuition or special individual relations. He established a system of movement

with celestial and occult ideas. He can be linked with Laban in that they both were influenced by ancient doctrines of harmony and flux (Curl, 1967). Most of Laban's early work has reference to ritual and culture, there is overlap in the thoughts of Laban and Steiner.

Steiner was in education long before Laban and used the art of eurhythmics for therapeutic purposes. The activities were practised and appealled to people interested in less stereotyped movement. Steiner and Laban had both aroused interest in this notion of expression and the individual; the emphasis being more on virtuosity than what is actually evident in the performance.

It is possible to trace a form of movement education throughout the history of the growth of physical education. The early years were movement-centred and work was developed in schools by workers like Diana Jordon, Margaret Dunn and Elsie Palmer. They were working mainly in Lancashire and Yorkshire. It is evident that in the development of the games tradition and in the unfolding of the various gymnastic systems, movement education was an included element. It is outside the brief of this study to indicate the relationships. Cheffers and Evaul (1978) suggests that the importance of the discipline of movement "lies in helping the individual select the most efficient and effective form of movement to help (to) meet personal needs" (p. 18). This research identifies some of the growth areas in Laban's life. Laban himself had observed that movement was received and studied through professional application and his early work in Europe had begun to develop into a variety of professions. Cheffers and Smith (1978) describe the work of a physical therapist who incorporates play movements in helping young children to rehabilitate. Whilst an individual schedule is desirable for any child for the mentally

retarded it is essential (Drowatzky, 1971). Drowatzky has so aptly stated,

> "the education of mentally retarded individuals has frequently represented little more than baby sitting" (p. vii).

Although general developments in special education have produced teachers and programmes that help those children to reach their potential and engage in activities, not all curriculum areas of education have reached such a level, physical education and movement training being particularly barren. Hollis (1976, 1977), a physiotherapist, believes that interest is evident in special schools; class teachers; physical education teachers and nursery nurses are beginning to be involved in the remedial aspect of movement and exercises which are taught to individual children in physiotherapy sessions are being extended into other curriculum areas. Hollis says that previously insufficient attention had been paid to the recognition of immature movements and delayed physical skills. The term 'mental retardation' is used in an attempt to classify a particular group of handicapped persons. These persons are by no means homogeneous in behaviour, intellectual function, physical characteristics or abilities, developmental levels, or other characteristics.

A great variety of different kinds of activity use and make reference to movement. To the musician it has one meaning, to the painter it implies something else, whilst to the teacher of dance or physical education it has yet other distinct connotations. Underlying all these differences is a fundamental unity, for the word "movement" implies that something is happening (Langer, 1953 and Thornton, 1971).

In order to pinpoint Laban's contribution to movement and dance it requires not merely a chronicle but an explanation of events and an unravelling of the interconnections between them. To appreciate the influence of Laban to Physical Education in England and the diverse cultures, the works of Fokine, Duncan, Wigman and Jooss are studied.

Nevertheless, the turn of the century had been a period for the rethinking of dance forms; Isadora Duncan, an American dancer and Laban in Central Europe were both working independently to change established dance forms and education (Kirk, 1962). Isadora Duncan's revolt (1877-1927) was against the unproductiveness that had been upon the Ballet of her day. She made her own kind of dancing and was recognised by Fokine and Diaghilev. This style of movement and dance so divorced from life without doubt influenced Laban's thinking and was described by Magriel (1948) as

> "an embodiment of the American spirit, fearless, honest and direct, with a burning love of freedom she passionately believed in dancing as the great art." (preface)

The whole culture and artistic atmosphere of Europe and America was at this time ripe for a continuance of her pioneering work.

Isadora Duncan's writings refer to dance as an art and as a new educational force. She was influenced by trends as varied as the New York "Ashcan School", the Russian Imaginism and Parisian Dadaism. Fokine was influenced by Isadora Duncan's ideas and he in his turn influenced the Russian ballet and movement.

Laban's early interest in movement was sharpened by his reaction against the classical ballet technique which ignored the freedom of human movement. Laban was born almost at the same time as Isadora Duncan, and it is obvious that the same reaction to the artificialness of dance as a stage art was experienced by both. Isadora Duncan had followers who tried to evolve systems of natural movement, but these also resorted to set steps and gestures. Laban searched and reached some understanding of the quality of movement and examined its dynamic and spatial attitudes.

> "Von Laban substituted for the stylised line and attitudes of the classical ballet movement as a natural means of expression, having its full range between the two extremes of complete tension and complete relaxation, and he restored the male dancer to his essential role, contrasting the male elements of energy and impulse with consequent heavier movement with the lighter female elements of gliding and floating..."
> (Lynham, 1947, p. 167).

As previously indicated, if there is one aspect of Laban which emerges more strongly than any other it is his understanding of people. Laban did not attempt to change people, but he accepted them as they were.

Winearls (1968) reinforces that "the word dance will mean different things to different people, but all will agree that it is concerned with moving in a pattern of rhythmic order" (p. 139). Winearls believes that whatever method or system is employed, the final requirement is that the child should be shown how to use that system to advance his own growth.

In the years before World War 1, Laban organised dance festivals and was a member of an art group in Northern Italy. It is his involvement with Dadaism, however, which illustrates the real importance of Laban in the arts at this time. The Dada movement was an artistic revolt against art. "Dada" quickly became a watchword as it questioned current values. This trend could be compared to present day hippies, drop-outs, fringe and underground groups (Willett, 1970; Foster, 1977).

Willett investigated the influences of Rudolf Laban and believes as does Foster that:

> "ecstasy was the essence of expressionism with which Laban was associated through his involvement in Dadaism which grew out of the expressionist movement," (p. 43)

and evidence suggests that he encouraged them to develop their potentialities. There was no pre-Laban mould. Furthermore, this discussion has not been illuminated by the tendency to adopt an "either/or" approach, to be either "for" or "against" Laban. But there is no need to think in terms of accepting or rejecting "in toto" a theoretical structure which, though suffering from a variety of confusions, provides the sort of basic essentials to the study and practice of what ultimately must be recognised as an aesthetic form of understanding. Laban in his theoretical interpretation has a kind of creative untidiness. Therefore, movement experience becomes increasingly diversified as contrary ways of directing and structuring it are propogated according to the particular purposes which it may serve (Redfern, 1982).

The greatest impact that Laban's work made in England was in

education. He came here at a time when activity methods were replacing formal instruction wherever possible and physical education had to make the same adjustment. Through the untiring work of Lisa Ullman, the Education Authorities accepted his basic classification of movement analysis as the foundation for the teaching of special technical skills and modern dance. It is also possible to show a sympathy between Laban and Rousseau. The latter thought it was through movement that the child learned about himself and that through movement he discovered the concept of space. They are in sequence but whether Rousseau directly influenced Laban is conjecture. Similarly, Guts Muths, in Germany, stressed the importance of linking physical and mental activity; an idea found throughout Laban's thinking. The relationship here is just speculative as that suggested by Rousseau. In the same way, Pestalozzi's 'natural' as distinct from 'art' gymnastics, (where the emphasis was on the development of the innate capacities of the child) can be linked with Laban ideas.

More direct links can be established with Froebel. Basically, the idea is that:

> "It is from the natural "outgoing" of the child that we develop the art of movement, an art within the capacity of every individual, and an art which is capable of fulfilling Froebel's principles." (Russell, 1958, p. 16).

This view of Russell's makes fundamental assumptions concerned with the nature of basic human motivation which would be unacceptable to some. It is, however, a view widely accepted by progressive educators. Froebel's concepts are similar to Laban's ideology. Laban believed that this harmony was evident in human movement. Curl (1969) and

Russell suggest that Laban and Froebel both had value and idealistic philosophies being influenced by German idealists. The assumption is that these attributes were in some way less than desirable but is this necessarily so? Foster suggests that the position is probably that Laban was aware of Froebelianism and found himself sympathetic to the basic ideas.

Comparisons can be drawn between Ling and Laban. Both pioneers were influenced by the natural philosophy of ancient Greeks and were concerned for the individual and the recognition of body and mind as a unity. The development which has stemmed from Laban could not have taken place without the liberalisation which occurred through the influence of Ling.

Curl (1968) argues that Plato and Pythagoras had a significant influence on Laban's theories. It is debatable whether the emphasis which Curl places on this is justifiable. Laban uses Pythagorean ideas but these are not the main basis for his thinking. Comparisons can be drawn between Laban's use of ideal forms and Platonic theory. However, this is a concept which constantly runs through the work of many men who were associated with high idealism and philosophies of nature. Curl attributes Laban's ideas almost totally to Platonic and Pythagorean bases but this is surely a narrow view. Laban is more 'a man of his time' whose ideas represent a whole spectrum of current thought and who developed his ideas from this as well as drawing from earlier ideas, Laban must be seen as part of a narrow movement owing something to Plato but he was not a narrow Platonic disciple.

Most commentators reporting on Laban have suggested that

Laban's work owes something to Delsarte. Delsarte's teaching was the first to reveal what modern dancers call tension and relaxation: thus it was he who laid foundations for the German modern dance which in turn strongly influenced American modern dance (Shawn, 1963). Claims have been made that Laban studied with a pupil of Delsarte but the pupil is not named (Dutoit, 1970). There seems to be a case for accepting that Laban was influenced by Delsarte, the most important fact being that some of their terminology is similar.

Hans Richter, an art historian and himself a considerable artist, details the emotional involvements and attachments of a variety of people including Laban. Leeder talked about Laban and the Da da-ists and his comments generally support the picture of a man in search of a new art form and seeking new media for expression, (Verkauf, 1957; Winearls, 1958). He links painters like Picasso, Modigliani, Kandinsky, Ledger and Matisse with the Dada group. Several European artists created art forms and outraged the complacent neutral Swiss public. The Dadaism lasted until 1922 and greatly influenced the artists surrealism. It seems impossible for Laban to have mixed in company like this without being influenced by the ideas with which they were concerned. Similarly, as a respected member of that group one can understand that he influenced the others. So close was Laban's association with Dada-ists that his pupils were performing in several scenes at the famous soiree in Zurich on 9th April, 1919 which erupted into an uncontrollable riot. The involvement in Dadaism shows Laban's experimentation with multi-media, inter-disciplinary artistic ventures; these interests and strands were often reflected in his later work in Education in England.

Laban's Dada period provides us with a microcosm of the life he led, his contacts, the innovative and research nature of his work, the times and the man and his search for a satisfying art-form. However, drawing together the mystical elements of Laban's own mysticism is of some academic interest.

Jooss, Leeder and Lisa Ullman worked with Laban in Germany. Laban was accepted into this rather intimate atmosphere as a unique figure. There is great significance in the time which Laban spent at Dartington. In 1931, Leonard and Dorothy Elmhirst had founded Dartington as a trust which offered both commerical and non-commerical activities concerned with the arts. The organisation flourished and drew artists from several disciplines, many of whom were exiles from totalitarian oppression. As early as 1933, Jooss had to move from Germany. He desperately needed a base for himself and his group. The Elmhirsts were looking for an artist of international standard and experience, with a reasonable understanding of dance (Bonham-Carter, 1958). It was therefore of mutual benefit that in 1934, Jooss came to Dartington. Between 1934 and 1939 Dartington saw dancers with international reputations come and go. The Ballet Jooss was acquired by the Dartington Trustees. Michael Chekhov, nephew of Anton, directed the theatre studio and such painters as Mark Tobey, Cecil Collins and Hein Heckroth, the sculptor Willi Soukop, and the potter Bernard Leach were based there, all of whom were supporters of self discovery in their individual disciplines. Laban was accepted into this atmosphere and was looked upon as an innovator.

Michael Young (1982) in his book "The Elmhirsts of Dartington: the creation of an utopian community" conveys in the sub-title the basis of Leonard and Dorothy Elmhirst's vision. However, the naive idealism of the founders tried to put into practice the

beliefs that mankind can be liberated through education and that the development of the arts can transform a society impoverished by industrialisation and secularisation. It is not surprising that Laban joined this "utopian community" on his arrival in England. Under the influence of Rousseau and Dewey, the founders based their school on the principle that education be conceived as life and not merely as a preparation for life. Young, the author of the book, is himself a product of the school. The arts life of the school was based on Coleridge's dictum that "deep thinking is only accessible or attainable by a man of thought and deep feelings"; deep feelings were certainly well nourished at Dartington. How many schools have had in "extended residence" a world famous ballet company (Ballet Jooss)? Or had Imogen Holst to stimulate music activity? Or had Bernard Leach to advise on pottery? The Elmhirsts and Laban believed in the arts as a process of discovery; doubtless at Dartington the pendulum swung somewhat in the libertarian direction. Dartington Hall as described by Young began in 1926, and has been the pilgrim centre for educators and artists.

Tolstoy (1898) writes that "art is not a handicraft, it is a transmission of feeling (that)....the artist has experienced", nevertheless, the point which is being made is that each person has a unique way of moving and that this style gives vital cues to their movement performance. (Tolstoy as translated, Maude.) However, the retarded child given direction is likely to find that movement can be an appropriate vehicle for growth, development and learning (Barnard and Erickson, 1976).

The system used by Laban could be classified as "open ended". Laban's arrival in England coincided with the period of physical training and recreation (previously referred to in Circular 1445). The progress of physical education in elementary and secondary schools had not been spectacular in

the seventeen years following the end of the war in 1918. Nevertheless, the achievements of professional organisations such as the Ling Association and the Secondary Schoolmasters Physical Education Association influenced the growth of physical recreation and had prompted the Board of Education to give some positive encouragement and guidance to physical education.

It is debatable whether Laban would have had such a direct and immediate educational impact if the Dartington ethos had not existed and if he had not become part of it for a time on his arrival in England. Dartington had strong links with the main educational innovations of the time and has continued to provide a platform for progressive innovation in Education and particularly the arts. Laban's contact with the arts and artists in many disciplines, his links with the Dada art movement, his dance schools and his own lively personality reflect his interests and way of life which was his before he came to England. Laban's work in Germany between the wars set the scene for many ideas which have been associated with this English period. It was during this time that contact was first established between Laban and those educationists who were forerunners in projecting his ideas onto the educational scene. Here, it is appropriate to show that links developed from Laban's early English students which flourished when he came to this country (Munro, 1972). Sylvia Bodmer joined him in 1920 from Zurich when he was working at Stuggart. She was later responsible for the movement choir at the Frankfurt Opera House. (The term "movement choir" was coined during this period, but in fact the principle had been established before the war, at Ascona.) (The reference refers to Laban's work on the Monte Verita in Ascona which extended over a number of years, not only before World War 1 but also during it.) By 1923 Laban had established dance schools in Basle, Stuttgart, Hamburg, Prague, Budapest, Zagreb, Rome, Vienna and Paris. Each of these was named

after Laban and was directed by a former Laban master pupil. As a result of the Laban impact, a centre was set up in Essen where two of Laban's former pupils were developing activities, Kurt Jooss and Sigurd Leeder were joined by Lisa Ullman. In 1930 Laban moved to Berlin to become director of the Allied State Theatres, a position he held for the next four years. The influences of Laban are evident from 1932.

Laban's ideas have opened the way to another viewpoint; from Germany came Jacques Dalcroze's eurhythmics and from Denmark Helle Gotved and others who worked with music and movement for adults which was inspired by the Medau system. The idea here is for the music to follow the pupils' movements in the interaction between music and movement, so Helle Gotved created possible teaching approaches. The Dane, Astid Gøssel introduced a kind of rhythmics which from primitive movement patterns leads on to natural relaxed movements. Dalcroze was contemporary to Laban and many comparisons can be drawn between them. There were close links between them and they had mutual acquaintances. Susan Perrotet, Mary Wigman and Kurt Jooss were all pupils of Dalcroze and, later, were very supportive of the view that gymnastics, movement, dance and creative expression form a focus for related ideas.

The eurhythmics of Jacques Dalcroze were practised in England from about 1912. Dalcroze's work flourished and by 1920 the eurhythmics movement which centred on movement and rhythm had entered the curriculum of many private schools and became a recreative activity for women in clubs and health centres. It seems that there was genuine interest in eurhythmics and it was looked upon as supporting "physical training". The Dalcroze system at this time received full support from Miss Edith Clarke when she was Staff Inspector of Physical Education (Armytage, 1972).

The writer's main consideration is the application and interpretation of Laban's theories in education in relation to the retarded child and his movement training; an understanding of Laban's theories are necessary as they are aimed at stimulating an awareness of the body as it is displayed through movement. Laban believed in the accuracy of responses and maintained that it is a diagnostic vehicle for the understanding of activity. However, the writer puts dance into place historically, giving a brief view of Laban in the educational context and so to link with the Twentieth Century.

The aim here is to focus on dance centred movement education which was apparently pre-Laban which had some of the elements seen in his work. This change of emphasis in physical education from stereo-typed physical training to a more child centred and individualised developmental approach is particularly meaningful for the education of the mentally retarded child.

Laban moved from Dartington Hall shortly after the outbreak of the Second World War to London in 1940. It is speculated that the break from Dartington Hall hastened Laban's journeys. Lisa Ullman and Laban worked together and eventually Laban was asked to investigate the possibility of applying movement to the industrial process and became involved with a Manchester industrialist, F. C. Lawrence. Laban's visits to Manchester were so frequent that he decided to move there and his association began with Lawrence.

As a consequence of the increase of Laban's influence and the shift of emphasis by the Ministry of Education the approach to physical education in the primary school, even before the war, was much less formal than the secondary school but even the 1933 syllabus maintained that "emphasis is laid upon good posture, both in rest and action". (London County Council).

The years between the publication of the 1933 syllabus and the next official Ministry publication in 1952 saw a review of the State Education system. It was during these years that Laban had arrived in England. The historical development of physical education is beyond the scope of this study, yet some examination of the practice of physical education is required if the influence of Laban is to be understood and appreciated (McIntosh, 1968). The social climate at the beginning of the twentieth century was one in which "little children were to be seen but not heard" and when they were seen they were seen as little adults. This latter point coloured educational thinking. Dewey (1925) in his early work "Democracy and Education" paved the way for rethinking because it was this analysis of the education process which gave rise to the progressive education movements - movements which brought the child in to the centre. Dewey launched a frontal attack on formal classroom instruction. In the years since Dewey's first book, times have changed. "Learning by doing", "discovery methods" and project teaching are no longer revolutionary, but orthodox, and, with the educational emancipation of the child for which Dewey campaigned, a social freedom has emerged; children are heard as well as seen and even listened to. Dewey's concern was for the child as a person as well as for his educational achievements. Munrow (1972) believes that while the individual child is at the centre of his own particular educational experiences it is not enough to regard education as a process of surrounding him with opportunities from which he can select or which he can reject. "Directed activity in fact is education" (p. 22). Munrow believes that child centred education which, in his view has often been misinterpreted, has had an influence on post war developments in physical education.

So while the individual child is - indeed must be - at the centre of Laban based movement, it follows that a brief examination of physical education is necessary in order to show

how the authorities scrutinised the syllabus.

An examination of physical education in the 1940's and 1950's in this country indicates that the authorities believed continually and accepted the conclusion of the Board of Education (1933) that "physical education embraces all types of physical activity" and that the aim should be to produce all round skill. The other standard by which the merit of a physical education was judged, at least at school level, was posture. The annual report of the Chief Medical Officer of the Board of Education in the 1932 "The Health of the School Survey" dogmatically stated that the ultimate criterion of the success of any scheme or system of "physical training is the carriage, mobility and equilibrium of the human body" (R. C. M. O. 1933, p. 48 (cited in McIntosh, 1968)).

The outbreak of war in September 1939 brought disruption to physical education and recreation. The administrative change, however, prepared the way for a decline in "official interest" in the therapeutic element in physical education and a decreasing emphasis on the medical value of physical exercise. The change was accepted not without regret by some H.M.I.'s who had greatly appreciated the close association of the medical branch of their work. However, the pedagogical changes in physical education which were already taking place and were to gather momentum after the war did not find their inspiration or basis in medicine and the new administrative arrangements probably made for their smoother and more rapid development.

It is only possible to attempt this review by referring to texts which were used by teachers and thus deduce the movement experience of children. In November 1954, a reprint of the London County Council's Syllabus of Physical Training for Boys in Secondary Schools (1933) contained a paragraph which

could be regarded as a summary of the sort of movement experience which was regarded as normal at that time.

> "The material used . . . . . both free standing exercises and exercises which require portable apparatus.... if the apparatus is not available or if the teacher is not qualified to handle this type of work, then only the free standing exercises.... jumps, simple agilities and games should be attempted " (p. 5).

This publication would be directly felt in London Schools but it is speculated that many copies of it were used outside the London area. The London County Council felt that a daily period of physical activity was to be central in all its schools. An examination of the tables shows that the exercises are grouped under anatomical headings. The teacher was to focus "on the essentials of good movement and not on the less important fact of class synchronisation" (p. 16). Other texts published between 1948 and 1954 conformed fairly generally to the same pattern. The years between the publication of the 1933 Syllabus and the next official Ministry publication in 1952 saw a reappraisal of the state education system. It was during these years that Laban arrived in England and "The Art of Movement Studio" was established in Manchester; it is evident that Laban's ideas were contributory to "Moving and Growing". This book could be regarded as giving Ministry approval to child orientated physical activity which emphasised self expression, movement awareness and the importance of dance in the primary school. At this time at secondary level, the practice of physical education had been widened to include many more activities, recreative and competitive. The emphasis was still upon the training and coaching of good performance.

Most of the authors who have written on the subject of movement within the sphere of education admit to the influence of Rudolf Laban. All their books were published after 1945 with the exception of one by Diane Jordon which was published in 1938, the year that Laban came to England.

Taking World War II as a dividing line the writer has tried to indicate contrasting situations, on either side of that dividing line, in schools, in society and in the theatre. There is little doubt that Modern Educational Dance has made very substantial headway and gained general acceptance in the primary schools. There is a reasonable supply of teaching material and varied teaching approaches. The "younger child's foremost need is for effort exercise" (Laban, 1948, p. 24), and "dance gives an outlet to that desire for general body movement which is spontaneous in growing children" (Russell, 1954, p. 54). The availability of material and the general readiness of the child to utilise it, aids the teacher's task which is also more wieldy because his aims are general and not specific. He is not concerned with training dancers, with producing skilled technical performance... (but) "with giving scope for discovery, imagination and intuition" (Russell, 1966, p. 17). Russell (1961) accepts this fact, the problem is sometimes that the material lies in the person of the dancer (the teacher).

The Art of Movement Studio, because it emphasises the universality of movement forms, deals not only with students and teachers of dance, but also with teachers of movement, gymnastics as well as those intending to work in therapeutic or industrial fields (Laban, 1954). Jordon (1967) claimed that it is the educational relevance of "movement" in which most educators are concerned.

Modern educational dance, drawing as it does on a whole series

of bodily movement, and rejecting that there is any gesture or posture that may not be appropriate, is able to develop a wide variety of subject matter. It is from this kind of standpoint, that for example, Preston Dunlop (1963) makes the statement:-

> "The aim of modern educational dance is not to learn one way of walking but to experience many ways, not one kind of posture but many so that the body is a versatile instrument capable of being used at will and not an instrument which can do only a limited selection of movements." (p. vi).

However, with the retarded child the greatest difficulty may be in reducing the number of extraneous cues and emphasising the important cues adequately. The second method requires that the retarded child be placed in a situation where he must perform a prescribed movement task correctly.

It becomes apparent that from a recognition of the overriding importance of movement and dance, it is all too easy, but a somewhat dangerous step, to arrive at the conclusion that the practice of dance forms leads to, or even involves skilled performance.

Munrow suggests that the terminology sometimes hindered, or was entirely neutral to the learning situations it was supposed to be assisting and believes that some detraction of technique and of standards of excellence have been a corollary of the general application of what are, in fact, inapplicable movement principles. Munrow does not query the terminology from the point of view of its total validity of the time, weight, space and flow terminology namely in dance training. However, Russell suggests it is after the movement training that development

ceases and the realms of dance tend to be forgotten. Today, the word "dance" is used to describe many different styles of activity. On the one hand it is seen as a highly technical performance art, subject to aesthetic criteria - while at the other extreme it is used to describe any natural and controlled movement. If this experience of dance is structured it seems that it is appropriate in a modified form for the retarded child. McCreesh and Maher (1974) believe that:

> "learning is more likely to take place if a child hears, sees, says and feels and the senses are brought to bear on the learning situation". (p. 14).

Within the retarded child there is a limit to the capacity of the sensory channels, one or more of which may be faulty. If these channels of perception are to be trained, then any weaknesses need to be diagnosed and an appropriate training programme devised to help the individual child.

Blacking (1983) in his writings on movement and meaning says that making sense of dance is as much a part of dance as performing its movements, because its movements are intended to convey meaning and the interpretation of a dance experience is what ultimately makes dance interesting and effective in human life. Geert (1973) refers to what Susan Langer called a "life of feeling" (Langer, 1953, p. 372), and in a later context he wrote:

> "In order to make up our minds we must know how to feel about things; and to know how we feel about things we need the public images of sentiment that only ritual, myth and art can provide." (p. 82).

For the mentally retarded child the sheer scope offers a "social

revolution", participation and limited goals. The present state of dance is full of diversity because dance is a human phenomenon. It will be impossible to achieve comprehensive knowledge in the context of one academic tradition. What is of special interest is that dance is a special kind of social activity that cannot be reduced to anything else.

The current child-centred approach to education at primary level acknowledges the manner in which mind, body and physical activity are interwoven.

Laban was against a method of presentation but he did see the need for a methodical foundation on which the teacher could base his interpretations of the Laban theories.

> "Modern dance is based on a large range of contemporary movement and the best way of giving the teacher a methodical foundation on which to build up the details of his tuition had to be developed through many years."

> "Instead of sets of standardised exercises, basic movement themes and their combinations and variations have proven to be the most helpful tool for the teacher of the contemporary form of dance."

> "The leading idea is that the teacher should find his own manner of stimulating the pupils or classes to move, and later to dance, by choosing from a collection of basic movement themes those variations which are appropriate to the actual stage and state of development of a pupil or of the majority of the class."
> (Laban, 1948, p. 27).

The focus of Laban's writings is for each teacher to use the movement themes in Modern Educational Dance as the framework on which to build his teaching of dance. If Laban had set down a method of teaching he would have gone directly against the individuality of each person which he had spent his life trying to develop. He wanted people to continue thinking about and experimenting with movement. He wanted his theories and findings to be regarded as a beginning and not as the final definitive word on the subject. Thornton says that Laban himself may not have used a method in the teaching of dance, or movement. Is it then permissible for other teachers of movement to use one? The writer believes that this is the crux of the Laban flexibility as it suggests that the key factors are an ongoing intensive progressive and a personal approach which reflect his theories on the art of movement.

It is intended simply to describe the type of activity used in the teaching of a Laban programme for this study. This form of dance is not restricted to one type of rhythm, spatial pattern, bodily movement or effort quality. The technique is based on Laban's analysis of movement in terms of bodily action, spatial patterns and the dynamics of movement. Even those basic qualities and combinations of these qualities known as "efforts" can be studied at a very complex or simple level (Preston Dunlop, 1963). From such experiences a child may be led to select and refine a movement and produce his own dance. (Appendix II details the content of the programme for this study which is described in Chapter 3.)

It is common practice to base dance lessons on Laban's sixteen basic themes. Laban and Preston Dunlop interpret and develop the materials at a variety of levels.

In general terms a Laban orientated programme aims at developing in each child the ability to identify, discriminate, recognise and apply the effort qualities in movement.

The strength of a Laban based programme is that movements initiated can be in the form of play. The specific methods employed in terms of the general techniques used, include the activity methods and examples of the child centred approaches of experimentation, exploration, problem solving, following and imitation; and the teacher centred techniques of assistance, demonstration, and direction. In movement education, experimentation and exploration are the fundamental issues. Furthermore, the writer agrees with Barnard and Erickson (1976) that the process of play and movement exploration with the retarded child requires sequenced and orderly teaching. The specific approaches discussed are those techniques which have grown out of the movement work of Laban, and in particular Mosston (1965) selects from these approaches for movement teaching.

Kephart has developed particular approaches which can be adapted to these methods. An example of the use of exploration and experimentation is to have the children find out how much space they can fill when lying down, standing up, taking one step; then how little space they fill, how far an arm or leg will reach, bend, move sideways and so forth. Problem solving in movement as in all other areas requires time. Following and imitating techniques can be child centred or teacher directed. For example, the game of "Follow the Leader" employes the technique of following. If one child experimenting with different ways to perform a task attempts to perform in the same way as the child ahead of him, he is using the following technique and uses copying as a guide to his experimentation.

Assistance is the first of the techniques which are teacher centred, a readily apparent example is helping the child to keep time to the beat. Another example is giving "that little push over" at the proper moment to effect completion of a roll for the child, it is assistance. Also, telling or gesturing to the child when attempting a performance that what he is doing is correct when he comes out with the proper and correct placement of a part or the pattern of movement, is assistance. Assistance is primarily physical but can be verbal and non-verbal as well.

The writer is influenced by the work of Cratty and Kephart; their approaches to movement can be integrated with the Laban interpretation.

Demonstration includes any performance by a teacher or a child designed to give another child an idea of how, as opposed to an exact or "correct" way, to do something. Demonstration does not have to include the total movement but can consist solely of that part necessary to help the child perform. For example, to suggest the idea of walking when levels of mattresses are raised, the teacher need only gesture to the child that he lifts his foot higher, that he steps upwards at that point. The teacher need not actually step up "the steps" himself. If the partial demonstration fails to be enough help, then full demonstration is used. Evidence of this technique of demonstration is observed in the training programmes when adult professionals can be cited, reinforcing the child's pattern and producing repetition in the task performance with a child. Volume II includes a video-tape which illustrates the progressions of the sample undergoing the structured training programmes. Although it is impossible to separate these parts during the performance of any one activity, it is important to understand their comparative influences to the child's achievement.

Direction is probably the least used of the primary techniques for movement pattern education. It is used when a desired movement action has not been obtained. The technique of direction is most frequently seen in the use of cues to the child, to help him perform the task more correctly or vary and expand a movement. Whenever possible, direction is used within the framework of helping the child to achieve a certain movement pattern. An example of such might be telling a child in what position to point his feet or his body for the beginning of a sequence. Cues and hints are appropriate uses of the technique of direction.

Manipulation is a physical direction of movement. Manipulation as a technique implies a certain amount of force by the teacher to overcome resistance or inability to move on the part of the child. Where the child is willing and the teacher merely helps him through the task, the technique is assistance and not manipulation. An example of manipulation is holding the child's arms at his sides while pushing the child over in a log or sideways or pin roll along a mat. Lifting the child onto a piece of apparatus such as a stool, or putting him half way up some foam mattress at raised levels are not manipulation but simply methods of establishing problem solving situations. However, manoeuvering him through the steps of climbing up and down or placing his hands and feet to hold onto and move onto the stool are manipulation. The technique of manipulation implies externally applied physical direction. Manipulation should therefore be designed to emphasise tactual and kinesthetic clues. The child should be manipulated through the movement boldly. If the task is for the child to place his hand on his shoulder, it is necessary to grasp his wrist firmly, move his arm quickly into place and place his hand on his shoulder. By this means the emphasis is first, the initial position of his arm from his wrist, second, the movement as his arm is moved and

finally, the new position as the hand is pressed firmly to his shoulder. On the other hand when "the teacher" grasps the child lightly and gently and moves slowly, it seems that the tactual and kinesthetic clues are minimised and lose much of the teaching value of manipulation.

Another technique reasonably unique to movement training is interference. Interference is disrupting or breaking up the child's movement of the moment. An example is placing a box or object or another child unexpectedly in the path of a child running or walking somewhere or hopping to a counted rhythm. Interference can be both expected and unexpected. The primary difference between a motor pattern and a skill is that the former is sufficiently flexible to adjust to changed conditions.

For the retarded child sensory systems need to be taught, trained, rehearsed and rated. An awareness schedule can be used to indicate responses to vision, auditory sounds, gustatory, olfactory, memory and attention. This approach schedule was used for some time during the main investigation to discover positive approaches to stimuli, for example: smiles, turns or reaches toward music, smiles when "teacher" (researcher) smiles (social response), turns towards voice from behind. An integrating memory with present stimuli method looks at the familiar responses (turns head or smiles when name is called, obeys gesture command, raises arms in response to outstretched arms) for the retarded child (Wehman, 1979).

The rigour and vigour of some movement and dance serves to re-channel constructively some of the energy which might otherwise be spent in undesirable or destructive activity (Bruce, 1965). In some retarded children the co-ordination may be unbalanced when movement occurs; sometimes it is limited to certain areas of the body while other muscle groups may not be developed or used at all. Holle describes how exercises for

these children usually include a series of motions which involve specific muscles throughout the body. In other retarded children whose motor development may even be fairly advanced in some areas, movements may tend to be haphazard and vague. Kephart describes how tight structure and set routine will help to organise their movements into a definite purposeful sequence. Some retarded children are so involved in their "make believe" world that any straightforward requests to perform or copy exercises are unsuccessful (Hollis, 1977). The motivation in these cases must exploit the child's capacity for fantasy. The techniques are basically dramatic here, using the movements of animals and the movements suggested by the use of objects such as clocks, dolls, drums, hats, masks and scarves to inspire a wide range of muscular activity that can be interpreted as dance. (Appendix I and II refers to a variety of stimulus used in the experiment.) Once some body control is gained, almost all retarded children can benefit from the techniques of group dance. Here, inspired by highly rhythmic, strongly dramatic music, the children find that different movements imply different emotions and they can experience a variety of feelings as well as a variety of muscular activities (Gunning and Holmes, 1973). In short, the concern is not what the child does with the movement but that sensitivity is increased and what movement does for the child is monitored.

Drowatzky (1971) describes how self-expression may also be fulfilled through simple walking activities. He says that "every movement that we make has both spatial and temporal activities" (p. 149). It suggests that rhythm which is present in all motor activities forms the basis of the temporal activities of movement. Consequently, rhythmic activities may be used to facilitate exploration and various other forms of body awareness in the retarded child. It may range from basic beats of the drum, to singing games, a rhythmic musical sound or some musical accompaniment. The addition of rhythm and music to

movement can provide variety, minimise inhibitions and stimulate creative movement. The reader is reminded of the similarities in Drowatzky's interpretations to some of the Laban orientation.

Fundamental rhythms are used to stimulate the child to perform basic movements, either locomotor patterns such as either running, walking, jumping or non locomotor movements such as stretching, twisting or flexing. The rhythmic pattern is formed from a definite grouping of sounds or beats that is related to an underlying beat. Measures with the metre of time are able to provide this underlying beat. Phrasing refers to the group of measures which completes the sequence of sounds or beats. Tempo is the rate of the speed, fast, slow or moderate, at which the beats are made and accents refers to the force of the emphasis given to certain beats in the series of beats contained within a measure. Rhythm is initially acquired by having the children associate the rhythmic duration of various notes with their movement. (Appendix II demonstrates the usage of rhythms and the variety of accompaniment which is explored at the child's level of functioning.)

Carey (1960), Joseph and Heimlick (1959), Murphy (1958), O'Toole (1962) have reported some successful methods of teaching rhythm to children with varying degrees of mental retardation. More recently Dickinson (1976) has been successful with E.S.N. children and the research indicates a positive response to rhythmic teaching. The limitation of Dickinson's work is that none of the teaching links it directly to a rhythmic movement response with the E.S.N.(S) hospital child.

Drowatzky has used a musical basis or a "beat" into activities with mentally retarded children and has incorporated such into programmes designed to teach physical skills to such children.

Success was achieved using rhythmic activities and music to reach children who were previously insulated from class activities. Positive results were achieved whether the instruction revolved around movement and related activities or immobility and relaxation. The addition of rhythm and music to movement, Drowatzky suggests can provide variety, minimise inhibitions and stimulate creativity (Drowatzky, 1965, 1967, 1968, 1970). Drowatzky (1965) summarises research that was established in 1962. This programme was based on the orderly progression of physical fitness activities and basic skills instruction. He reports that the programme was originally planned for boys only, with instruction for the girls after the boys' programme was well established. Improvement in the children's physical skills was evidenced by all ability groups and a daily programme of physical education produced gains in agility and endurance measures.

Greenfield (1965) reported the effects of a structured physical education programme on physical fitness and motor educability of educable mentally retarded children. These children, attending special classes, participated in a ten week physical education programme and were then evaluated by the investigator. He reported that the subjects had the capacity to learn basic motor skills, their physical fitness can be improved and they are able to learn all of the same motor skills that normal children learn. Greenfield also found that the physical education programme had beneficial effects on the retardates' social growth. The significance of movement for early cognitive development is receiving a new emphasis although it is by no means a novel relationship.

There would appear to be more agreement amongst workers in the field, of a significant positive relationship between motor and mental ability if the complete range of mental ability is taken

into consideration. Malpass (1963) investigated such a relationship in normal and mentally retarded subjects. He concluded from his study that the mentally retarded children tended to demonstrate less motor competence and skills than normals of the same age and sex. If Malpass's findings are accepted, it seems likely that motor disability is more likely to be found in retarded pupils.

The Lincoln-Oseretzky test (from which the Stott (1966) test of motor impairment originally derived) has been used by a number of investigators seeking the nature of the relationship between impaired motor and intellectual performance. Sloan (1950) reported a significant relationship between scores made. The group tested, however, was only twenty in number.

The trend in compensatory education programmes is rather to focus attention on basic abilities which enter into a wide range of activities. Abilities are those mechanisms which account for the observed activity. Hence, it would appear that it draws attention to the fundamental importance of early movement experience on which these basic abilities depend.

'Laban did not have an analysis of movement', a view from one of his most distinguished students indicates that in her opinion he produced new lines of thought on the subject of movement (Preston Dunlop, 1963). Thornton (1971) has been able to deduce two principles of movement but he adds that nowhere in the works of Rudolf Laban are his principles of movement presented in a way which makes reference easy. It is a characteristic of his writing that he leaves the reader to make his own conclusion. The principles stated are the interpretations of Thornton:-

1. Movement enables man to realise his physical potential.

2. Movement characterises a man.

These principles attempt to indicate the scope of the study of movement and the open endedness of the theories of Rudolf Laban (Laban, 1950). The shape and rhythm of Movement as described by Laban

> "shows a special attitude to meet the situation in which the action takes place. It can characterise the momentary mood, or the personality of the moving person", (p. 2).

The Plowden Report (1967) commenting on Physical Education states that:

> ..."the aim is rather to develop the child's resources as fully as possible through exploratory stages and actions which will not be the same for any two children", (p. 257).

The concern is that development should occur which springs from Laban's work. Rather, movement implies the full involvement of the learner in a process which is individualised. No system holds all the answers although each approach has something to offer. Here the focus is upon assessment and remediation through movement. Essentially the research describes developmental physical education.

Allen (1970) carried out a programme of training with a group of boys who were regarded as being motor impaired. The Laban movement training aimed at correcting any noticeable deficiencies. Allen and Morris (1970) devised a schedule based on Laban's Principles of Movement and the twelve boys who took part in the study were divided into two matched groups according to their age and motor impairment on Stott's test. The six boys who formed the Control Group received only their normal two lessons each week. The Experimental Group received, in

addition, a movement training programme devised by Allen and Morris for 2 x 40 minutes per week over a period of seven weeks. The programme of movement was based on qualitative aspects. It will be seen that the following four aspects of movement are clearly defined, although inter-related.

(a) The body - what moves,

(b) The quality - or 'effort', how the body moves,

(c) The space - where the body moves,

(d) Relationships - with what or whom the body moves.

At the end of this training period both groups were retested on Stott's test.

From the retest scores of the Experimental Group noticeable gains were recorded on all items. The fact that they received additional periods of physical education regardless of the activity, perhaps also influenced these results. The small number of children involved in the study prevents any firm conclusions from being drawn as to the value of this type of approach. These results, however, are positive and encouraging to support further experiments with this work. The writer takes the broad outline from the three phases devised by Allen and Morris for their programme and interweaves the phases using both a direct and indirect teaching method. For this experiment, the three phases:- vocabulary building, sequencing or sentence building and task orientation were extended for a two year programme (Chapter 3 and Appendices II, III, VII).

The approach is first to identify the problem or types of problems and then attempt to remediate the deficit physical activity by exposure to tasks which deal with sub-skills. A balance between theory and practice has been attempted. Russell (1969)

has stated that:

> "dance can be considered as the primary art because, firstly, it is an expression in movement which is itself the first expression of the human being; because secondly every other form of expression uses movement as its vehicle". (p. 19).

> "The tendency has been, and still is, to fit the child to the learning situation rather than devise a learning experience to fit the child's needs...." (McCreesh and Maher, 1974, p. 20).

What seems to be necessary is that in order to achieve the match between tasks and the learner, the teacher may have to break the task down into component parts, and then present the task to the child in carefully graded sequences. It has been noted already that children tend to avoid tasks and situations which present difficulties to them. In this way, many children do not thoroughly master developmental tasks. Only intervention in the form of instruction will reduce frustration and lead to effective learning.

Intervention must be based upon prior identification of those children who are most in need. Acknowledgement of the problem and a will to action leads to the format of intervention to be adopted. The movement intervention programme (as designed in this study) may be defined as having the aim of developing particular skill areas where the child has difficulties. Deutsch (1960) writes in his view of education experience that:

> "it would seem in the long run that the most effective remedial and enrichment programming would have to follow developmental stages". (p. 88).

Hunt (1969) affirms the view that we are justified in intervening from birth to develop each child's potential. Effective learning, as Hunt and Deutsch have specified, consists in matching particular stages of development and readiness in the child to the appropriate stages on the tasks. According to Lingford (1968), higher levels of motor skill development may be obtained by bringing the natural play skills of the child under the control of the teacher's verbal stimuli and by following a behaviour modification pattern for absent skills. Evans (1968) and Lipman (1963) have indicated the importance of short, accurate and concise directions to retardates. If maximum value of instruction is to be obtained, the teacher must be careful not to present many confusing stimuli and different concepts at one time, in-as-much as the retardate has difficulty locating the pertinent characteristics of a stimulus and is easily distracted. Furthermore, learning may be facilitated if the important characteristics of a stimulus or situation are highlighted or emphasised in some manner.

Although there are several different theories of learning, most investigators agree that motor skills and motor activity are essential for any degree of educational achievement. For the retarded child motor skills form the basis for self-help and safety activities, assisting in the development of a favourable self-image, and help the child to receive some level of independence. Motor skills must be taught in easily understood units that are later integrated into a meaningful perception (Cratty, 1977). While enthusiasts have articulated "solutions" based on the particular kinds of motivation, it seems clear that any adequate strategy for dealing with the problem must take account of the diversity of human maturation, and with the retarded child that is, the individual needs. Teaching styles at the early stages involve the use of contingency reinforcement procedures accompanied by the normal prompt and fade

techniques; one to one teaching is essential. Jordon (1967) writing of the expressive movement of the young child states that:

> "it is easier to recognise the variety of children's actions and movements than it is to understand what they express, yet movement is the only language by which they can express and communicate what they feel" (p.20).

Normal children learn many motor skills spontaneously by observing other children at play. Retarded children appear to have only limited ability in learning motor skills through this incidental means (Tansley, 1960). Moreover, the retardate's functional level is considerably different from either his chronological or mental age. Hence, the activities selected for use in his physical education programme must be appropriate for the level at which the retardate functions. It is consistent with current theoretical and methodological positions to investigate the possibility of developing communicative behaviour in language deficient children. The writer (Lishman, 1977a) found within a short movement programme that the language deficient children did begin to communicate after a twelve week training programme. Jones (1979) explaining the rebus system of non-fade visual language describes:

> "the three fundamental skills that are required are visual attention, visually directed reaching and prehensibility" (and that) "experience has shown that children who previously have been quite mute have begun to vocalise" (p. 4 and p. 6).

This fact is evident in language and movement studies of retarded children (as reported by Jackson, 1974). It is easier to link the developmental needs of younger children to movement than it is

to establish a case for older children. There is a body of knowledge from psychology which can be used in support of Laban's principles and their application to education (Piaget, 1950). In movement, emphasis is given to experiencing the component functional and dynamic elements of a skill rather than to the teaching of the skill. In this way the child in the programme is able to develop the range needed for organising, interpreting and manipulating the object world meaningfully and adequately - the very functions of motor generalisation. It is Kephart's feeling that motor generalisations provide us with a fundamental perceptual cognitive structure which in turn allows perception to take place. Component elements are refined, experienced and gradually training penetrates and internalisation takes place, and ultimately, the reintegration of the basic sensory motor modalities occurs.

In the various separate research of Barsch, Cratty, Frostig, Getman and Kephart the importance of movement as it relates to total development is often stressed. It is apparent that regardless of one's personal style of expression one must be flexible if one is to meet the challenges of a constantly changing environment. The physical experiences begin with the articulation and flexibility of the body which has the functional ability to articulate in all directions. Specific work in the area deals directly to affect control, developing the ability to sequence and conceptualise. The goals of this child centred movement approach help the child to identify and experience his body boundaries. Furthermore, in mastering the dynamics of moving and expressing his feelings in order to strengthen the self-concept, the retarded child will be helped.

Hutt (1974) clarifies the distinction between human action and human movement. It is the overt actions that are defined by Alston (1974) as actions that involve and give a performance publicly of observable bodily movements. Hutt writes:

> "Behaviour is not movement and to specify an action in terms of muscle activity or extension of limbs is not specification in terms of movement .... it is unhelpful to describe the activity in terms of discrete movements such as lateral displacement of the fore-arm. Identification of the motor constituents of a behaviour category is by no means the same as using those movements to reconstruct the behaviour". (p. 503).

Whilst it is feasible to study or appreciate human movement in context of the activity, for example the movements made while bouncing a ball, or by children jumping from pavement square to the kerb, it is clearly also possible to study or look for the significance of the activity itself independent of the movements involved.

The dichotomy elaborated reflects the progress of a new field of study (Brook and Whiting, 1972). Such information is of interest to aestheticians, biomechanics, choreographers, educationists, paediatricians, psychologists and other students of human movement. Having said this, the suggestion is made that the primary interest in this field of study by the educationist concerned with development of the retarded child will be the significance of movement for development in general - cognitive, physical and social skills. With the older retarded child (both in chronological and maturational terms) such a concern shifts towards the significance of particular activities. The perceptual motor theorists (Kephart, Getman, Barsch and Doman Delacto) tend to emphasise the activity and do not take into account the significance of the movement. Cratty is more cautious in his judgement and Sherbourne (1975) supports the Laban view of movement.

The importance of early movement behaviour is reflected in

Piaget's (1955) hierarchical stages of cognitive development. It is Piaget's belief - based on extended observation - that for cognitive development to take place it is necessary for the schemata which would normally be developed at each stage to be acquired before progress can be made to the next stage. It will be realised that the sensory motor stage for Piaget extends from nought to about eighteen months of age. It is characterised by the exploring of concrete objects by movement and establishing the permanence of such objects. Jackson (1974) puts a similar emphasis on pre-language experience and writes that the period before language is one of the most critical segments of human development, as, during infancy, the basic human motor skills are established, perceptual development is virtually completed and the roots of the cognitive skills are laid.

It is appreciated that in order for any skill to be acquired, "the individual must inherently have the potential" (Whiting, 1971, p. 76) and the environment must provide the opportunity for that particular skill to be developed.

The question in need of elaboration in the present context, is the significance of movement for the development of particular abilities and how movement experience might be constructed with this aim in view.

What is being proposed then is that movement experience in its widest sense, is the basis on which later development of all kinds, builds. It draws attention once again to the fundamental importance of early movement experience. Other studies (Deutsch, 1969; Sutherland, 1959) suggest that the first consideration is an analysis of the child's ability to respond to form. Fleishman (1967) differentiates between 'ability' and 'skill'. What one must be aware of, is in attributing too much to movement per se for, as Doll (1966) suggests, there is some feeling that through some occult process transfer of training occurs with general improvement in non-motor areas.

A number of workers in the field of child development give motivation as another line of approach to the problem of movement. Hunt (1961) for example has attributed several incidences of marked retardation in children to the homogeneity of 'input' during the early years. Early tactual experience with the mother together with auditory and visual experience and gross movement of the arms and legs serve as base line information on which differentiation of bodily structure and function is based. The more severely retarded children appear to have consistently lower performance and in complex tasks which require more learning, the disparity between the performance of retarded and normal children is increased. Motor skill instruction might be included as a basic element of the physical education programme. In order to look at the position more positively, Reynell (1976) indicates that:

> "Rigid programmes designed to include all handicapped children, or even one category of handicap, are not suitable when there are so many personal and individual variables to consider. The basis of planning must first of all be a thorough understanding of early development." (p. 309).

While the normal sequence of development may not chart precisely that of the handicapped child it does offer a guide to the teacher in her efforts to select and structure a suitable programme. The most severely retarded individuals are capable of some degree of learning such as lifting an arm in response to a stimulus. To illustrate further, Levin and Levin (1972) consider music to be an important tool in conveying the primary skills of early learning that is fine and gross motor activities, sequencing, limit setting and developing laterality. Rhythm was thought to be an appropriate starting point because it is one of the most fundamental elements of music which affects man. While the idea that a sense of rhythm is

strongly inherent has been challenged by Hickman (1968), none-the-less many children and adults are attracted by musical rhythm and can relate to it.

Today, recognition of music's contribution to work with the handicapped has led to the development of music therapy. Alvin (1966) defines it as "the controlled use of music". She has used music in the treatment, rehabilitation, education and training of adults and children suffering from physical, mental and emotional disorder. Erickson's (1970) definition bearing on the educable mentally retarded, is more specific, still: "musically elicited behaviour designed to eliminate disorder in the retardate's cognitive field". It is sufficient to recognise that music can have a therapeutic effect on any listener or mover simply because it provides opportunities for emotional release, self expression, verbal and non-verbal communication. According to Gilman and Paperte (1952) the human organism can be stimulated at all levels by tone and rhythm: the instinctual responses; the coordination and bodily rhythm; the imagery and association; and the creative response. With this knowledge it appears that music is most valued for its non-musical benefits. Alvin (1965) views music as fitting into the total curriculum for the educable mentally retarded child. Reacks (1961) is interested in music's role as a means of reinforcing and integrating other subject areas. It is found that music is a feature in a number of curricula for the retarded, for example, Bereiter and Engelmann (1966), Carlson and Ginglend (1961), Connor and Talbot (1964). There have appeared some specialist music curricula for the retarded, for example, Buker (1966), Ginglend and Stiles (1965), Robins and Robins (1963). The aspect of enriched activity is central to the ideas of Carlson and Ginglend who detail activity projects for the young retarded children of six years mental age or younger. Bereiter and Engelmann's programme for the disadvantaged pre-schooler, describes how music is used as a vehicle for teaching language.

Alvin explains that her approach is remedial, a means not an end and therefore is unconcerned with high or perhaps even ordinary standards of achievement. Several activities are considered: singing, playing percussion instruments, also music and movement. Ginglend and Stiles are in favour of dance experiences to develop better locomotion in the children. An educational method which deals specifically with coordinated movement in conjunction with music has been formulated by Robins and Robins. Their approach offers a systematic step by step description of 'rhythmics' which has implications for motor and mental developments of mentally handicapped children. Where a child finds an activity difficult, giving it a rhythmic base can prove helpful. Conversely, where a child has a poor sense of time, repeated execution of simple motor activities in cadence can also be beneficial. Additionally, where such rhythm and temporal awareness can be reinforced through music "some reinforcement is added to an otherwise flat sequence of movements" (Price, 1980, p. 104).

The exploratory programmes in Dickinson (1976) report some measure of success. Dickinson's work is carried out in two E.S.N. day schools where there is no music specialist and no systematic teaching of music. Three differently aged classes were involved at both schools. The children in the age range were roughly eight years to fourteen years and in total sixty children. In considering the basic ideas that were to be used in the programme, the problem arose of how to relate these ideas to the developmental thought levels of the pupils. The emphasis is on sensory motor experiences organised within a structured and progressive framework. Melody and rhythmic activities are basic to Dickinson's programme. Carlson and Ginglend consider that a retarded child must have an understanding of rhythm through considerable experience of clapping and tapping in time to the music. Overall, Dickinson's studies do show that retarded children can respond positively to rhythmic activities.

Ward (1976) recognised that retarded children tend to appreciate music of all kinds, often in spontaneous and unpredictable ways; music appeals to their bodies and emotions, rather than to their intellect. The power of music to communicate can be clearly observed with those cerebral palsied children who have deficiencies of speech. Lowenstein (1976) in describing a programme of work with such children in South Africa, claims that "music is the great motivating factor". Forest Town School is a day school for cerebral palsied children, where pupils receive individual specialised care. Music therapy in the form of remedial movement is taught in the form of a therapeutic programme. Lowenstein has developed the work over eight years and has developed "a series of exercises and movements (a combination of ballet steps, eurithmics and gymnastics) which coordinate with and reinforce the work of the physiotherapist". (p. 2). The remedial movement that is described is performed to music; Lowenstein's approach seems to draw upon strands from a variety of researchers; however, progress and improvement appears to be ultimately achieved. Music improvisation is a way of involving mentally retarded children; simultaneously, the idea of conversing in sound can be extended and developed. Music activities associated with sound offer possibilities. Work with long and short sounds can be related just as experience in rhythm helps the children to become generally more coordinated. Some respond to questions and instructions when they are sung rather than spoken, like "Follow, follow" (Ward, 1976, p. 64). In the same way when children add sound to their own movement, they can do so quietly, so that the sound accents rather than dominates, therefore it does not need to be loud. Wisbey (1980) uses music for the child who is failing; Tansley (1968) in his pioneering work indicated some of the rhythmic activities that can be drawn from music. It is agreed that music education does provide some input. Dembey (1980) takes issue on the subject indicating that music and movement should be valued in their own right, "not as spurious aids in the complex conceptual and linguistic task" (p. 15).

It is with the retarded child that the activities need to be at the level appropriate to the child's stage of development. An associated Piagetian concept is the view that motor action is the source from which mental operations emerge. There are some movement links here. The first learnings of the infant are motor learnings, as the first responses of the infant are motor responses (Piaget, 1951). Later, more complex activities such as perception, symbolic manipulation and concept formation will develop. However, more complex activities depend upon the acquisition of the more basic motor activities. The young child gains his initial information about the environment through his exploration. Such exploration involves movement through space and the manipulation of objects. Both of these aspects are dependent upon motor activities and the ability to control motor responses (Kephart, 1960). If Laban's principles are used in a creative way it will create 'open' systems whose chief characteristic is the ability to change. The ideas of Laban will remain flexible in the hands of all who use them (Laban, 1948). The primary intent of Laban's interpretation in movement education is that the teacher becomes the initiator of movement problems that are to be solved by the child (Thornton, 1971). Movement education is an effective approach to assisting motor development; however, there are times when a skill should be demonstrated and taught in a formal manner. Most educators would concede that physical education is an integral part of the total educational process. Physical activity is an important factor in the learning process; it makes objects available to the child and enables him to learn about himself. From a review of research that has been conducted into the physical education of mentally retarded children, Drowatzky states that many systems of classification of these children have been developed but no one system appears to be completely satisfactory.

It is through sensitive interaction, suggesting, observing, guiding and responding that movement teaching takes place. In dance it

is the movement ideas themselves which generate excitement and enthusiasm. The unique advantage of the Laban approach is that technique and opportunities for movement can be given side by side. This form of movement is not restricted to one type of rhythm, spatial pattern, body movement or dynamic quality. This is not to say that there is no technique as Groves (1981) infers that teachers who believe dance is simply "free" or "movement to music" cannot involve their pupils into meaningful and worthwhile experiences. However, it is true to say that this type of movement is concerned with the individual and his movement participation. There had been great strides in physical education in the early thirties in England. The 1933 syllabus represented a significant forward move in its day, but even at this time Jordon writes that teachers of physical education were questioning the work in which they themselves were participating.

> "The time was right for change and the ideas in question were in line with the more individual, flexible approach characterising change in education generally. The processes by which change took place are a perfect example of how development occurs in the English system."
> (Foster, 1977, p. 95).

In the 1970's there appeared to be a growing realisation that because physical education is a process central in the education of children and unique in its effects, it has an inherent strength and authority. Physical educationalists have frequently been accused of an obsession with the skills and processes. Some of the claims made for its benefits, such as social and psychological, in addition to the anatomical and physiological effects, cannot be proved. However, the concepts of movement analysis, applied by Laban during the 1950's has resulted in a growth of knowledge of the processes of skill acquisition, and a reappraisal of the

structure of the subject and its relationship to education as a whole (Smith, 1974).

## E. SUMMARY REVIEW AND IMPLICATIONS FOR PRESENT STUDY

Movement exploration, or as it is often referred to in the United States, movement education (Mosston, 1966) is one way of promoting the integration of expressive and receptive functions, because movement always combines both. "Integration" as defined by Frostig (1975) "is a characteristic of all motor behaviour, (it) varies in ever-changing ways, depending on the stimuli the organism experiences, and of which it usually is not completely aware". (p. 233). Integration tends to be missing whenever a disturbance occurs in any part of the brain, as all parts of the brain are interconnected. Deficiencies in integration are therefore very frequent symptoms in brain damaged children and both the shifting between sense modalities and between visual and auditory stimuli, as well as memory, may be affected (Katz, 1975).

It appears that language can also be integrated into movement exploration - this occurs when the child has to translate the verbal instructions of the teacher into action when following directions (Konorski, 1967).

With the retarded child it is necessary to first make sure that the child perceives clearly what he should remember and then to make sure that overlearning takes place.

The educator has to be careful not to put too great a memory load on the child and should use frequent reviews which vary in style and mode of presentation, so that multiple associations can be formed and stabilised.

Another reason for the difficulty in forming stable associations is over responsiveness to environment stimuli. The brain has the task of screening the incoming stimuli. This screening is an aspect of perception.

Not all stimuli which impinge on our sense organs can be perceived, integrated or reacted to. Cruickshank (1975) suggested restriction of stimuli as the main curative method. There are alternative methods. One of these methods is the strengthening of the representational functions.

Perceptual training, together with training of representational function, clarifies for the child which stimuli are important and which are not, and helps him to direct his attention.

Piaget has postulated that the outside world can be represented in three different ways: through deferred imitation, imagery and language. The basis of all three of these forms of representation is perception. To learn as well as to remember, it is agreed are various forms of representation of an event.

Deferred imitation is first noted during the second year of life in a normal infant. Imagery, too is first observed during the second year of life, when the normal child pretends, for instance, to eat or sleep. Imagery is a precondition for solving problems and planning actions.

It is evident that deferred imitation and imagery are the result of perception. What has not been observed cannot be imitated; and although imagery does not reflect the outside world as it was perceived originally, it involves arranging and rearranging and assembling former perceptions in various ways. Deferred imitation cannot lead either to problem solving or creativity.

Imagery is the basis of them both.

Play is probably the most important method to train both deferred imitation and imagery.

> "Of nearly equal importance is movement education because no activity requires imagery more than motor planning" (Frostig, 1974, p. 239).

Perception is the tool with which the child builds his world and with which he communicates. Therefore, it can be stated that all thoughts have their basis in perceptual activity and that perception is basic to all other psychological processes. Yet perceptual training is of limited and restricted value when administered without taking into account its relationships with the emotions, with the development of movement, language and thought processes and with deferred imitation and imagery.

McKinlay (1980) suggests that in dealing with the remediation of clumsiness, rhythm can be used to make positive changes such as assisting a child in controlling his impulses, increasing body awareness and providing the physical abilities necessary for efficient movement. Rhythm is treated as an integral and necessary part of all movements. In each approach, directions for variations and problems to solve are offered. The variety of movement increases motivation. Step one, is determining the objective which is based on the knowledge of the individual's needs. Step two, is determining the present level of performance in a specific physical attribute. This step can be done by observation, trial and error or by measurement. This step can be done by the individual himself once he learns the concept of development. The variations and the small steps provide a strong physical motivation for further learning and accomplishment (Arnheim and Sinclair, 1975).

Friedmann-Wittkower and Sherbourne (1979) appear to make similar claims for movement education: that is, mentally retarded children actively involved in this process of movement do gain self-confidence, self-respect, through the success of their own movements, as well as improving their ability to concentrate. A new kind of discipline emerges, more stable, more self-critical and perhaps more permanent. Held and Hein (1963) have shown in their experiments with animals and later with humans that active movement enhances perceptual behaviour. In other words, as people move about, visual perception develops. A movement programme of this type could help to develop this perception by providing increased opportunities for movement even though development of perception is not a stated aim. Many researchers in the field of compensatory education and movement education place great importance on the development of the body concept and body awareness. Although these approaches differ from the Laban based approach, the similarities are evident, as Laban's analysis is investigated. Cratty favours a task orientated programme aimed at aiding certain aspects of perception. The integration and differentiation of body parts is the first principle incorporated into his movement programme. Frostig is mainly interested in helping children with learning problems. She has found that children with learning problems often have poor visual perception. Her programmes are aimed at improving the area of poor visual perception through task type procedures.

The Piagetian view gives support to the principles of Laban and to the developmental approach of Sherbourne. Piaget outlines three main periods in which cognitive development is commonly observed. These stages and age limits are based on relatively normal development of normal children yet retarded children will presumably go through these stages but depending on the degree and nature of retardation will remain in each stage for a

longer period than normal. A severely retarded child may function in the first stage for most of his life and some retarded individuals may not reach the second stage of development at the age of four years, six years, ten years or even later. If movement is important for the intellectual development of normal children up to the age of eleven or twelve years, then it must be of importance to retarded children to a much older age depending on the degree of retardation. Movement that normal children experience in the first few years of life may be of value to much older retarded children. While research does not indicate that movement activities are some kind of magic potion for retardation, Cratty states that it is becoming increasingly apparent that exposure to certain kinds of sensory motor experience can have a vital positive effect upon the personalities and abilities of the child. On the other hand, the same author states that remediation of motor problems, coupled with the learning of play skills can lead to helpful social interactions among retarded and normal children (Cratty, 1979). Physical education activities may give the child the opportunity to achieve success; various kinds of relaxed training programmes which involve the reduction of excess muscular tensions might when properly allied, help to reduce hyperactivity in some retarded children. The ways in which different body parts can initiate these activities can be the cause of much interest and experiment. Rhythmic motor activities could aid some retarded children to obtain concepts of self-control. In essence, the rhythm in the dance media can be used to make positive changes in the social behaviour, such as assisting a child in controlling his impulses, increasing body awareness (specifically as it concerns the self-concept) and providing the physical abilities necessary for efficient movement. Children can create their own rhythm movement patterns and phrases stressing different body parts (Cooke, 1980).

Rarick (1967) considers that physical education programmes coupled with reasonable levels of exercise can aid the fitness of retarded children and can exert significant improvement upon basic

skills such as walking, running and jumping. Acquisition of these skills in turn may enhance the child's self-concept to a significant degree. The primary aim is the enhancement of body balance and muscle coordination and the ultimate objective of posture training is the maintenance of energy in order to accomplish a particular motor act. Luria (1977) suggests that children use self-commands to develop control over new forms of behaviour and physical activity. Yet the retarded child will need to be helped and guided continually. Cratty (1974) found that overall retarded children may be less fit and evidence poorer motor ability than will normal children, but the statistics reveal that about 10% may evidence abilities equal to those of normals, particularly if exposed to adequate or superior programmes of physical education. The retarded child should be continually supplied by the teacher with information informing him of his general improvement in physical fitness and skill, as well as with immediate information relative to a single improvement in a given task.

Retention will be best in skills that are rhythmic and integrated and in skills that have been overlearned. Chasey (1971) found that with the retarded subject, overlearning as a variable in the retention of gross motor skills can be worthwhile.

The Tarnopols' (1974) research suggests that:

> "Self-instruction becomes unnecessary after the behaviour is learned or becomes automatic." (p. 24).

At the same time individual differences, together with differences in teaching environments make the outcomes highly diversified. It seems that sensory motor dysfunctions that impair internal speech may adversely affect other learning areas such as

movement. There is much experimental evidence from workers which implies that the development of basic physical skills can contribute to the growth and development of all children, including the handicapped. The Tarnopols' Study is based upon certain assumptions about the relationships between the body and learning processes. Theorists (Kephart and Getman) show experimentally that 'body awareness' depends upon effective coordination of this perceptual motor activity which is essential in the development of purposeful activity in children.

The study by Lowenstein (1966) represents an investigation comparing rhythmic tendencies of Down's Syndrome children to those of normal children. The Down's Syndrome children respond well to music yet the kind of response is an infantile response seen in many very young children when exposed to similar rhythmic conditions.

Maloney and Charrette (1970) found that gross motor training emphasising walking board practice heightened attention and self-control in retarded children, reflected in improved performance in a visual discrimination task administered at the termination of training. Prolonged use of the boards, which required that children attend to the task for increasing periods of time, did indeed generalise to other kinds of problem-solving behaviour requiring attention.

Another type of activity found helpful in aiding a child to gain control of himself is to present motor tasks that may be engaged in for increasingly longer periods of time. The basic assumption underlying this component of the programme is that encouraging a hyperactive child to do something longer than he has done it before may prolong his attention span in other tasks. Gross and fine motor tasks are appropriate tasks for two reasons: they seem to unite several kinds of sensory stimulation at the same time (visual and kinesthetic) and prolonged attention or inattention to a motor task is easier to observe than a task

involving visual attention only.

Cratty describes a child in an experimental programme who entered the programme with an attention span from five to eight seconds. After a few months work with an instructor, he was willing and able to engage in a variety of motor tasks for periods of time ranging from three to five minutes. These tasks consisted of walking lines of increasing length, drawing lines through patterns of increasing complexity and attempting to keep a tennis ball balanced on a board while holding the board in both hands.

Impulse control activities demonstrate to children that they can slow themselves down and place themselves under better control by learning to move slowly. Cratty and Szerzpanik (1971) advocate that after hyperactive children demonstrate their ability to move very slowly, efforts should be made to see if they can perform quickly ("How fast can you get up?") and then determine if they have good control by an activity such as "How slowly can you do it?"

Impulse control activities of this nature are often effective when accompanied by music to give children an awareness in sensory modality of just what slowness means (Cratty, 1971).

Sherbourne suggests that developing body awareness in physical education fosters the general education of the child. The writer in this research uses the stimulation necessary for a growth of body awareness which comes from the structured creative activities possible in physical education. Some of these activities are described in the experiments which form the basis of this study. Research indicates that the studies of Werner and Strauss influenced the work of Kephart, Getman and Barsch. They share a common ideology through their shared professional experience. Kephart worked with Strauss;

Getman worked with Kephart and Barsch worked with Getman. Frostig acknowledges the significance of each of the theories. Werner and Strauss initiated much of the work and the study of perceptual motor development. Later theorists have maintained the central theories about the reception of, and response to, basic stimuli but have expanded their theories in relation to the normal child. Getman and Frostig lean more heavily on visual behaviour, Barsch on motor behaviour and Frostig on visual perception. The perceptually handicapped child requires a structured environment. Because he is spatially and temporarily disorientated, he needs a definite and predictable routine. He needs to know where each thing belongs and what he is expected to do next. The Frostig approach aims at pinpointing the child's developmental strengths and weaknesses: the isolating of different functions allows the programmer to structure schedules that help and encourage the development as a whole person. Kephart co-operated in the formation of a perceptual motor survey. Central to Kephart's theory is the 'adaption' of the child to a diverse environment. The length of the time necessary for the child to learn is suggested by Piaget's stages, the complex nature of this environment is an indication of the phylogenetic level of the human organism. Hebb stresses the considerable amount of time needed by the higher level organisms to acquire sensory control. Arnheim and Sinclair (1975) concede that movement education is an effective approach to assisting motor development; however, there are times when the skill requires specific teaching by a formalised method.

A common criticism of the standard physical education programme is that it is primarily group centred, rather than individualised. However, it is believed that a balanced approach to physical education includes movement education, perceptual motor training and the traditional approach (Frostig, 1974). In coming to the unstructured 'movement approach' as

supported by Sherbourne to the structured 'perceptual motor theorists' there is one common feature: all place great importance on the child gaining body awareness and body concept. The main difference seems to be that Sherbourne's approach is much more indirect than others which appear to be more task orientated. It could be that there is no way of proving at this point whether or not the Sherbourne approach succeeds in teaching body awareness and body concept to the children except by subjective observation which may be biased. No test results are available on Sherbourne's work. It is difficult to imagine what tests can be devised for an essentially unstructured activity approach. It could be that one child will respond to a free movement type of approach, another will benefit from a task orientated schedule. Others will require a programme that offers both styles and approach. The Friedmann-Wittkower study described some of the perceptual motor activities although the process showed some of the traits that Sherbourne is trying to develop. Play and physical activities are basic to the activity of the infant and constitute an important life component through childhood into adolescence. In his early works the psychologist, Karl Groos, surmised that play is instinctive; a time for exploration and development of the imagination, memory and social self (1901). Such beliefs have been reiterated by a French sociologist, Roger Caillios (1961) and by Frobel (1912) who advocate that the inclusion of play is a part of the educational process. Smilansky (1968) has found that in young handicapped children make-believe play seldom occurs. Golomb (1977) indicates, as theorists would argue that...

> "the symbolic transformational process requires adult modelling" - "and is largely taught by the adult". (p. 178).

Physical activities have been seen as a medium of socialisation, assisting in learning to cope with the environment and with inter-personal relations.

More research evidence is necessary, in order to establish the effects of participation in programmes of movement whether individual or group schedules for the retarded child. Arter and Jenkins (1979) describe the instructional model within special education as a technique which involves the operations of various instructional models within the same programme. Although it is evident that the marginal intellectual capacities of the mentally retarded have a limiting effect on their performance and learning of motor skills, the ways in which neuromuscular mechanisms and the motor learning processes function in these children is not yet fully understood. The retarded child's difficulties in the execution of relatively simple movement patterns adversely affect the rate of acquisition of new and complex movement patterns.

It is the appendices that give the practical realisation of the investigation and the evidence of the experiment. Although the researcher realises that:

> "....it is harmful to the growth....if measures are used to impose one particular style...." (Jung, Mao Jee, 1893).

It is not certain, however, that these findings can be taken as conclusive evidence on this issue. It is difficult to be certain about severely retarded subjects as well as their programme. Such findings still raise the question of which aspects of the programme were the effective components, and whether the goals could have been reached more effectively by other methods and approaches.

The strength of Laban's work is that it offers a variety of interpretations to movement teaching. The underlying key to the intervention programme lies in the partnership between research worker and practitioners which allows the

implications of research findings in ongoing day to day operations to be developed (Mittler, 1979). Mittler (1981) forecasts that as professionals prepare for the demands and changes of tomorrow and see the child as an integral part of the environment, partnership in a teaching programme with other professions will increase. The increased interest shown by so many people working in different disciplines must be consolidated to the benefit of these children (Gordon and McKinlay, 1980).

Although there are several different theories of learning, most investigators agree that motor skills and motor activity are essential for any degree of educational achievement. For the retarded child motor skills form the basis for self-help and safety activities and assist in the development of a favourable self-image.

In summary, the writer looks at the educational strategies incorporating basic sensory and motor experiences, sometimes paired and sometimes engaged in separately.

From the 1950's until the present time, descriptions of these various movement programmes have attracted attention. Some have advocated what might be termed a "perceptual motor approach" through exposure to movement activities. Such writers as Getman and Kephart investigate the manner in which infants seem to explore their worlds in direct ways and have suggested that motor activities are imperative for the development of perceptual abilities. Hence, their programmes advocate the extensive use of movement activities, sometimes paired with visual exploration which will heighten the child's perceptual awareness.

Others, notably the Doman-Delacato group in Philadelphia, have put forward a model in which essentially they maintain that

the child passes through the stages of development. Reflex writhings seen in human infants, these writers contend are similar to the wigglings of fish, and later attempts at locomotion and manipulative acts seen in the developing child are similar to efforts evidenced by amphibians and mammals. As a result of this kind of speculation, the motor programme they advocate contains several basic movement activities resembling the attempts of animals to move through space, such as creeping and crawling. The Doman-Delacato group suggest that through exposure to these and similar activities, some kind of adjustment in the "neurological organisation" of a child may take place, and a variety of abilities and disabilities reflecting intellectual and perceptual functioning may be affected in positive ways.

Others have advocated what might be termed a 'dynamic approach' to explain how engaging in motor activities may positively change other facets of the growing child's personality. Research by Oliver has produced data suggesting that an improvement in the self concept of a child through pleasurable and successful experiences in physical activity may also result in increased effort towards tasks reflecting intellectual, as well as, motor functioning.

The third approach attempts to improve performance through participation in movement activities based upon what might be termed "cognitive models". In general, this theory suggests that to enhance the operations through movement experiences, one must pair in precise ways, the movement activities with the intellectual qualities one hopes to change. Among the proponents of this model are Jean Le Boulch, Louis Picq and Pierre Vayer in France; and James Humphrey and Muska Mosston in the United States. This approach is the one undergirding the writer's beliefs and the nearest to Laban's interpretations. The focus is upon movement work which

infers that movement activities may affect children's proficiency in tasks which require perceptual abilities for several reasons. However, motor activities usually require the close attention and concern of some interested adult figure. Frequently, this "attention effect" alone is sufficient to encourage a child to perform better in a variety of tasks to which he is later exposed. Some of the "success stories" which may have emerged from the Doman-Delacato programme may be attributed to the fact that the family is given some kind of purportedly helpful way to work with one of their members; and the child when given this extra and prolonged attention may blossom. It seems that movement activities provide concrete acts to experience, to observe and to think about. The activities provide the teacher with observable evidence of the quality of a child's thought processes.

In total, it appears that there are many pervasive reasons why a more active approach might help the child's learning. "Education of both the perceptual and the integrative functions should be primary concerns" in the education of the retarded child (Frostig, 1974, p. 241). In contrast to the teaching of these specific skilled movements, a more indirect approach has developed the freedom of individual inventiveness and creative expression. By this means a child is relieved of the necessity to conform to set patterns of movement and encouraged to create a wider vocabulary of movements. The Reading Research Foundation of Chicago (1967) is an example of this type of approach which is similar to Laban's interpretations. This Research Foundation attempts to develop a state of "readiness to learn" as the first principle of its Programme. It is based upon the Piagetian concept of developmental sequences. Piaget shows how opportunity for variety in stimulation and response leads to cognitive growth and how behavioural inquiry and exploration develops into interest and curiosity. It is from this research tradition that the principle emerges of continuously

providing the child with a small increment in the task which is being pursued (Piaget, 1962).

Friedmann-Wittkower and Sherbourne appear to make similar claims for movement education: that is, mentally retarded children actively involved in this process of movement do gain self confidence, self respect, through the success of their own movements, as well as improving their ability to concentrate.

Groves (1966 and 1967) reported on the response of educationally sub normal adolescent girls (E.S.N.(M)) to two series of dance lessons. She reported evidence of increased self-confidence and greater willingness to attempt new tasks. The increase in the length of receptive time was also most evident. Furthermore, Groves (1971) undertook a pilot study with girls from the same special school. This study indicated that dance could have an effect upon the social behaviour of E.S.N.(M) girls.

Lishman (1977a) reported on the response of severely educationally sub normal adolescent boys and girls in an E.S.N.(S) day school to a series of dance lessons. She reported evidence of some retention from the initial sessions and the results indicated that regular structured performance can increase the exercise skill. In other areas such as gross agility, imitation of movements, identification of body parts and rhythmic body responses some positive change was recorded. These results suggested that the programme that was movement biased led to some positive responses to physical activities. A longer programme was stated to be desirable before a marked difference in performance would be recorded.

The suggestion for "individual movement therapy" was put forward

by Lamb (1953) who relied upon a type of observation "to diagnose the strains in a person's movement". The aim of this treatment, as described by Lamb, is typical of a process which tries to compensate for deficiencies and builds up neglected essential areas.

Laban in his study of human movement was also concerned with the development and maintenance of this sense of proportion within the factors of motion. (Laban's motion factors are weight, time, space, flow, and his effort elements are firm and light, sudden and sustained, direct and flexible, bound and free which are described in Chapter 3 in the Programme.)

The writer of the study suggests that Sherbourne's approach is developmental. The term "movement" may ultimately be found to be inadequate, for whatever Laban's fundamental philosophy, it is McKellar (1975) who says that "he initiated a new attitude to Movement Education" and it seems that a new method of teaching developed, yet agreeing with Curl (1969) that "from which we have reaped rich rewards".

The Schools' Council Programme, "The Curriculum in Special Schools" (Wilson, 1981) suggests that

> "all creative and practical subjects have their basic skills which can often be listed in order of difficulty in the curriculum plan, but the creative/aesthetic experiences which it is hoped will arise are less easy to plan and predict" (p. 34).

If an adaptive movement and dance programme is tailored on the basis of a Laban schedule and interwoven with selected perceptual motor skills, it might be considered as possible curriculum content for the retarded hospital child. The most important trend in

the education of the mentally retarded school population is that an earlier admission age and a later but flexible leaving age are being developed. In fact, in Hospital B where the main experiment was implemented there is a widening of "the school age range" which extends from birth to at least nineteen years. Following on this, continuous educational programmes are being explored and developed for individual and group work with these severely retarded subjects.

Evidence suggests that the movement approach can select a range of experiences based on the different sensory modalities which offer rich opportunities for the E.S.N.(S) child. Much of the benefit of any programme is engendered from careful grading of activities. This, in turn, enables the E.S.N.(S) child in particular to achieve progress which is visible to himself and to his teacher, and so both experience success. If the work of Rudolf Laban is adapted in such a way it promises to be a process for compensating and building up movement sequences, helping the individual to overcome a problem and providing opportunities for an observant professional to identify the deficiencies in a child's movement. Movement and dance experiences can contribute to the child's success.

# CHAPTER THREE

PART I: DESCRIPTION OF THE INVESTIGATION

PART II: ANALYSIS OF DATA

(1) DESCRIPTIVE STATISTICS

(2) FORMAL TESTING

(3) CASE STUDIES

(4) VIDEO-TAPE OVERVIEW
(VOLUME 2, WORKING
VIDEO TAPE)

# CHAPTER 3

## PART I

### DESCRIPTION OF THE INVESTIGATION

A major difficulty which besets any experimental research in an educational context is that of method of adequate control. This is specially heightened when the subjects are handicapped, particularly when the aetiological basis of the handicap is diffuse and its consequences impossible to specify with any degree of certainty. In such circumstances the creation of matching groups is a dubious if not spurious procedure and in the present experiment it was rejected at the outset in the favour of the selection of subjects from a single institution.

Entwistle and Nisbet (1976) would refer to the sample used as "an opportunity sample". It is accepted that results from samples of this kind cannot be generalised to all hospital schools or to all severely retarded children. Similarly, results based on research in a single institution must be treated with caution. While the results of studies by Oliver (1958, 1960), Rarick and Widdop (1970), Corder (1966) are in general agreement, the testing procedures have varied markedly from one investigation to another and each has employed a small sample of single sexed children for a very short period and from a limited geographical area. In the absence of data from large population studies it is difficult to speak with confidence regarding the effect of training programmes in movement for E.S.N.(S) children, nor are suitable data available for the establishment of national norms of gross motor, body perception, imitation of movement, identification of body parts, exercise and rhythmic body response performance for these children.

From the published tests available (Cratty,1969) 'Six Category Gross Motor Tests' and Kephart's (1960) Perceptual Motor Match Tests designed for trainable retardates (E.S.N.(M)) four measures were selected which the writer had used previously and regarded as the most appropriate (Gross Motor, Body Perception, Imitation of Body Movements and Identification of Body Parts). Additionally, two purpose designed tests (Exercise and Rhythmic Body Response) which had been used by the writer in a similar sample complemented the physical skill tests. Although these six measures tested physical skill performance, which demonstrated physical readiness in the subjects, this included only the quantitative responses. This Laban movement investigation required that an additional focus was necessary which included the qualitative movement responses. Movement Observation Schedules were devised in order to monitor the qualitative responses to the movement. Appendix I shows the three levels of the Movement Observation Schedules (M.O.S.). The teacher was the researcher, and an experimental approach was adopted because it has been shown to be appropriate and valuable to teachers working with children of very low intelligence (Kiernan, 1974). It attempts to provide insight into the capabilities and learning difficulties of individual children. Further, feedback of knowledge of results is not only helpful to the teacher but is also a source of motivation to the sample (Lishman, 1977a).

This experimental style of approach to teaching children with severe learning difficulties carried with it not only an avoidance of ineffectual routine but also a stimulus to teacher motivation.

Many approaches have been used in attempting to study severely retarded children's physical activity, and many problems have been found. It is apparent from several of these studies, that they have all entailed programmes of short duration, no studies had included both sexes of severely retarded children, and none

had attempted any form of quantitative and qualitative measurement procedures with Laban biased movement. With these difficulties and the needs of these children in mind, a new approach was tried out. Because the approach seemed likely to offer a realistic, relevant, and practical means of investigating training sessions in movement and dance for the severely retarded child, a team approach was adopted. (Details of the training scheme which provided a team approach for the main investigation (Hospital School B) are found later in this chapter.)

The writer shares the belief of Mittler (1979) who advocated that it is not merely a matter of research workers 'disseminating' their results "but of working alongside practitioners to develop some of the implications of their own findings" (p. 220).

## THE INSTITUTIONS

The pilot study involved one institution (School A) and the main investigation was carried out in a second institution (School B). Both institutions provided for E. S. N. (S) residents of all ages; second, they provided "phased care" that is a planned sequence of residence in hospital, alternating with residence at home when possible. Attendance at the hospital school was negotiated on a day basis when "the phased home care" operated during the school working week. The characteristics of the children in the hospital schools are summarised in Table 3a. As judged, both by the description of the hospital schools given by their head-teachers and by the researcher's observations, the hospital schools differed considerably in their mode of functioning. One school was primarily a therapeutic hospital school with little emphasis on teaching and one was beginning to provide a structural and organised setting for the teaching of specific skills.*

* (The description of the two hospital schools given in this study apply strictly to the period when they were studied. Important changes in staff, teaching and buildings have taken place since that time. The pilot investigation was initiated to assess the merits or demerits of any one hospital (E.S.N.(S)) school (3 months) and a second hospital (E.S.N.(S)) school for the main study (2 years), the purpose being to derive general principles applicable to the effects of training programmes in movement and dance, on such children in any hospital (E.S.N.(S)) school and it is in that context that the study should be read.)

The residential facilities that were provided by the long stay subnormality hospital, in which each of the schools were situated were run completely separate from the hospital school administration. However, the physical space in which the researcher operated the movement training sessions was used by the hospital authorities in both schools outside 'the school working day'. These dual purpose halls were each sparsely furnished, rather bleak in appearance with high windows on one wall, yet considering the generally poor level of physical resources both halls were in constant demand. Despite the apparent lack of attractiveness in each of these halls where the pilot and main investigation programmes operated, these physical environments were familiar to both samples of severely educational sub-normal children.

Table 3a

Showing the groups of children in the E. S. N. (S) Hospital Schools during the investigation.

| Subjects | Total Pilot Study | | | | Total Main Investigation | | | |
|---|---|---|---|---|---|---|---|---|
| | Over-all | Group m f | Group No | MA Mths | Over-all | Group m f | Group No | MA Mths |
| Number in hospital at start of study for the experiment | 24 | 8 4 4 | 1 | 107.5 | 30 | 10 6 4 | 1 | 123.9 |
| | | 8 4 4 | 2 | 121.3 | | 10 5 5 | 2 | 171.0 |
| | | 8 4 4 | 3 | 143.3 | | 10 5 5 | 3 | 188.9 |
| Duration of attendance Total hours per subject | 12 hours | | | | 72 hours | | | |
| Mean age at outset | 124 months (10.3yrs) | | | | 161.3 months (13.4yrs) | | | |
| I.Q. as stated by Institution's record | 20-35 range | | | | 23-48 range | | | |

## OVERVIEW OF THE SUBJECTS

The children were comparable across the six groups; there were some differences at the extremes of the age range (Appendix IV) which need to be taken into account in assessing differences in the progress of the children. During the

period of the pilot and main investigation all the children were in attendance at the hospital schools for the entire time. Pre and post-testing was used in the pilot and main investigations. This served both to identify the child's level of performance and to provide a base line against which to measure. The main investigation used a combination of observation techniques and a systematic weekly study of each group and individuals during their training session.

The subjects used in the pilot study, hospital school A (n = 24) and in the main investigation, hospital school B (n = 30) might be described as almost the same. Each school provided a sample of severely retarded children which were each placed in three groups. It followed that a given sample might be more usefully studied by considering individuals as well as the groups and the sample as a whole. The groups used were the normal classes in which the children were placed for their school day. Their placement had been pre-determined by the hospital and school authorities using the Gunzburg Social Assessment Profile (Gunzburg, 1963).

The Progress Assessment Charts (Gunzburg, 1973) which were used by the multi-disciplinary teams provided a detailed and systematic breakdown of a range of abilities under broad headings, for example: self-help, socialisation, communication and occupation, each of which was further broken down into more detailed sub-headings. For example:-

i) Self-help activities - eating, mobility, toilet and washing, dressing;

ii) Socialisation;

iii) Communication activities - "from to to";

iv) Occupation - agility (fine finger movements), dexterity (gross motor control).

The Gunzburg Assessment Schedules were not merely for assessment. They were designed to lead directly from assessment to programme planning, though it must be admitted that they were not always used as such. Appendix IV includes information regarding the sample's functioning level, prior to the pilot and main investigations. The records can only be taken as a nominal guide as the aetiological make up of the total groups was so diverse and the medical condition of the subjects in both samples was variable.

## DESCRIPTION OF TESTS AND TESTING PROCEDURES

Each test selected for use depended primarily on a basic component for its successful execution. The Cratty and Kephart tests were widely used and considered standardised instruments for measuring physical performance skills. Less well known instruments not standardised but used previously in studies in the same problem area as the current study, were the Exercise and Rhythmic Body Response tests constructed by the author, measuring body stance and rhythmic body interpretation. The physical skill tests placed demands on the subject's capacity to demonstrate gross motor coordination, static balance, agility, and some taxed primarily the subject's ability to maintain his balance under well defined conditions.

Care was taken that the child, as far as possible, understood the nature and the demands of the test before it was administered. No more than four or five children were in a testing area at any one time. The four testers were all trained professionals with considerable experience in working with mentally retarded children. Without exception, they were quickly able to gain the confidence of the children. There was every reason to believe that the testing operation was very

nearly ideal for a field project of this kind. Each individual on each test required a tester and a recorder; in order to provide uniformity between the testers for testing and recording, video-tapes and live performers were used to train the team of testers. Each tester was able to grade and assess individual children when executing a movement response. Similarly, each tester was involved in being the tester and the recorder.

All the tests were conducted with the children wearing physical education clothing. Although two subjects in the pilot and main investigation proceeded on all tests wearing medically prescribed footwear, the other subjects of the sample wore tennis shoes or worked in bare feet at all times.

The tests were measuring instruments administered to individuals to elicit responses, on the basis of which a score was assigned. These scores indicated the extent to which individuals achieve at prescribed times the characteristics being measured. The score from each test was a mean of three trials. All the testing was numerical in that it was quantitative, regardless of the precision of the instrument or the expertise of the tester. Equally all the tests imply measurement of characteristics which vary. All tests performed against time were timed to a tenth of a second with a stop watch.

IDENTIFICATION OF BODY PARTS (Kephart, 1960, Test 3)

This performance was related to the problem of body image. Two general areas of knowledge were involved; the first was awareness of the existence of the body parts and their names, and the second area was awareness of the precise location of the parts. Difficulty in this area was shown by the child who could start in the general direction of the part but who required time to experiment or feel around to make final contact. . The scoring was achieved for correctly executing each of the requests. No points were deducted for a slowly executed

response. A total of 9 points was possible.

GROSS AGILITY (Cratty, 1969, Level 1, Test 2)

The subject was placed, standing in the centre of the mat, facing a four foot side then the tester stood 10 feet away. The subject was asked to lie down in the middle of the mat, his feet towards the tester. After the child was in position, the tester said to the child, "I would like to see how fast you can stand up and face me". A stop-watch was started as the child's head was lifted from the mat and stopped as his knees straightened when he assumed a standing position facing the tester. If the child was not able to understand, the tester demonstrated standing up rapidly. Scoring: one point if the child turns to his stomach first and then arises in more than three seconds, two points if the child turns to his stomach first and arises under three seconds, three points if the child sits up without turning over and stands up without turning his back to the tester in more than three seconds, four points if the child sits up, remains facing the tester and does so in two seconds, five points if the child sits up, remains facing the tester when arising, and does so under two seconds. The scoring was a maximum of 5 points which was scored according to the test being achieved correctly.

BODY PERCEPTION (Cratty, 1969, Level 1, Test 1)

The subject was placed standing on the floor, with his toes against the mid point of a four foot edge of the mat. The tester stood next to the child. The tester described and then demonstrated each movement and then expected the child to respond. The subject was verbally thanked and given visual facial reinforcement after each request. One point was given

for correctly executing each of the requests. No points were deducted by the tester for a slowly executed response, a total of 5 points being possible.

IMITATION OF MOVEMENT (Kephart, 1960)

The essence of this act was in performing a movement, doing essentially the same type of movement, or mirroring or repeating the movement of the tester. To move from each position to the next required one of the following types of movement: unilateral movement, bilateral movement, or cross lateral movement. It was desirable that the child could reverse the laterality of the tester's movements. The movements were to be made promptly and with definiteness. The evaluation was related to the child's ability to control his upper limbs independently, and in combination with other parts of the body; additionally, a translation of a visual pattern into a motor pattern was reproduced physically. One point was awarded for each correctly executed movement. No points were deducted for slowly executed movements in the tasks if the movements were correct but with the wrong arm in every case, that is, all movements backwards. A total of three points was awarded to the child for the test. The total score for correctly performed movement was 17 points.

EXERCISE PROGRAMME TEST (Arnheim et al, 1973 and Lishman, 1977a)

The A.A.H.P.E.R. test battery of physical fitness was inappropriate for the E.S.N.(S) subjects. (American Association of Health, Physical Education for Retardation.) An adapted schedule was devised and scored; the content of

the test included body balance, imitation, physical exercise control and a static posture balance. The test was to act as a motivating influence for personal improvement. One point was scored for each test item followed and completed successfully. The tester demonstrated each physical exercise, all activities commenced with the tester in a standing position and the hands at the side of the body. The stance was demonstrated and the child performed exactly the same exercise which was imitated. The maximum number of points was 10 for accurate responses.

THE RHYTHMIC BODY RESPONSE (Ashton, 1953 and Lishman, 1977a)

A test was developed for a rhythmic body response. As many tests involved hand movements only, the author devised a test that used the feet. This measure had been used with a similar sample by the researcher. The test involved repetition of rhythmic body patterns which were translated into various movements. As little data were available in which rhythmic movements had been explored the author selected the music for the tests to consist of quick and light movements and slow and strong movements. The musical taped excerpts were approximately one minute in length and repeated four times. The musical excerpts were taken from a professional record made for movement and dance. Seven second intervals between the selections of music was decided upon; with the excerpts varying in length because they were dependent upon the movement under consideration. Of the movement areas tested, each movement quality area commenced with a listening period. The listening band was followed by four pieces of approximately one minute in length which depicted the same movement factors. The rhythm rating scale devised by Ashton (1953) was used and taken as a guide for scoring and checking the

subjects. The rating scale was based upon a zero to four score with the following items described under each rating; response to beat, correct rhythm pattern, ability to maintain and vary movement, ability to change direction and style of movement. The test revealed those individuals who were outstandingly poor in rhythm, and the range on the total scores seemed wide enough to point to possibilities for discrimination between performers. The four movement areas tested allowed the individuals to demonstrate precise qualities of movement. The total score was 16 points. (Further details and procedures on all the tests administered are in Appendix I.)

Items from the Fleishman (1964) fitness tests were used throughout the training programmes for correct standing positions, correct walking and sitting positions. No testing was carried out. The writer used "the content material" as it had a functional application not being limited to a static standing position.

## ADMINISTRATION

The systematic administration of the tests ensured all the subjects were given the items in one day before and after each programme, the tests being placed in an order that would not require the subject to perform tests that might fatigue him in certain portions of his body to the detriment of his score on the following item. The sequence was:-

Test of Identification of Body Parts,
Test of Gross Agility,
Test of Body Perception,
Test of Imitation of Movement,
Test of Exercise, and,
Test of Rhythmic Body Response.

For ease and maximum efficiency two testing stations with a tester and recorder at each station operated for the pilot and main investigation. As the maximum number in a group (class) was ten subjects and the minimum was eight subjects, it was helpful to have an assistant to keep the subjects moving in the right direction. For ease in recording the scores, the child's card was pinned to his shirt. The recorder at each 'station' recorded the score on the child's card as soon as he completed the test. The testing schedule was operated in a way which gave ample opportunity to rest between tests. The procedures were set up so that a child could observe the test being administered. This served two purposes. First, it orientated him to the task and tended to reduce the apprehension that he might have had about a particular test; and second, it provided a period of rest for the children between tests. The children not being tested remained quiet and were in no sense a distractive influence on the subject being tested.

Accuracy was evident when the testers were required to grade a narrowly defined task. Consistency was maintained as the same tester and recorder were operating the same pre and post-test in each twelve week period with the same subjects. The administration of the testing allowed each tester to work with others in the group; all of the tests required numerical scores, three tests required the correct response to a defined task (Imitation of Body Movement, Identification of Body Parts, Exercise), whilst the other three tests (Gross Agility, Body Perception and Rhythmic Body Response) required that the tester made the decision on the numerical score achieved. All testers shared equally in both types of tests.

The Movement Observation Schedules (M. O. S., Appendix I) were devised as a result of the pilot study; these schedules

monitored the qualitative elements that were common in the Laban training programmes. The M. O. S. observers were trained for the main investigation (Hospital School B), in order to achieve a measure of reliability in the variables on the Movement Observation Schedules. To gain some assessment of the achievements of the subjects, the qualitative elements were not recorded on the M. O. S. until the Laban element was visible in six consecutive training sessions. The terms used on the M. O. S. are those commonly used in movement and dance (Laban, 1948).

## PILOT STUDY

### HOSPITAL SCHOOL A

The hospital school and the mental hospital shared the same premises, the building being surrounded by gardens and playing fields. The school was co-educational and catered for pupils in the age range 3-16 years.

The children were housed in wards in a three storey building which included forty adults. Only two wards reported the possession of books, toys or equipment.

A fenced area outside with a climbing frame, two swings and a Wendy House was available for physical activities.

The headteacher believed in the importance of physical education but had been unable to recruit a qualified teacher to his staff. The physical education programme included swimming, horse riding and the opportunity to "exercise" in "the fenced area". Outdoor expeditions in the form of walks were arranged into the nearby countryside. The programme included no form of gymnastics or dance. However,

in total each class had three hours of physical education per week.

The ethos of hospital school A was supportive to a pilot study based on movement and dance. The training programme was biased towards physical skills and movement patterns; the six categories of items covered included:-

Identification of Body Parts,
Gross Agility,
Body Perception,
Imitation of Movements,
Exercise, and
Rhythmic Body Response.

Demonstrations were used throughout which ensured that the level or range of items were appropriate.

The objectives were:-

1. To promote the children's awareness of physical skills.
2. To improve their level of attention.
3. To increase their perceptual awareness.
4. To identify movement patterns that might lead to movement and dance.

Measurement

Pre and post-tests were administered to the three groups:-

(a) Cratty tests:- Agility and Body Perception (Cratty, 1969).

(b) Kephart tests:- Identification of Body Parts and Imitation of Movement (Kephart, 1960).

(c) Two purpose produced tests:- Exercise (Arnheim et al, 1973 and Lishman, 1977a); Rhythmic Body Response (Ashton, 1953 and Lishman, 1977a). (Detailed information on the administration and scoring of these tests is in Appendix I.)

Treatment

The programme administration, organisation and implementation covered a six month period. The three groups were taught separately, each for a fifty minute session over a period of twelve weeks (Table 3a).

The focus on the individual child's physical performance provided information for the teacher researcher. The movement programme produced insights about the individual children which were not based on the criteria of pass/fail or right/wrong. Physical achievement records helped to indicate when specific skills were achieved.

Tasks were presented with great care in order to ensure that every child appreciated what was required. Observations were similarly made. The children's understanding, or otherwise, was demonstrated by their participation and in their observed behaviour. The people with whom the children were in daily contact observed the teaching sessions.

The content of the Laban biased programme of movement was based on the qualities of movement and the use of the body in space (Preston Dunlop, 1966.). (Appendix II gives detail of the content.)

The tests in the pilot study were retained for the main investigation; significant improvements were shown on the Test

Identification of Body Parts, whereas the Tests of Gross Agility, and Body Perception showed that a level of confidence was achieved. The three remaining tests:- Imitation of Movement, Exercise and Rhythmic Body Response, proved too difficult for $33^{1}/3$ % of the sample when administered. (Detailed test results are in Appendix V.) These three tests (Imitation of Movement, Exercise and Rhythmic Body Response) were retained for the main investigation as it was the youngest group in the pilot sample that had not responded to these tests. The researcher believed that as the main investigation was for a duration of two years, the youngest group in hospital school B would be helped by their natural physical maturation. Furthermore, regular participation, rehearsal and retention in all the test items could be an additional aid to the performance for the severely retarded child.

Evaluation

The pilot study has shown that a specifically designed curriculum for retarded hospitalised children can promote awareness, improve attention, and perhaps increase perceptual awareness. Attention is crucial to perception and both are necessary for the identifying and extending of qualitative movements which can lead to Laban movement. Furthermore, over a longer period (2 years) it was speculated that pre and post-testing at frequent intervals would be providing a certain amount of memory and practice effect which would be transferrable, and simultaneously, providing a learning mechanism within the innovation.

## CONSIDERATIONS ARISING FROM THE PILOT STUDY

The pilot study was to determine the extent to which mixed groups

of severely mentally retarded children (E. S. N. (S)) might respond to training sessions in movement that could lead to dance.

The aim was to explore how Laban's interpretations of movement might be adapted and incorporated into a programme of movement training for E. S. N. (S) hospital children. Previous research by the writer (1977a) had deemed prerequisite skills for a programme of structured movement and dance to include:- gross motor activities such as basic components of strength, speed of movement, agility, balance, flexibility and endurance; they were all required in varying degrees, depending upon the nature of the task. The pilot study results indicated that mentally retarded children required the basic movement skills taught in discrete easily learned units; when mastered they form the basis of the more complex skills needed for self help, communication, socialisation and occupation (Gunzburg, 1973). The results of the tests (Identification of Body Parts, Gross Agility and Body Perception) showed achievements from the subjects (24) in hospital school A, inferring that the sensory motor stage progresses as the child begins to generalise his motor patterns and coordinates simple individual patterns into new and complex behaviours. For the first time the child has learned new means, first, through physical experimentation and later through mental combinations. These developments include the ability to imitate and the development of the concepts of time and space (Flavell, 1963). The pilot study showed that, in these three latter areas, the youngest group had not reached the maturational development level to make any numerical response at pre-or post-test level, whilst the two older groups (groups 2 and 3) made some responses in the tests of Imitation of Movement, Exercise and Rhythmic Body Response (Appendix V). The pilot study reinforms the writer that the first period with which Piaget (1950) is concerned is the

stage of sensory motor development. First, experiences which lead to concepts needed to be emphasised. This is because mentally retarded children particularly require goal directed behaviour from early sensory motor activities.

As shown in the previous chapter, there is little evidence available of the part which movement and dance plays in the education of severely retarded hospital children. It would be clearly useful to find aspects of physical education which would interest severely retarded boys and girls. The pilot study (n = 24) consisted of three groups (Table 3a) with equal numbers of male and female subjects which indicated no sex differences in regard to responses. One aspect of physical education which has been shown to interest many retarded children is dance (Chapter 2). This, so called movement, modern educational dance or creative movement/ dance, is a contemporary activity. Gross motor skills form the basis for mobility; fine motor skills are refined and combined into complex chains of behaviour. Both gross and fine motor skills contribute to the mentally retarded child's ability to learn from the environment. It was with this in mind and personal experience of the enjoyment of dance by retarded subjects that the writer set up a pilot study to seek information about general testing in this area.

The main investigation (n = 30) was informed by the pilot study (Hospital School A) which took place throughout two school terms. The training programme was of short duration due to the amount of time spent on testing. The first point that emerged was that there was no staff participation and limited staff observation. The novelty of the training programme may have increased the pupils' interest and attention. The implication of the test results (Appendix V) indicated that the programme needed to be longer before a marked

difference in performance could be recorded. Additionally, the training sessions were not subjected to evaluation procedures. It was, however, in agreement with research (Groves, 1981; Moule et al, 1979; Oliver, 1968) that any innovation programme with retarded children needs to be of a longer duration. The main investigation (Hospital School B) attempted to emphasise that being labelled as severely mentally retarded means different things in different places and that successful participation in a training programme of movement was feasible. The main investigation was to determine the effects of training programmes upon movement leading to dance with severely sub-normal children in a hospital school. Secondly, the experiment was designed to test the capacity of severely sub-normal children to respond to and learn through a programme based on the teaching of Rudolf Laban. The pilot was designed to be an experiment of short duration and the main study was designed to be an indepth experiment. The pilot informed the writer of the necessity for a team approach with mentally retarded children and the emphasis throughout was on helping the E. S. N. (S) child to learn. All the children worked on the same task at the same time and the teacher in overall charge (i. e. the writer) decided when all the individuals and groups should move onto the next task.

The main investigation required that observations of all training sessions were made by two independent observers; like the testers, the observer trainees were trained with segments of video-tape. For tallying highly specific behaviours such as counting the number of times "the teacher" (the researcher) reinforced the child, the agreement was almost 90 per cent. When the testers and observers made inferences or evaluations about the behaviour observed or the movement task achieved however, 70 to 80 per cent agreement was deemed to be satisfactory. During the training sessions inter-reliability was calculated across twelve sessions. In addition to the observers in each training session, all groups had two named

"participant observers" in the weekly fifty minute training session. The "participant observers", by virtue of being actively involved in the situation, gained insights and developed inter-personal relationships that were virtually impossible to achieve through any other method.

In each group the two named "participant observers" were professionals, a nursery nurse and a qualified teacher; the two "participant observers" in each group remained constant during the six programmes (72 weeks).

Kerlinger (1977) referring to the weaknesses of such a sample choice, believes, as does the writer, that the selected design helped to mitigate some of the weaknesses that might be prevalent with a non-probability sample. The design required adult testers, observers, participant observers, and the use of video. The teacher's skills in the programme are scrutinised through the use of video. Many of the children have meagre or non-existent vocabularies even when compared to other children with severe learning difficulties of a similar age. Much of the work with this particular group of children has been carried out within a behaviour modification framework that emphasises controlled presentation of stimuli and the use of positive reinforcement procedures. Yet the need for flexibility of teaching approach is demonstrated by the writer's own attempts to interweave a variety of approaches into the training programmes.

All experiments are attempts to determine the effect of an independent variable or variables on a dependent variable. In this research the independent variable was often a new educational practice or product, and the dependent variable was a measure of the subjects' achievement. If it had an effect, the independent variable would be reflected as a change in the subjects' scores on the measure that was administered

before (the pre-test) and after (the post-test) the experimental treatment. Thus, an important aspect of the experimental design was the measure of change from pre-test to post-test. The person who administered the initial test (Hospital School B) in Programme 1 (Week 1) was required to re-test in programme 6 (Week 72).

Pre and post-testing was used throughout, although this introduced bias in favour of low scorers who had more scope for improvement in their performance. The testing informed, and gave precisely the success and failures of the individual child. The monitoring procedures had a built-in flexibility to allow for adaptations to be made and for observation of the movement activities, simultaneously to allow repetition, recall and rehearsal of the prescribed tasks and sub-tasks. The final assessment was used to measure the results of each programme. An assessment of the outcome of each programme was necessary in order to review other aspects of the programme.

This model emphasised the belief that joint involvement by a team approach gave enhancement to the individual child, the programme and the personnel.

In an attempt to obtain reliability each training programme during the experimental period commenced at the same time and the day was uniform throughout; additionally the adult contact and "participant observers" remained unchanged. Each group had an extra lay-helper in each 'school' year (36 weeks) of the experiment. Both lay-helpers cared for the children inside and outside school hours; in general, they approved acceptable behaviour by the child, and expressed disapproval of deviant behaviour. (The two lay-helpers were young adults participating within the Government Manpower Services Scheme on a yearly contract to Hospital School B.)

The collection of data from observational schedules was related to other measures used. Teacher activities were recorded according to a list of operationally defined activities (listed in Appendix III). They were grouped as acts of instruction (for example, asking questions, showing how to do something), playing with the child, acts of approval (saying something approving, cuddling the child) and acts of disapproval (for example, making disapproving gestures or statements). In this scale, several different staff behaviours were recorded in a given 15 second observation period. Thus, a staff member might smile, gesture, say "good boy", pat the child simultaneously. All four events were recorded. With all verbal acts, the tone of voice was recorded.

The first scale, therefore, assessed the style of staff-child interaction but not the context in which the interaction took place. Bricker (1976) believes that the staff response to interaction which immediately follows the child's movement behaviour, can be characterised according to the various categories of approval or disapproval, both verbal and non-verbal. For verbal responses, tone of voice was again noted.

In order to provide a valid reflection of the staff and the children in each group, prolonged periods of observing and recording behaviour were undergone before the assessments were attempted. However, unsatisfactory levels of inter-related agreement were obtained by the observers as they recorded episodes. Accordingly, a second scale was devised. The general activity was differentiated according to whether the child was carrying out the activity intended for him, or whether he was turning away from such activities. The staff response, immediately following the child's performance, was scored according to the various categories of approval or disapproval, both verbal and non-verbal. For verbal response, tone of voice was again noted. Individual patterns of children's

movement behaviour were recorded. Similarly, staff sequences were recorded so that there were at least 12 sequences for each member of staff. It was not practicable to carry out that kind of analysis very far. However, this approach pointed to the fact that what was more directly relevant to an individual child was the behaviour of the particular staff member with whom he was most frequently in contact.

Time sampling was used in order to check the sample (the subjects), the writer (the teacher) and the six "participant observers" in their responses. The sample was checked in an attempt to discover if the children's response to the teaching was progressive. At selected 5 minute intervals the response was coded. No account was taken of what happened between sample times and if the sampling intervals were too long.

The problem addressed by this main experiment (Hospital School B) was the previously unverified effect of training sessions that lead to movement and dance with E.S.N.(S) children.

## THE MAIN INVESTIGATION

### HOSPITAL SCHOOL B

This school and mental hospital shared the same premises. However, the resident provision was of single storey attractive villas, each housing approximately twelve children.

As Bland (1978) reports "neither the age of the school building nor its design can be used as a valid indication of the quality of its worth" (P.57). Nevertheless, this hospital institution was designed in the early 1900's and in appearance gave the impression of restriction, stigmatisation and poor conditions.

The school was co-educational and catered for pupils in the age range from nursery to nineteen years. The school was situated in the hospital administration block where the older residents could be seen partaking in routine tasks like escorting younger residents to the laundry and assisting wheel chaired retarded children to classrooms.

The Hospital School B occupied a wing of a sub-normality hospital in which rooms were set up as classrooms with tables and chairs, book shelves and bright pictures and notice boards on the wall. There was a large fenced-in grassy area outside containing playground equipment such as slides, several swings and climbing frames.

The thirty children involved in the programme were all classified as having language problems although all were very capable of producing unintelligible sounds. Their I.Q.'s ranged from 23 to 48 (Stanford Binet) and ten were considered untestable. Twenty of the children had multiple and severe handicaps in responding to both visual and auditory material and so they were difficult to stimulate.

The Gunzburg Social Assessment (Gunzburg, 1973) profiles in Hospital School B were the additional information. These profiles were used for placement of the children into groups by the school and health authorities. All of the children had been in the institution from three to five years and all had at least a short period (three days and three nights) away from the environment approximately every three months. The sample of children was drawn from four villas ("villa" being the term used to describe their home base in the hospital grounds). The children attended classes four hours a day, five days a week. The curriculum for the classes was not highly structured. The children were encouraged by their teachers to involve themselves

in activities such as drawing, colouring, clay modelling and playing with various types of puzzles and toys. Each day the children went swimming, or to the hall where a soft play area was available; approximately five hours a week were spent in some form of physical education but no dance was taught.

In order, to refine procedures for the main investigation, the pilot in part informed the writer that pre and post-testing of a short programme was not sufficiently reliable, and further detailed rating procedures were desirable. The administration of pre and post-tests on individual training programmes was open to the objection that the pupils would react to the same test in different ways although in the unexplored area of measurement in modern educational dance the researcher believed it to be a viable approach. The pre and post-testing at twelve weekly intervals was largely governed by the hospital school calendar. Over testing might be a criticism and is accepted. Yet between each training programme a specific break was registered. This break was a useful indicator when the training session was restarted.

However, as movement and dance can be more easily observed than measured, especially with severely retarded children, it was important to monitor and checksheet the instructional sequences taught through movement. In part, the movement observation schedules monitored the qualitative elements in the implementation of the programme in the main investigation. The movement observation schedules:- M.O.S.1, M.O.S.2, and M.O.S. 3, are detailed in Appendices I and VII. Additionally, the pilot helped to decide the real content and phases of the main investigation which would provide movement experiences and activities for the E.S.N.(S) child to learn to respond, to select and to discriminate movement responses, thereby creating movements, skills and patterns that might lead to dance.

In general terms, the programme aimed at developing in each child the ability to recognise, discriminate, express and apply the different effort qualities in movement. The following synopsis represents an outline of the relevant features of the programme:

| | |
|---|---|
| PHASE I | Vocabulary building |
| PHASE II | Sequence or sentence building |
| PHASE III | Task orientation |

Details of the content of each of these phases is in Appendix II.

In Phases I and II, attention was centred upon the effort qualities and not primarily on the skill. In Phase III, more emphasis was placed upon the skill, referring back to effort qualities. Both direct and indirect teaching methods were used throughout the three phases (Allen and Morris, 1971).

The teacher of mentally retarded children can utilise many activities to develop the various components of perceptual-motor performance. By understanding the components of these performance skills, used in physical activities by severely retarded children, it was possible to postulate a framework which encompassed many of the basic components required in the execution of these skills.

Laban (1948) proposed that all bodily actions may be assessed by means of effort elements and that a change of individual effort can be effected by appropriate training.

On the basis of Laban's motion factors (weight, time, space and flow) his breakdown of the effort elements (each with two opposite components), were used in the movement analysis profile of the

four individual cases detailed in the analysis of data in this chapter. The effort profiles and the movement observation schedules prompted a closer observation and an awareness of movement from many sources. These profiles complemented the pre and post-physical tests which were administered for each of the six twelve week programmes.

Additionally, the P. A. C. (Progress Assessment Chart, Gunzburg, 1973) provided a visual check of functioning and progress in the four main areas of social development (self-help, communication, socialisation and occupational), and in various aspects of personal development. Statements referring to relevant skills and behaviours are listed (Appendix IV); also achievements and deficiencies are pinpointed with some accuracy.

The movement approach to E. S. N. (S) children is central to the Piagetian concept of developmental sequences which aims to develop a state of readiness to learn (Piaget, 1950). It is from this research tradition that the Laban movement programme developed, and stressed the principle of continuously providing the child with some increment of challenge. Whilst the selection of tests which according to previous research were operable to establish base lines in physical performance, they were not sufficient in themselves (Lishman, 1977a). The additional monitoring procedures (Movement Observation Schedules) aided the focus which complemented the observational schedules. The triangulation of data from the administration of these instruments revealed from the 2 year programmes that the 30 subjects demonstrated some change in social and physical domains. A case study approach was chosen to seek information and knowledge that would describe the effect of the programme on the E. S. N. (S) hospital children's movement performance.

Table 3b(i) summarises the six teaching programmes which were implemented with the three groups. All conditions were constant; each group received the same interruptions (during programmes one, two, four and five there was a break of one teaching session for the school mid-term break; programmes three and six coincided with two Public Bank Holidays); in total, all groups were exposed to the same teaching hourage. Each complete teaching programme (12 weeks) had a break of four weeks without reinforcement during the experiment period.

The teaching session of 50 minutes weekly with each group enabled the maximum usage of the available manpower. The model used of "participant observers", observers, and testers, gave in some ways a comprehensiveness to the experiment. The group session allowed some limited individual teaching and some group work to develop. Ideally, a ten minute weekly session with a "participant observer", an observer, a tester and the teacher-researcher for each individual child would be desirable. It may be stretching credibility too far that such individualised schedules might eventually materialise but there is indisputable evidence that such are necessary for the mentally retarded hospital child.

Table 3b(i)

SUMMARY OF PROGRAMME TIMING FOR EACH GROUP IN MAIN INVESTIGATION - HOSPITAL SCHOOL B

| Programmes | Period | Teaching Session Weekly | Teaching Sessions per Programme | Contact with each Class per programme weekly | Total Contact with each Class in programme |
|---|---|---|---|---|---|
| Total | Total weeks | | | | |
| 1 | 12 | 50 minutes | 600 minutes (10 hours) | 60 minutes | 720 minutes (12 hours) |
| 6 | 72 | | 3600 minutes (60 hours) | | 4320 minutes (72 hours) |

Several authors purport that a variety of movement programmes have some impact on mentally retarded individuals. However, there have been few data based inquiries into the effects of actual development of these programmes. Furthermore, most programmes have been only for very limited periods. The problem addressed by this study was to allow for a more in-depth investigation (Table 3b (i)) using the natural environment of the institution (Hospital School B).

The range of measures were as follows:- physical education performance tests; movement observation schedules; and observation sheets (216 in all) (Appendix III) which when completed served as both lesson summaries and as aids to recollection for the later detailed lesson "write ups". The observation sheets were divided

into several sections:-

i) class reactions,

ii) teacher difficulties,

iii) pupil observations, in the movement programme

iv) behaviour problems,

v) extent of material covered, and

vi) a brief appraisal.

While only overt, surface behaviours were recorded through such observations, nevertheless they did help to identify some of the teaching problems which were encountered in the programme. The observational data on the pupils' responses were examined in terms of four levels from Bloom et al.'s (1964) taxonomy of affective objectives; willingness to receive, acquiescence in responding, willingness to respond, and satisfaction in response.

Additionally, all the groups were video-taped for sessions one and twelve for each of the six programmes. The video-taped material aided the researcher to check the individuals' developments and achievements. It provided evidence for the team operation; in a sense it was possible to monitor everything that was going on at the same time. However, as the movement sessions were decentralised it proved extremely difficult. The teacher researcher used a radio-microphone; however, some interchanges with the retarded children were missed. The main function of the video-tape recordings was to collect data to help the teacher researcher:- to self-monitor the situation; to note salient patterns in the movement behaviour of the retarded children; to develop dialogue with the participant observers; to develop dialogue with the observers about the responses of the

retarded children. The adopted methods produced "illuminating" data but not overwhelming data (Elliot, 1976, p. 33). From the observational data of 72 hours of video-taped material, a short overview tape of the three groups of retarded children proceeding through the open ended Laban movement programme was produced (Volume II). As one team participant commented, "the more a teacher self-monitors, the more likely he is to bring about fundamental changes". Rowe (1973) commented that:

> "Nothing is ever in a state of stasis, nothing is ever finalised, always there is reappraisal in the light of new experiences." (cited in Elliot, 1976, p. 44).

The first point to emerge from these observations was the high rate of staff activity in all three groups. For most of the time, the staff were actively doing something with the children. The children's responses to staff's requests were studied as each prepared for the weekly training sessions. The children in Groups 1 and 3 less often complied with the instructions given and when they did so, on average for less than 2 minutes.

In Group 2 the children's responses to staff request to carry out an activity, usually complied, but they only persisted for an average of less than 3 minutes. These time recordings were monitored weekly whilst the three groups prepared for the movement education lesson.

The possible reasons for this difference between Group 2 and the other two groups were noted, as the two "participant observers" of this group continued to provide movement training sessions on the days when the experiment was not operating. However, the findings from all three groups indicate the necessity of close supervision, constant repetition of the activity and a variety of

teaching styles. Again in Group 2 most of the inter-action constituted of some kind of instruction, directing the child being the most frequent, followed by showing the child something, and thirdly, by some kind of questioning. It was noted that Groups 1 and 3 were quite different in this respect. Acts of instruction were less frequent and playing with the child was relatively more frequent. However, this difference was a function of the fact that Group 1 children (mean age 123.9 months) had been attending this Hospital School B for a shorter period (37 months being the average length of time in the school) and also Group 1 had a greater proportion of younger children compared to Groups 2 and 3.

The Movement Observation Schedule (referred to as M.O.S.) designed by the researcher incorporated the Laban type of movement. The three levels consist of qualitative movements that are neither sequential or developmental in physical terms yet the levels refer to the phases of the Laban movement programme (Phase I: Vocabulary Building; Phase II: Sequencing; Phase III: Task Orientation) that are described briefly in this Chapter (Appendix II describes the programme).

The physical education skill performance tests provided evidence of the physical readiness which could be described as a prerequisite for the Laban movement training programme. Some parts of the skill orientated programme developed into Laban biased movement patterns.

The tests of physical performance assessed psychomotor skills, namely physical stance in the sense of correct position; guided response in the sense of ability to learn through imitation; and mechanistic in that the learned response had become habitual and could be performed and repeated correctly (Colwell, 1970).

Measures used to test the effects of the training programmes were physical education tests. The tests served as measures of pre-specified skills which were tests of physical education that were useful but limited for a movement programme. It was of course, axiomatic that "success" or "failure" of the programme resulted from a complex interaction process between programme and teacher; programme and pupil; teacher and pupil. The team cooperation with the researcher in a joint enterprise had a significant bearing on the entire project. Comparisons were made between groups and across the sample and sex; pre and post-tests were examined on the six individual programmes of the thirty E. S. N. (S) subjects. Additionally, individual profiles were studied and four individual case studies are included later in this chapter.

The observation schedules provided information regarding the individual's acquaintance with the programme and then in terms of each qualitative skill in relation to the pupils' level of performance. Additionally, within the profile was the individual's responses that helped to identify his broad interests such as attention, interest and pleasure in particular content areas of the programme. Within the same schedule, reactions were recorded when two "independent observers" monitored 'agreed' or 'disagreed' on an item. The items presented allowed the observers to give a response, by checking those attitude items like inattention, indifference, fatigue, rejection or restlessness. This proved a useful one, especially with the continuous development of the content material for the training programmes. The observational schedules were able to record the development of qualitative and quantitative aspects which the tests and the movement observation schedules neither measured nor recorded. Additionally, these schedules were being used in "an untest" environment although the reader is cued to the fact that many of the test items were part of the phases in the content material (Appendix III).

In addition, a sensory systems check sheet was devised for use prior to and during the training programme. These Awareness Observation Schedules included recordings of fine and gross motor responses, records of imitation and communication, responses of commands, gestures and words (Appendix III). In summary, these schedules provided information for the development of the Laban type movement which had three continuous movement phases in the teaching material of the movement programme.

It was essential in the teaching to use a multi-sensory approach to a task in which a child was having difficulty by expecting him or her to look at the task, for example, step onto a mattress or step forward (pointing the direction) - walking three steps and stopping, then physically helping and controlling the child. It was desirable that the child was properly positioned for good body alignment and optimal visual range and movements. Helping the child to become physically prepared before beginning a training sequence was part of each session. This was done by keeping the environment free from too much stimuli, talking gently to the child or group of children, sometimes gentle rocking in the fetal position and the recognition of each individual verbally and visually. Appendix II indicates how accompaniment was used in naming and recognising individuals.

The approach used in the training programmes cannot be called a physical education or exercise orientated style of teaching. The focus of the main experiment was on the experience, not any end product. By changing the emphasis the interweaving of theory and practice accommodated individual needs.

Programme Content

In general terms, there were three phases in the training

programmes; Phase I: produced vocabulary building of movement skills and patterns; Phase II: produced sequences of movement; Phase III: produced a task orientation focus. Each of the phases accounted for the variety of teaching styles. However, the phases in the training programme were neither sequential nor developmental. The writer (as "the teacher") was able to select from the phases as self-confidence and interest developed.

The following synopsis represents an outline of the relevant features of the programmes, further details are recorded in Appendix II.

## PHASE I: VOCABULARY BUILDING

(a) Identification. Understanding of the individual effort qualities by seeing, hearing, saying and doing. Emphasis was placed on the elements which the children found difficult.

These children, like any other people, have individual difficulties of extreme slowness or haste. Their difficulties tended to be extreme. This insight illustrates that an observer might use this deficiency to build up rhythmic sequences and help the individual to overcome some of his particular problems.

(b) Discrimination. between contrasting qualities. Learning to distinguish verbally, visually, kinesthetically, the differences between, for example, a direct and a flexible movement, or a firm and direct movement.

This particular section of vocabulary building in

(b)...

movement was difficult for the sample to comprehend. It appeared that at a performance level flexible movements were produced, repeated, and a level of mastery was achieved. Movements that were direct and firm required much more help. Incorrect responses equalled correct responses. Laban's four motion factors, weight, time, space and flow alongside the effort elements (firm, light, sudden, sustained, direct, flexible, bound and free) were taught throughout the six programmes and experienced through a variety of movement activities and stimuli.

(c) Conceptualisation. Learning to classify movements using similar effort qualities, e.g. quick running, quick rolling, quick eye and hand movements.

They included activities involving balance, hand and eye coordination, whole body movements, manual dexterity and simultaneous movements with both hands.

## PHASE II: SEQUENCING

(a) Sequencing of activities and different qualities were given for each child to interpret according to his own capabilities, for example a strong jump, followed by a sustained roll.

The sequence of activities was determined by whether the movement pattern was in response to a given stimulus for example, balance. In the basic position, raise one arm and move it about, return to starting position, raise the other arm and repeat the action. Or to develop a sequence

(b)...

as produced by the "teacher" following the tambour beat or by a phrase in a musical melody or initiated by descriptive vocabulary from "the teacher" for example "whirl, twirl and melt away". ("Teacher" being the writer who taught in each session. )

(c) (i) Individual experimentation of movement tasks, simple sequences were built up by the children, using two or three different qualities.

(ii) Selection and repetition of sequences to show different degrees possible in the elements, e.g. very quick, very sustained.

This was extended to cover a full range of basic actions such as running, walking, climbing and balancing.

The two main methods were involved: firstly, being taught to imitate. This method orientated the pupil to the specific tasks involved and there was no expectation of complex tasks to be imitated. Secondly, the pupil was placed in a situation where he had to perform correctly. Barriers or artificial restraints to eliminate undesirable skills and activities were developed which dictated the correct performance; games were used to direct and enhance desired skills.

The physical activity of walking was taught by this method, the process of continually losing and regaining one's balance; push off, hip flex, knee and ankle flex to lift foot; body weight transferred from heel along outer edge of foot to ball and toes for next push off; arm motion co-ordinated with legs. A description of the exercises that developed are in Appendix II.

## PHASE III: TASK ORIENTATION

(a) Task analysis. The emphasis here was placed upon the activities which the child found most difficult in relation to the effort elements.

(b) Experimentation. Finding alternative ways of achieving the objective of the task; for example different ways of getting a jumbo sized ball moving around the room, different ways of climbing on and off a "teacher made" ledge, different ways of moving around a "teacher made" circuit of forms, benches, mattresses and shapes.

(c) Analysis of individual responses in terms of the efficiency of the appropriate qualities which were involved in the selected movement tasks.

In Phases I and II, the focus was towards the effort qualities and not primarily on the skill. In Phase III more emphasis was placed upon the skill, recreating and referring back to effort qualities, movement sequences being taught and created. Both direct and indirect teaching methods were used throughout these three Phases (Appendices II and VII).

The major purpose of the programme was elicitation of, and training in, the various basic movement patterns. A number of general factors were operative and considered in the movement performance. The factors were laterality, directionality, balance, occulo-motor control and visual orientation, rhythm, body image, flexibility, variability and pacing, co-ordination, control, body mechanics, attention, strength, total body participation and group participation.

Indication has been made of activities for a number of these purposes, none of the factors being specific to any particular technique or activity. For example, activities for laterality and directionality may also be teaching running and jumping.

## PART II

### ANALYSIS OF DATA

The following null hypotheses were tested:-

1. There would be no significant difference between pre and post-test scores on the Test of Identification of Body Parts in the programme.

2. There would be no significant difference between pre and post-test scores on the Test of Gross Agility in the programme.

3. There would be no significant difference between pre and post-test scores on the Test of Body Perception in the programme.

4. There would be no significant difference between pre and post-test scores on the Test of Imitation of Body Movements in the programme.

5. There would be no significant difference between pre and post-test scores on the Test of Exercise in the programme.

6. There would be no significant difference between pre and post-test scores on the Test of Rhythmic Body Response in the programme.

7. There would be no significant difference between pre and post-test scores on the Movement Observation Schedules in the programme.

For the purposes of assessing the subject's performance the following methods were used to examine the data:-

1. Descriptive statistics,
2. Formal testing,
3. Case studies, and,
4. Video-tape overview (Volume 2).

## 1. DESCRIPTIVE STATISTICS

The writer shows in tables 3b(ii) and 3b(iii) the mean scores of the subjects on pre-test 1 and post-test 6 for each physical measure and yet realises that one cannot normally compare one severely sub-normal person with another. Secondly, since no two children are identical, comparing an individual runs the risk of error. Thirdly, even the best standardised tests are subject to errors both of measurement and interpretation. Fourthly, since the majority of these tests have been standardised on mildly retarded individuals their use with severely retarded hospital children is somewhat limited.

The approach that the researcher initiated and developed was different methods for assessing the severely retarded hospital subjects.

However, by way of summary it was useful to look at the sample as a whole, by sex, by group and individually, all of which was aimed at not just assessment for the purpose of categorisation and placement but at providing data for the experimental programmes. Furthermore, assessment was continuous and "on going". (Appendices VI and VII.)

Table 3b(ii) shows the mean scores of subjects on pre-test 1 and post-test 6 for each physical skill measure.

| TEST | PRE-TEST 1 | S.D. | POST-TEST 6 | S.D. |
|---|---|---|---|---|
| Identification of Body Parts | 4.2 | 1.5 | 4.1 | 1.3 |
| Gross Agility | 3.1 | 1.06 | 4.03 | 0.09 |
| Body Perception | 2.3 | 0.09 | 3.7 | 0.8 |
| Imitation of Movement | 4.6 | 2.7 | 9.3 | 2.2 |
| Exercise | 3.9 | 1.5 | 5.4 | 1.3 |
| Rhythmic Response | 7.4 | 2.7 | 9.3 | 3.8 |

The Table 3b(ii) shows that the subjects ( n = 30) showed no significant difference on the Test of Identification of Body Parts although on the Tests of Gross Agility, Body Perception, Imitation of Movement, Exercise and Rhythmic Body Response some changes in physical performance are evident. Further analysis attempted to deal with this by allowing some examination of the effects of each physical skill measure.

## TEST OF IDENTIFICATION OF BODY PARTS

The scores (Appendix VI, Table 17a(i)) suggest that there is no progressive gain in the overall programme although some change is evident. In programmes numbers 4, 5 and 6 this sample demonstrated some improvement and some change.

## TEST OF GROSS AGILITY

The scores (Appendix VI, Table 17a(ii)) suggest that some level of agility had been achieved by rehearsal within the continuous programmes.

## TEST OF BODY PERCEPTION

The scores (Appendix VI, Table 17a(iii)) suggest that there had been some gain in performance. The content of the programme was perhaps providing physical readiness for body perception and body awareness activities.

## TEST OF IMITATION OF MOVEMENT

The scores (Appendix VI, Table 17a(iv)) suggest an increment had been achieved from pre-test 1 to post-test 6 (Table 3b(ii)), a mean gain of 4.7 that being greater than the mean score for programme 1 on the pre-test.

The level of physical performance in this measure improved sharply over the period. This test measure demanded considerable stamina and physical precision.

## TEST OF EXERCISE

The scores (Appendix VI, Table 17a(v)) suggest an increase in five of the programmes. However, Programme 4 showed a decrement. The overall change from Programme 1 on the pre-test to Programme 6 on the post-test shows a mean gain of 1.5 (Table 3b(ii)).

## TEST OF RHYTHMIC BODY RESPONSE

The scores (Appendix VI, Table 17a(vi)) suggest that improvement occurred in the programmes during the first year of the experiment. The regularity of the programmes and the overall change from Programme 1 on the pre-test to Programme 6 on the post-test shows a mean gain of 1.5 (Table 3b(ii)).

It was expected that with an array of six skill measures there would be significant differences between the sexes. The Table 3c(iii) presents the results from pre-test 1 to post-test 6 of the male and female subjects for each skill measure. The indication is that both sexes show some increase in achievement from pre to post-test. However, the point was that assessment should be aimed not at categorisation and placement but also at determining the child's level of functioning in different areas in order to develop specific training programmes.

Table 3b(iii) shows the mean scores of male and female subjects on pre-test 1 and post-test 6 for each physical skill measure.

| TEST | MALE | | FEMALE | |
|---|---|---|---|---|
| | Pre-test | Post-test | Pre-test | Post-test |
| Identification of Body Parts | 3.9 | 4.1 | 4.6 | 4.1 |
| Gross Agility | 2.8 | 3.6 | 3.5 | 4.4 |
| Body Perception | 2.0 | 3.6 | 2.7 | 4.1 |
| Imitation of Movement | 3.0 | 9.4 | 5.4 | 9.1 |
| Exercise | 3.8 | 5.5 | 4.0 | 5.2 |
| Rhythmic Response | 7.0 | 9.0 | 7.9 | 10.7 |

In the experiment as a whole the individual child's scores were variable, and fell into no consistent pattern. The important feature lies not in how many items are recalled, but if the test items were transferrable to the training programmes, even though the child may be unaware of it, or unable to recognise it.

What is needed is to investigate if any change was demonstrated in the training programmes and when the change was recognisable in the specific movement skills.

## (2) FORMAL TESTING

### MEASUREMENT BETWEEN GROUPS

In order to determine whether the two groups (male and female) are significantly different the Mann-Whitney U Test was used to analyse the data. The Mann-Whitney U Test was particularly relevant as the appropriate measurement was at the ordinal level. The researcher was confident that a higher score represented a higher physical accomplishment than a lower score although he was not sure that the scores were sufficiently exact to be treated as equal interval data. Furthermore, the experimental findings were likely to be less than valid when the same pre and post-tests were used. Yet these measures allowed the writer to actually "narrow down" what truly influences what within an experiment context.

Tables 3c(i) to 3c(vi) show the Mann-Whitney U Test rank differences between male and female subjects in each physical performance skill measure. Where the differences occurred are highlighted in each of the tables.

When applied to the Test of Identification of Body Parts the null hypothesis states that there will be no significant difference between the male and female subjects. When this p is less than $\alpha = .05$, the null hypothesis is rejected (Table 3c(i)).

Table 3c(i) shows the rank difference between male and female subjects on the Test of Identification of Body Parts.

| TEST OF IDENTIFICATION OF BODY PARTS | | | | | |
|---|---|---|---|---|---|
| Stage of Testing | Group Sex | No. | Group Sex | No. | Corrected for ties |
| | M | 16 | F | 14 | Two tailed p |
| | Mean Rank | | | | |
| 8 | 12.5 | | 18.8 | | 0.04 |
| 9 | 11.9 | | 19.5 | | 0.01 |
| 10 | 12.6 | | 18.7 | | 0.05 |

The differences occurred in post-test of Programme 4, the pre and post-tests of Programme 5 on the Test of Identification of Body Parts.

In Table 3c(ii) the Test of Gross Agility results show a level of significance which was a level of confidence being achieved. The hypothesis states that there will be no significant difference between the male and female subjects. When this p is less than $\alpha = .05$ the null hypothesis is rejected (Table 3c(ii)).

Table 3c(ii) shows the rank differences between male and female subjects on the Test of Gross Agility.

| TEST OF GROSS AGILITY | | | | | |
|---|---|---|---|---|---|
| Stage of Testing | Group Sex | No. | Group Sex | No. | Corrected for ties |
| | M | 16 | F | 14 | Two tailed p |
| | Mean Rank | | | | |
| 2 | 10.8 | | 20.86 | | 0.001 |
| 3 | 12.34 | | 19.11 | | 0.02 |
| 4 | 12.34 | | 19.11 | | 0.02 |
| 6 | 12.25 | | 19.21 | | 0.02 |
| 10 | 12.03 | | 19.46 | | 0.01 |
| 12 | 12.53 | | 18.89 | | 0.03 |

The differences occurred in post-test of Programme 1, pre and post-tests of Programme 2, post-test of Programme 3, post-test of Programme 5 and post-test of Programme 6 on the Test of Gross Agility.

When applied to the Test of Body Perception the null hypothesis states that there will be no significant difference between the male and female subjects. When this p is less than $\alpha = .05$, the null hypothesis is rejected (Table 3c(iii)).

Table 3c(iii) shows the rank differences between male and female subjects on the Test of Body Perception.

| TEST OF BODY PERCEPTION | | | | | |
|---|---|---|---|---|---|
| | Group Sex | No. | Group Sex | No. | Corrected for ties |
| Stage of Testing | M | 16 | F | 14 | Two tailed p |
| | Mean Rank | | | | |
| 1 | 12.50 | | 18.93 | | 0.03 |
| 3 | 12.69 | | 18.71 | | 0.04 |
| 6 | 12.25 | | 19.21 | | 0.02 |

The differences occurred in pre-tests of Programmes 1, 2 and post-test of Programme 3 on the Test of Body Perception.

When applied to the Test of Imitation of Movement the null hypothesis states there will be no significant difference between the male and female subjects. When this p is less than $\alpha = .05$, the null hypothesis is rejected (Table 3c(iv)).

Table 3c(iv) shows the rank differences between male and female subjects on the Test of Imitation of Movement.

| TEST OF IMITATION OF MOVEMENT | | | | | |
|---|---|---|---|---|---|
| Stage of Testing | Group | No. | Group | No. | Corrected for ties |
| | M | 16 | F | 14 | Two tailed p |
| | Mean Rank | | | | |
| 3 | 12.66 | | 18.75 | | 0.05 |
| 4 | 11.94 | | 19.57 | | 0.01 |

The differences occurred in pre and post-tests of Programme 2 on the Test of Imitation of Movement.

When applied to the Test of Exercise the null hypothesis states that there will be no significant difference between the male and female subjects. When this p is more than $\alpha = .05$ the null hypothesis is supported (Table 3c(v)).

Table 3c(v) shows the rank difference between male and female subjects on the Test of Exercise.

| TEST OF EXERCISE | | | | | |
|---|---|---|---|---|---|
| Stage of Testing | Group Sex | No. | Group Sex | No. | Corrected for ties |
| | M | 16 | F | 14 | Two tailed p |
| | Mean Rank | | | | |
| 5 | 16.47 | | 14.39 | | 0.05 |
| 7 | 14.47 | | 16.68 | | 0.04 |
| 10 | 16.28 | | 14.61 | | 0.05 |
| 11 | 17.41 | | 13.22 | | 0.01 |
| 12 | 16.44 | | 14.43 | | 0.05 |

The differences occurred in pre-test of Programme 3, pre-test of Programme 4, post-test of Programme 5, pre and post-tests of Programme 6 on the Test of Exercise.

When applied to the Test of Rhythmic Body Response the null hypothesis states there will be no significant difference between the male and female subjects. When this p is less than $\alpha = .05$ the null hypothesis is rejected (Table 3c(vi)).

Table 3c(vi) shows the rank differences between male and female subjects on the Test of Rhythmic Body Response.

| TEST OF RHYTHMIC BODY RESPONSE | | | | | |
|---|---|---|---|---|---|
| Stage of Testing | Group Sex | No. | Group Sex | No. | Corrected for ties |
| | M | 16 | F | 14 | Two tailed p |
| | Mean Rank | | | | |
| 7 | 12.13 | | 19.36 | | 0.02 |
| 9 | 12.59 | | 18.82 | | 0.05 |
| 10 | 12.41 | | 19.04 | | 0.03 |

The difference occurred in pre-test of Programme 4 and pre and post-tests of Programme 5 on the Test of Rhythmic Body Response.

Table 3d shows a summary of the responses of sample by sex on the Mann-Whitney U Test in each physical skill performance measure.

| Execution Sequence of each Measure | Measure | Means | | | | Two Tailed p | |
|---|---|---|---|---|---|---|---|
| | | Male | | Female | | | |
| | | Pre-test 1 | Post-test 6 | Pre-test 1 | Post-test 6 | Pre-test 1 | Post-test 6 |
| 1 | Identification of Body Parts | 12.91 | 12.50 | 18.46 | 18.93 | 0.08 | 0.04 |
| 2 | Gross Agility | 12.16 | 11.09 | 19.32 | 20.54 | 0.02 | 0.003 |
| 3 | Body Perception | 12.97 | 11.78 | 18.39 | 19.75 | 0.08 | 0.01 |
| 4 | Imitation of Movements | 13.06 | 13.81 | 18.29 | 17.43 | 0.104 | 0.2 |
| 5 | Exercise | 15.81 | 16.22 | 15.14 | 14.68 | 0.8 | 0.6 |
| 6 | Rhythmic Body Response | 12.53 | 12.59 | 18.89 | 18.82 | 0.04 | 0.05 |

The one group pre-test - post-test design provided for one formal comparison of two observations. In this design, however, several extraneous variables including maturation, the effects of the training programmes, the frequent testing, the instrumentation and the severely sub-normal hospital subjects themselves limit the weight which may be attached to observations.

Finally, in the absence of any appropriate tests for measuring the effects of movement training programmes the writer and the team attempted some kind of prognosis. Subject to the caution already emphasised it is reasonable to suggest that accuracy of the prediction can only be improved if the additional data is noted from the video tape, the observational schedules and the monitoring procedures.

## (3) CASE STUDIES

In order to interpret and to assess the data obtained from groups the writer informs the reader of four case studies. This focus interprets the creative element which is an integral part of the training programme.

A particularly important advantage is the possibility of a case study identifying a pattern of influences that is too infrequent to be recognised by the more traditional analyses. It is a style of inquiry which is particularly suited to the severely sub-normal hospital child.

It has a number of weaknesses. The observers had to be selective and focus on specific categories of movement. However, the case study approach is very flexible, and can pick up unanticipated effects; it can take account of new insights.

The case study method was appropriate in Hospital School B as relationships of mutual understanding and trust were evident. The good relationships stem from the initial approach and working regularly in the institution and the involvement of its pupils and staff. The backing given by those in authority and by those in key positions in related institutions in terms of financial support and also in terms of interest, helped to create encouragement and a sympathetic understanding. Segments of the video taped materials were given to the institution during the experiment period as resource materials although of variable quality. The practical sharing of the data did help the case study process.

The four case studies were selected in collaboration with the "participant observers" of each group. The first step was to recognise those children who showed more than usual problems which were characteristic of a group of severely sub-normal hospital children; the second step was to examine the attendance records of specific children and the third step was to consult with the multi-disciplinary professional team, in order to gain medical insight about the background of the children. Additionally, the teacher researcher believed that it was necessary to establish a relationship with each of the individuals and to be flexible enough to share in ordinary classroom activities with the individuals.

Each child had an excellent attendance record prior to the experimental period and although the individuals were severely retarded they were known to be receiving no drugs.

SUBJECTS: Greta and Bryan were selected because they were the youngest in each group (Groups 1 and 2). Greta's limbs are affected by cerebral palsy. She can voluntarily move her arms at the elbows. Bryan had no physical body

deformities. Both subjects responded to attention and praise, and wanted to co-operate.

SUBJECTS: Ben and Helen were selected because of their medical history and they showed from their classroom records that they participated in activities together (Group 3).

None of the cases was receiving special help from physiotherapists or occupational therapists although medical permission was sought before the commencement of the movement training programme for the entire sample.

Each training session included individual and group participation. Furthermore, while one child was being taught, others in each group (ten children) sometimes were found to be doing nothing or/ and engaging in appropriate activities. Within each group programme the three participating adults had a definite role. The organisation was not ideal but the collaboration and careful planning allowed some individual programmes to operate. Since no two mentally handicapped children are identical the writer cues the reader to looking at individual cases.

Individual effort profiles were made to compare a child's responses with the effort elements that "the team" (the "participant observers", the observers, the testers and the teacher researcher) agreed upon in their analysis of each of these activities. The total number of incorrect movement responses were then measured to give an indication of the area and extent to which the training was needed. Diagrams 3a(ii), 3a(iii), 3a(iv), 3a(v) show the individual effort profiles and where the most help was needed. The profiles were

completed by the team involved in the programmes. A rating scale A to E was used (Allen, 1970).

(Rating Scales (Total %): (A: 0-20; B: 21-40; C: 41-60; D: 61-80; E: 81-100). This same rating scale helped the team in this experiment to agree on the total number of correct and incorrect responses.) Diagram 3a(vi) summarises the responses and showed to some extent the focus to which training was needed.

Table 3e(i) shows the background of each case, the similarities and differences between each.

| Subjects Identity | Greta 1G | Bryan 2B | Ben 3B | Helen 3H |
|---|---|---|---|---|
| Age at commencement of experiment | 7.2 yrs. | 13.0 yrs. | 15.2 yrs. | 15.8 yrs. |
| Possible handicap | damage at birth - Cerebral Palsy | Premature, unclassified retardation | Spastic Hemiplegics | |
| Siblings | 2<br>10 yrs. f<br>13 yrs. f | 2<br>twins<br>1 yr. m | 1<br>4 yrs. f | 1<br>4 yrs. f |
| Information on siblings | physical handicap no mental retardation | born during period of experiment, normal | Down's Syndrome<br>In same institution | Down's Syndrome |
| Current placement | 4 years | 8 years | 10 years | 10 years |
| Parental information | f. management level industry<br>m. p/t clerical | f. Bank Manager<br>m. p/t Teacher | f. Teacher<br>m. Teacher | f. management Civil Service<br>m. Nurse |
| Home background | All cases have 2 parents of professional status | | | |
| Age group of mother at birth of child | 37 years | 22 years | 39 years | 35 years |
| Additional information | | Mother Rh. Negative, but child was not considered to be affected | Family stress commented upon by school contacts | |

## CASE STUDY 1

## GRETA

Greta is discussed in order to focus the reader on an individual from Group 1. Greta, subject G, the youngest in the group, aged 7 years 2 months at the beginning of the investigation. Greta's mental handicap was recognised at birth and she was admitted to the present institution at 4 years of age; her siblings, two older sisters, were mildly physically but not mentally handicapped. The Gunzburg assessment procedures showed Greta at the beginning of the study as functioning on self-help skills; communication varied from throaty noises to two syllables for example, "da-da", "ba-ba" to twenty single words. From this basic level Greta listened to music, searched for sound with her eyes, followed moving objects with her eyes, was able to move in different directions and repeated the same movement pattern consecutively for at least six sessions. Her movements were flexible and she responded to strong movements, she listened to rhythms and was interested in electronic music, nonsense sounds and percussion instruments. After her physical expression showed a social awareness, she squirmed and responded to people, recognised familiar people and reached for attention by making noises. Greta's fine motor movements were limited although she could transfer objects from one hand to another. Gross motor agility skills indicated some developmental progress particularly as she was a Cerebral Palsy spastic. Greta was able to reach for objects by leaning forward and picked up objects without falling. She walked with an internal rotation with flexed hips and knees. She has had extensive surgery but she walked fairly well in her boots. Her balance was poor; she had great difficulty in standing still and tended to jig up and down to keep her balance. Because of the effort of bringing her feet forward to walk, the upper extremities became tensed, so she pulls her arms up with her elbows bent. Her equilibrium reactions were slow.

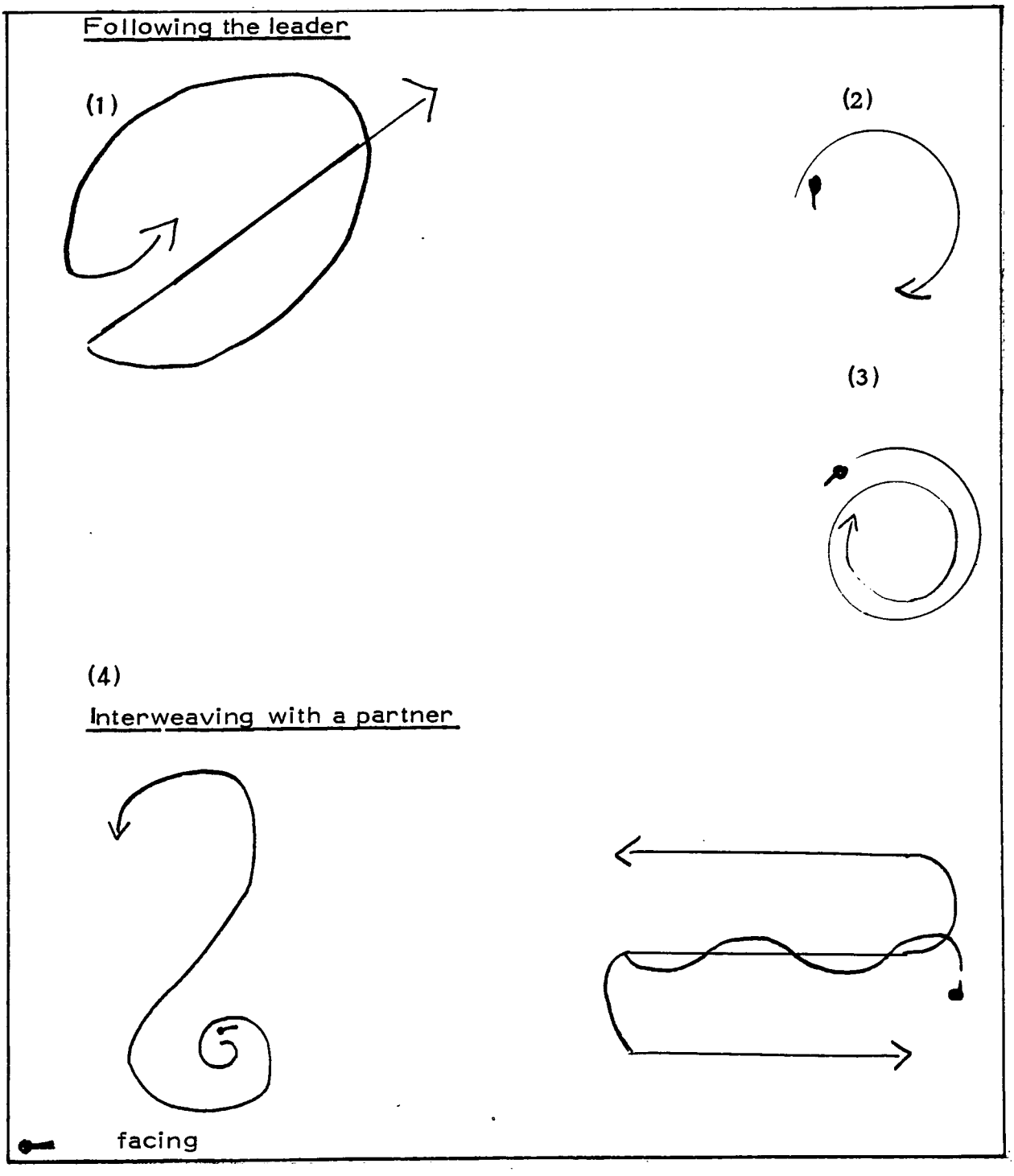
Greta was able to produce some movements with quality such as flexible pathways and patterns. These were achieved by her moving in and out of circles and around spaces, following in a file (Appendix VI), and by following a leader and a partner (Diagram 3a(i)), Greta's performance of strong firm movements were clear whereas light crisper movements were lacking. The Gunzburg profile suggested that Greta was sensitive to music and moved to sounds adequately; some movement responses were achieved to songs and participation in musical games was constant. Greta was able to maintain a full stretched body position for approximately three seconds. However, the nature of her physical disability was evident in her rocking body action.

Greta showed on the numerical data some increase in performance on the Tests of Identification of Body Parts and Gross Agility. Some gains were evident on three out of the six programmes in both measures. The Body Perception Test showed the subject with increments on two programmes. The Imitation of Movement Test showed an increased score in three programmes. The Exercise Test indicated some increment scores on three programmes. The Rhythmic Body Response Test showed increment from pre-test 1 to post-test 6 although an analysis of the individual programmes demonstrated that Greta's responses showed two programmes with an increased score, two programmes with a decreased score and two programmes with no change in score. The following were examples of exercises which helped Greta to improve her gait and balance:

1. Walking with rotation: walking to slow 4/4 music with exaggerated use of shoulders that was bringing the opposite shoulder forward to the extended foot. Both of these activities were performed constantly.

2. Sitting on the floor with the legs extended, both hands were placed on the floor at the back with elbows straight. This gave stability to the whole of the arms which physically did not always have much muscle power.

Diagram 3a(i) shows the dance patterns




Appendix VII shows further formations

Diagram 3a(ii) shows the Effort Profile of GRETA aged 7 years 2 months from the M. O. S. and the video-tape which provides a visual image of her qualitative movement responses.

| Laban's Motion Factors | Laban's Effort Elements | Rating A - E |
|---|---|---|
| Weight | Firm | A |
| | Light | D |
| Time | Sudden | E |
| | Sustained | A |
| Space | Direct | A |
| | Flexible | A |
| Flow | Bound | A |
| | Free | A |

MOST HELP NEEDED - with light and sudden movements

| RATING SCALE (TOTAL %) | | | | |
|---|---|---|---|---|
| A | B | C | D | E |
| 0-20 | 21-40 | 41-60 | 61-80 | 81-100 |

(Allen, 1970)

## CASE STUDY 2

## BRYAN

Bryan, subject B, aged 13 years at the beginning of the investigation was in Group 2 and the youngest child in this group. Bryan's birth record states: "the child was three weeks premature and forceps were used in the delivery". The medical record reads that "the child breathed immediately but has a history of vomitting early in life". Bryan had very poor eye sight and was an elective mute. Bryan's retarded mental condition was not recognised until he was eighteen months. He was described by his family as "a healthy little retarded boy". At two years of age Bryan was placed in an institution for "short term care placement". This placement lasted for six months after which the child remained at home until he was 8 years. This current placement in a hospital school for E.S.N.(S) children allows Bryan short periods at home.

Bryan appeared to look forward to the training sessions and had a good sense of rhythm. When asked what he would like to do he says "gallop". He nods or shakes his head constantly. This weekly training session was noted by the "participant observers" as being the only time that Bryan related to other children.

Bryan's mental handicap although identified as severe retardation, was unclassified as was his physical development profile. Bryan was an only child at the commencement of the programme and during the programme siblings were born (twins during the second year of the investigation). Bryan's self-help skills were satisfactory, his mobility skills were limited, he sits with slight support, walks with a slight lilt.

When climbing and stepping at various levels on foam mattresses, he places both feet together on each step. He was toilet trained; however accidents occurred on five occasions. He cooperates passively when being dressed although he removes and puts on simple articles of clothing. Communication skills were usually "coos", the only clear word uttered was "gallop"; however, Bryan listens to music, searches for a sound with his eyes although his eyesight was recorded in his medical records as poor. He turns his head as if to hear the sound. He handles objects on request. When listening to rhythms, he moves his head and responds bodily but not with any visual physical facial expression. However, Bryan's rhythmic body responses to songs seemed to be positive. He looked for objects that have fallen over by leaning forward, yet it was more like a repetitive movement than a specific task being answered.

Bryan demonstrated in the Test of Identification of Body Parts an increased performance level in five out of six programmes; however, from pre-test 1 to post-test 6 the numerical score achieved was unchanged. The Gross Agility Test and the Body Perception Test showed an increased performance level in four out of six programmes. The Imitation of Body Movement Test showed that in five programmes increments occurred and from pre-test 1 to post-test 6 the numerical score was more than three times that achieved on pre-test 1. The results were particularly significant in this test which demanded a visual interpretation and a visual copying of the performed activity. The Exercise Test results showed that on three out of the six programmes an increment was evident and from pre-test 1 to post-test 6 a gain was recorded. The gain score in the Exercise Test was taken as a probable maturational growth sign. The Rhythmic Body Response Test showed increased scores in four programmes (Programmes 3, 4, 5 and 6); from Programme 1 to 6 there was a marked increase in score (from

10 to 18 points).

The gain responses in the tests of Imitation of Movement, Exercise and Rhythmic Body Response were noted particularly as they corresponded with aspects of the Gunzburg profile which showed assessment strengths of the subject. Furthermore, the M.O.S. provided some evidence of this subject responding to the Laban orientated movement. Bryan showed limited participation in M.O.S. Level 1 where the qualitative element was monitored. However, responses improved when physical participation involved working and moving with others; similarly, response to external accompaniment was positive. The movement groupings that developed indicated the social awareness which the individual achieved (Appendix VII). In particular, Bryan responded to a variety of tactile stimuli; "Follow the leader" patterns developed with balloons and materials. Additionally, percussion instruments produced participation and provided further interest for body responses with this subject. Again, using "a follow the leader" activity and by moving in close proximity to other subjects as in M.O.S. Levels 2 and 3 Bryan produced specific body shapes and movement sequences with his arms, legs, body and feet.

Diagram 3a(iii) shows the Effort Profile of BRYAN aged 13 years from the M. O. S. and the video-tape which provides a visual image of his qualitative movement.

| Laban's Motion Factors | Laban's Effort Elements | Rating A - E |
|---|---|---|
| Weight | Firm | A |
| | Light | E |
| Time | Sudden | C |
| | Sustained | E |
| Space | Direct | A |
| | Flexible | A |
| Flow | Bound | A |
| | Free | A |

MOST HELP NEEDED - with light, sudden and sustained movements

| RATING SCALE (TOTAL %) | | | | |
|---|---|---|---|---|
| A | B | C | D | E |
| 0-20 | 21-40 | 41-60 | 61-80 | 81-100 |

(Allen, 1970)

## CASE STUDIES 3 AND 4

## BEN AND HELEN

These two subjects were studied together because consciously or unconsciously the writer recognised some rivalry or jealousy between Ben and Helen. It seemed that difficulties might be created if any preferential treatment had been given to one of the children. The writer believed that studying these two subjects side by side created another dimension in the case study approach.

Ben and Helen were the subjects in Group 3. Subject B, who will be called Ben and subject H who will be called Helen were both 15 years with an age difference of six months. They were both multi-handicapped and are classified as spastic hemiplegics. Both subjects were severely mentally retarded with disturbed behaviour and limited speech. These two subjects have similar medical records; they were identified at birth, each has a sibling of four years their junior of the same sex in the institution. The siblings in each case of Ben and Helen showed Down's Syndrome. However, their personalities and cognitive abilities varied widely as does their physique.

Ben and Helen were similar in functioning levels, as recognised and observed from the Gunzburg Primary Assessment Chart; their self-help skills were adequate, their mobility was reasonable, toileting and washing was satisfactory but described as "very slow". Communication skills were variable. Ben refers to himself by his own name, uses the names of familiar objects, constantly asks the question - "What's that?", "What's this?". Whereas Helen would give two to three clear words like "bye car", "bye box". Both subjects listened

to music, looked around the room for sound with their eyes, responded to "No", responded to questions, responded to directions, listened to rhythms and were able to differentiate between some instructions like "walk, walk, walk" and "slowly, slowly, slowly". Both Ben and Helen were able to stretch out; showed expression; recognised familiar people; and looked at mirror images with interest. Fine finger movements were about equal in Ben and Helen; in gross motor movements Helen showed a preference for participation in musical accompaniment that additionally had a vocal response, whereas Ben responded to tactile stimuli and manipulated the object and reached out for additional objects.

Ben and Helen were able to produce flexible and direct movements which allowed them to work together following and copying each other; they worked as partners and with others. They were able to form a circle, move in time to sounds like "Here we go round the mulberry bush" and participate with appropriate responsive actions. Ben repeated some of the words but Helen's responses were more limited. Further movement patterns developed with Ben and Helen as they followed in lines, moved from one area in the room to another, and produced patterns of movement (Appendix VII). Ben and Helen were able to produce and create several step patterns which provided the basis for a dance, and with rehearsal and repetition a variety of body movements and actions developed. Arms were raised and parts of the body were used to form circular movements, through physical proximity of the body. Both the subjects demonstrated dance like patterns. Overall their physical disability was not a hindrance.

The focus and accent for these two subjects was the use of both legs. Ben and Helen were helped to establish proprioceptic awareness of the affected side (joint and muscle sense). Spastic hemiplegics tend to disregard the affected side. They

used the affected limbs only when functionally necessary.

The numerical data describing Ben and Helen showed some similarities. In the Test of Exercise both subjects were performing with some success. The Body Perception Test results indicate that Ben and Helen had both increased in their physical achievements; however, their limited accomplishment in these two measures (Exercise and Body Perception) was linked to their physical retardation of specific muscles. The precision that the Body Perception and Exercise Tests demanded was not required in the Laban orientated movement schedules. The timing in the Laban movement was more flexible although specific movements were used to perform activities in certain directions and at a required level; the rigidity was lessened which allowed spontaneity and sensitivity to be developed. The Test of Identification of Body Parts provided some achievement. Ben's pre-test 1 to post-test 6 responses showed gains whereas Helen's showed a loss. However, both subjects demonstrated a level of confidence and achievement on the M. O. S. Level 1 which inferred that the quantitative movement responses were achieved in the bodily effort actions and activities. Ben and Helen showed some gains on the Test of Gross Agility.

The Imitation of Movement Test results indicate that Ben showed improvements in his performance from pre-test 1 to post-test 6. He demonstrated a trebled numerical score, from a total of five points to fifteen points and Helen's results showed that from pre-test 1 to post-test 6 a decrease in numerical score from 9 points to 5 points occurred. The tasks in the Imitation of Movement Test were developed into creative and sequenced patterns. Ben and Helen performed activities on M. O. S. Level 2, activities like "follow the

leader" in action; additionally, question and answer in movement activities with a partner. The Rhythmic Body Response Test results showed no change with Ben from pre-test 1 to post-test 6 although within some programmes there was recognisable interest and movement participation was visible; Helen showed an increased score on three programmes (Programmes 1, 3 and 5). The numerical scores indicated that Ben and Helen were accurately responding in rhythmic body responses in fifty percent of the programme. This rhythmic body response at this fifty per cent level was substantiated by M.O.S. Level 3 which required musical response to songs, nonsense songs and musical accompaniment.

The "participant observers" and the writer (the teacher) encouraged both subjects to tap the bad limb (sensory stimulation). Then they were instructed to lift their legs into the air and then to place it on the floor. The same instruction was used for their other legs (tapping it first) while looking at it. (This was to promote consciousness of the activity.) Both children continued this procedure of raising and lowering the legs (tapping and looking being emphasised). Gradually, both children had advanced from walk-lift, walk-lift on alternative legs to step-hop with alternative legs. Concentration and perseverance on the children's part with encouragement, praise and genuine excitement from the teacher, definitely speeded up this dramatic achievement.

The movements described with Ben and Helen, subjects in Group 3, were not evident in the numerical data, nor in the M.O.S. levels but were visible in the video-taped evidence. Additionally, the effort profiles of the two subjects (Diagram 3a(iv) and 3a(v)) cues the reader to the beginnings of the Laban movement which illustrates the creative element. However, the skill tests and the responses of the subjects infer that the pre-readiness physical skills developed into movement

patterns which were enhanced by musical accompaniment. It was the rhythmic responses which provided the motivating factor for the development of movement with Ben and Helen, for example, march time music, well known classical snippets from "The Planets Suite" (Holst) and "Peer Gynt" (Greig); sometimes even the latest songs from 'the hit parade' or television serial were used to excite and generate a desire to move and perhaps dance. Ben and Helen responded to the flexible and direct qualitative Laban movements; the subjects responded in movement terms in lines, circle formations and produced some dance (Appendix VII).

Diagram 3a(iv) shows the Effort Profile of BEN aged 15 years from the M. O. S. and the video-tape which provides a visual image of his qualitative movement responses.

| Laban's Motion Factors | Laban's Effort Elements | Rating A - E |
|---|---|---|
| Weight | Firm | C |
| | Light | D |
| Time | Sudden | E |
| | Sustained | E |
| Space | Direct | A |
| | Flexible | A |
| Flow | Bound | A |
| | Free | A |

MOST HELP NEEDED - with firm, light, sudden and sustained movements

| RATING SCALE (TOTAL %) | | | | |
|---|---|---|---|---|
| A | B | C | D | E |
| 0 -20 | 21-40 | 41-60 | 61-80 | 81-100 |

(Allen, 1970)

Diagram 3a(v) shows the Effort Profile of HELEN aged 15 years from the M. O. S. and the video-tape which provides a visual image of her qualitative movement responses.

| Laban's Motion Factors | Laban's Effort Elements | Rating A - E |
|---|---|---|
| Weight | Firm | B |
| | Light | A |
| Time | Sudden | A |
| | Sustained | A |
| Space | Direct | B |
| | Flexible | A |
| Flow | Bound | A |
| | Free | A |

MOST HELP NEEDED - in firm and direct movements that is to refine the activity

| RATING SCALE (TOTAL %) | | | | |
|---|---|---|---|---|
| A | B | C | D | E |
| 0-20 | 21-40 | 41-60 | 61-80 | 81-100 |

(Allen, 1970)

Table 3e(ii) shows the total percentage gain in performance in each measure by the four individuals on completion of the sixth training programme on physical skill (post-test 6) and Laban movement (M.O.S. post-test of the final programme.)

| Measures | SUBJECTS | | | |
|---|---|---|---|---|
| | Greta 1G % | Bryan 2B % | Ben 3B % | Helen 3H % |
| Laban Category | Actual scores from the main data | | | |
| M. O. S. 1 | 66.7 | 33.3 | 66.7 | 100 |
| M. O. S. 2 | 66.7 | 76.7 | 76.7 | 100 |
| M. O. S. 3 | 33.3 | 66.7 | 100 | 66.7 |
| Skill Category | Actual scores from the main data | | | |
| IDEN. | 50 | 76.7 | 33.3 | 50 |
| GA. | 50 | 66.7 | 50 | 50 |
| BP. | 66.7 | 66.7 | 50 | 17.5 |
| IMIT. | 66.7 | 76.7 | 66.7 | 50 |
| EX. | 33.3 | 50 | 66.7 | 0 |
| RHYTH. | 17.5 | 66.7 | 17.5 | 33.3 |

Table 3e(ii) shows the percentage gain in each measure by the four individuals which led to an examination in each case study of each variable. These percentages allow a crude interpretation although a simple comparison of mean difference and standard deviation led us to conclude that our difference was of practical significance but required statistical analysis. The Mann-Whitney U Test has indicated that our difference was not statistically significant (Table 3d).

## THE LABAN FOCUS IN THE CASE STUDIES

Appendix I includes the complete movement observation schedule and some of the developments. A ripple effect can be seen on affected individuals when the effort profiles are studied (Diagrams 3a(ii) to 3a(v)). The effort analysis is an additional aid in analysing why some children may show too much free flow and require activities which will enable them to develop qualities that are lacking. The writer interprets some positive change and refers to the creative element within it. The M. O. S. (Appendix I) recorded when the movement quality or activity had been achieved and demonstrated. This creative element which was demonstrated was not manifested in the numerical data. M. O. S. Level 1 (movement observation schedule) was based on the six classic elements of Laban's work, namely how the individual performed movements which demonstrated direct, flexible, strong, light and sustainment in bodily action (Laban, 1948). It was at this level that the Movement Observation Schedules were able to classify the quality of the movement performance in the mentally retarded subjects. M. O. S. Level 2 allowed the observers to monitor when some movement sequences were repeated and provided a base line for movement quality to be recognised. M. O. S. Level 3 provided a structure for the development of Laban movement. The reader is cued to the fact that "the movement phases" describe the content of the Laban training which are referred to in Chapter 3; and detailed in Appendix II.

The individual movement profiles in creative terms were not realistic to chart in each programme. However, some sequences in Laban notation and diagrams of the progressive Laban movement have been detailed in a format acceptable to dance educators (Collins, 1969) which are included in Appendix VII.

The Laban interpretation evidenced itself with the older subjects

in a clearer fashion. Bryan, Ben and Helen all participated in the Laban orientated movement with quality and a clearer 'end product' which resulted in a creative interpretation. Bryan (13 years), Ben and Helen (15 years) had gained confidence in their skill levels; in developmental terms there was maturation and a level of achievement. These subjects achieved this through repetition and the fact that music increased their activity level. The repetitive movement task was used with a variety of sound accompaniments which created patterns and sequences (M. O. S., Level 3). This finding indicated that tempo and task can be matched to facilitate performance. The relevance of the results lies in the possibility that certain music may prove more effective in yielding lasting improvement when used in particular circumstances. It may appear from this that faster music must necessarily facilitate greater learning. However, it was found that background music of a specific tempo was effective in motivating all the subjects to walk and to physically move and explore the space of the room. Another explanation was that music serves as an attention directing variable and facilitates the organisation of information through rhythm. The present results support previous research indicating that music has an activating effect and any procedure incorporating music that increases vigilance and skill should also facilitate learning. Perhaps, environment manipulation in the form of a specific tempo background was used to assist in the sequence and phrase building. The results indicated that the accompaniment facilitated the greatest improvement in performance, suggesting that the skill-readiness achievements were enhanced by the effect of music on the movement performance that provided a Laban movement response.

The Laban effort profile in Diagram 3a(vi) provides a summary and it indicates in qualitative terms the Laban effort movements that are required by the four individuals for an extended remedial programme.

Diagram 3a(vi) shows the Effort Profile/Overview from the M.O.S. and the video-tape which provides a visual image and shows where qualitative remedial movement is most needed with the four cases.

| Laban's Motion Factors | Laban's Effort Elements | from RATINGS A - E of Individual Profiles | Identifying case and area where most help was needed |
|---|---|---|---|
| Weight | Firm | 2 required help | Ben/Helen |
| | Light | 3 required help | Greta/Bryan/Ben |
| Time | Sudden | 3 required help | Greta/Bryan/Ben |
| | Sustained | 2 required help | Bryan/Ben |
| Space | Direct | 1 required help | Helen |
| | Flexible | Satisfactory | - |
| Flow | Bound | Satisfactory | - |
| | Free | Satisfactory | - |

| RATING SCALE (TOTAL %) | | | | |
|---|---|---|---|---|
| A | B | C | D | E |
| 0-20 | 21-40 | 41-60 | 61-80 | 81-100 |

(Allen, 1970)

The tests, assessments and observation schedules which form a large part of the descriptive section of this research were an attempt to identify and express the differences between the work which was produced. The terminology and symbols used were those developed by Laban. Apart from the notation evidence, more fundamental areas became clearer in the description of the movement. Observing movement required more than just a subjective view. It entailed skilful assessment and recognition, supported by accurate and precise analysis of the movement patterns.

In summary, the numerical descriptive data, the Mann-Whitney U Test, the movement observation schedules, the monitoring procedures and the video-tape segments each complement the other. The total data suggests that in Laban movement terms some change was recognisable and discernible in the sample.

# CHAPTER FOUR

# CONCLUSIONS AND IMPLICATIONS

# CHAPTER 4

## CONCLUSIONS AND IMPLICATIONS

The research hypotheses were designed to investigate the effects of movement training programmes constructed for E.S.N.(S) hospital children. In particular, could such movement training programmes lead to movement and dance with E.S.N.(S) hospital children?

The results of the study indicate that if the individual or group demonstrated a higher score in performance of the testable measure then the individual or group has demonstrated some improvement; the individual or group may have failed to demonstrate an increase in performance yet the individual or group might show observable improvements in their physical performance. The boundaries between stages defining the hypotheses proved to be problematic; they lacked sharp definition to the extent that it was difficult to determine whether a child had or had not achieved a particular pre-determined stage.

The six physical performance skills examined in this investigation were:-

Identification of Body Parts;
Gross Agility;
Body Perception;
Imitation of Body Movement;
Exercise, and
Rhythmic Body Response.

All of these physical performance skills are closely associated

with Piaget's developmental levels. They relate to the kind of activities that are appropriate to very young children, and which form an introduction to ways of exploring and of ordering for the retarded child.

The Test Imitation of Movement assesses the subjects' ability to respond to the demonstrations of directionality. The greatest increase in the subjects' physical performance was in this measure. The results indicate that 17 subjects demonstrated individual gains in their physical performance (Group 1 with 8 subjects; Group 2 with 5 subjects; Group 3 with 4 subjects). The youngest group (Group 1) of subjects showed the most marked increase which was, perhaps, established by the constant pre and post-testing and by this measure which ensured that each individual progressed from one mode to another.

The Test of Body Perception assessed the individual's ability to copy the physical skill performed and to respond to instructions in a given time. The results indicate that 16 subjects demonstrated a mean gain in their level of performance.

The Laban focus of body perception was perhaps complementary to the Cratty skill interpretation which might be regarded as a movement readiness skill for creative movement.

The Test of Exercise showed that the 12 oldest subjects were positive in their responses and these subjects demonstrated the clearest Laban type movement.

The Tests of Identification of Body Parts, Gross Agility and Rhythmic Body Response each indicate 13 subjects with an incremental score which suggests that movement has usefulness to the E.S.N. (S) hospital child as the programme content

centred on:- agility skills, movement patterns, repetition, exercise, body control and the performance of prescribed tasks. A strong interrelation existed between all the programme activities and the sequence of the material in the phases which were structured along definite developmental lines; some rhythmic body responses were developed; improvisation based on Laban's use of weight, time, space and flow qualities were devised. There was some interplay of the faculties involved: the psychomotor, the aural, the tactile and the visual. Yet equally significant were the concomitant effects - the mental stimulation, the interest that was aroused, the motivation which grew from the participation and awareness of the movement skills that overall led to a more accurate movement performance by individuals. Simultaneously, the training sessions provided opportunities to build social awareness skills.

In the experiment, the movement interpretation and improvisation which operated through the training sessions were viewed as a worth while undertaking for E.S.N.(S) children. The physical improvements in the subjects involved in the intervention programme emphasised the warm interpersonal relationships with the children and other professionals. The individualised programmes aided the activities, the instructional approach was positive, the criterion referenced tests related to specific curricular goals. The initiation of a Piaget based programme which dwells on processes rather than products reflects the emphasis. Interpretation of the total data indicated that the teaching aims were achieved. However, the problems highlighted that there was a tendency to look at assumptions. Support was given to the teachability of the programme by teachers not directly involved in the research but within the institution. The limitations of the experiments were found to be in the movement observation schedules which required more precision. Furthermore, the intervention team

started with a limited awareness of the subjects or the skill that needed to be refined. From the evidence of the field experiment it appeared that the scoring keys on all the tests needed greater precision and clarity; equally, evidence of praise, and/or rewards in operation as required in the monitoring, needed more analysis. However, a measure of the programme's success was that the intervention team recognised that the test results were variable and it was the pedagogical skills that aided the teaching of movement. The failure to increase in some skills might be due to the creative nature of the programme and that on many occasions the tasks could be answered in a variety of ways. Therefore, the failure in some of the prescribed skills by the sample can perhaps only be remedied by further training programmes.

The basic premise underlying this study is that all creative and practical subjects are made up of basic skills which can often be listed in order of difficulty in the curriculum plan, but the creative/aesthetic experiences which it is hoped will arise are less easy to plan and predict. Children vary very widely in their emotional responses to sensory and perceptual experiences. All that planners can do is to select a range of experiences based on sensory modalities which seem likely to be rich in opportunities for some pupils. The children in E.S.N.(S) hospital schools are there because they have special needs which differ, if only in degree, from what can be provided for in the ordinary schools. There is evidence examined in Chapter 2 that children who are academically retarded tend also to be physically retarded. Chapter 2 also records evidence of the successful use of aspects of physical education in improving self concept, and consequently academic performance of educationally sub-normal boys. There is little evidence of successful use of physical education in this way with girls. For the severely handicapped, important special aims are improved perception including the use of self help skills.

In general, the study indicates that by arranging simple but systematic training with reinforcement, the teacher should be able to develop and maintain movement and dance responses in severely sub-normal children. More extensive use of such procedures will determine the worth of such modification techniques with retardates.

The findings of the research are not definite. However, the effects of different teaching methods may be considered in relation to the children's progress. The results, represent perhaps, a start in the measurement of the separate components of teaching skills as applied to movement and dance with severely sub-normal children. That this is likely to be important is suggested by the evidence that teachers involved in special education may adopt particular approaches to handicapped children which influence their educational progress (Guskin and Spicker, 1968). (See case study diagrams of Effort Profiles in Chapter 3.) The suggestion is, however, that any worthwhile intervention must be looked at realistically in terms of validity, comprehensiveness, adequate documentation, proven results and cost effectiveness. This intervention takes one further step as it was a team approach.

The results (Appendix VI) indicate that some of the subjects had improved in their physical skill performance and in their movement interpretation. Also some of the movement experiences improved body awareness, and a feeling for movement which positively aided the subjects to produce some creative movements.

The Laban based movement approach allowed the child not to be frustrated in any way since at no time had it been possible for him to be completely incorrect in his performance. When in doubt or when an error of sequencing looked possible, physical prompting was returned. The development of movement skills

and patterns allowed for accuracy and a flexible interpretation of an experience. Experience has shown that children who have previously been quite mute have begun to vocalise. Gradually, as the child learns to adapt some form emerges within the movement context, thereby helping the child to gain understanding of himself and increasing his ability to integrate stimuli.

The problem of the Hawthorne effect on the results of this experiment was interesting. The only attempt to control the Hawthorne effect was by encouraging the "observer participants" of Groups 1 and 3 to continue and to develop the innovation.

An important question concerns the effect of the research orientation on this model of teaching. Although some time and effort must be given over to the research aspects of the programme, available evidence indicates that it is likely to be more balanced out by the positive effects resulting from the experimental approach. As noted earlier (Chapter 2) Doman-Delacato emphasised that probable key features, among others, of successful early childhood intervention programmes are that they are highly structured and are well supervised. Moreover, this programme focuses on the process of learning which is the key to the Laban approach and the programme of movement geared to the individual child.

There was a close correspondence between the methods described and implemented here and those of precision teaching. However, the training programmes take this model one step further by ensuring that the testing techniques, experimental methods were aimed at providing 'on going' programmes so as to permit a precise evaluation of those activities.

The present study suggests only that the selection of materials for a programme of movement and dance could focus on specific

activities. In this way successful participation would need no revision, continuing as it does to provide a means of improving the child's self image. An attempt to measure changes in self image amongst educationally sub-normal girls following a physical education programme was made by Cratty in the U. S. A.

A growing number of educationists (for example, Bland, Cratty and Mittler) recommend a multi-disciplinary approach to special education. It seems that dance has a part to play in this approach. Mention was made in Chapter 2 of improvement in the academic performance of educationally sub-normal boys after successful participation in physical activities. In America there is a growing interest in relating the development of perceptual (motor) skills needed for reading and those required in some motor activities.

It is obvious to anyone that children who are handicapped, whether physically or mentally, need a lot of help if they are to be able to learn to cope on their own. The whole point of a behavioural approach to movement teaching was that it employs elements of good practice used by good teachers and parents alike. Wheldall and Merritt's (1982) concern is to teach what is relevant.

> "We encourage teachers to use effective strategies consciously and consistently, instead of unwittingly and haphazardly and give them a rationale to go with it which fits very well with what they already know about children and the ways in which they respond." (p. 16).

If it is the Laban based movement approach that is able to offer perceptual motor training through techniques which are essentially non-verbal, then it is hoped that the use of audio and visual stimuli

together with Laban based movement techniques would enable the children to gain a new awareness of their own body parts in relation to the space around them, and an increased body awareness through structured movement activities.

Mittler repeatedly states that the establishment and maintenance of an active working link with the retarded child will help his potential and performance level; the continuity and regularity of the training sessions in this investigation helped to demonstrate its strength (Gulliford, 1971). The congruence seemed to accrue from such collaboration and cooperation as the input into the programme was multi-disciplinary; the adult participants were provided with specific training on teaching and managing the child; an active working link developed; the training could be effective for the child and the team; the staff proved to be well motivated and persevering, and were rewarded by the improvements that they helped to bring out in their children. The adults who initiated contact with the children found that it was not only important in itself for the help it provoked, but should be seen as a means of eliciting or sustaining a response from the children. Where possible it was the adults who expanded and elaborated on the child's response, supplying the words, meanings, information, giving approval and the rewards.

The two observers of each group tended to compare notes at various times and in the final analysis of the material used each other as checks and sources. They reported stages in the development of the training sessions. However, it took the observers one training programme (12 weeks) before they reached a level of awareness of the processes.

The "participant observers" embraced their roles; they were responsive and facilitated the teacher researcher to examine

critically and systematically. Stenhouse (1975) infers that the close examination of one's professional performance can be personally threatening. Whilst this is true, teaching the severely sub-normal hospital child involves professional collaboration and it is more likely to be a routine procedure. Hospital School B allowed the writer maximum collaboration with a multi disciplinary team throughout the experiment. Sometimes the devised observation schedules were crude and the monitoring procedures each required further refinement. But, within limits, each procedure adopted was a reasonably effective one.

To some extent the degree of handicap of the subjects was so diverse that the writer regarded it essential to discuss their physical performance with colleagues not directly engaged in the training programmes. It was found that a uniformly low level was present in every area with the severely retarded child. Any training programme will only be as good as the assessment of strengths and weaknesses on which it is based. Whatever area was tackled, improvement of a fairly rapid kind in the initial stages was essential to the learner and the adults concerned working with him. The demands made on the learner must, therefore, be modest enough for him to succeed without being so modest that he fails to realise that he has been successful.

In the young retarded child it was particularly dangerous to assume a permanent inability to reach any learning goal. This was not to say that the child must always be faced with tasks which were difficult for him.

> (If)... "The child sees it... (the programme)... only as a situation in which he is required to do all the things he is required to do and all the things that he is least capable of doing.

From this point of view, he stands only to lose." (Blank, 1972, p. 112).

The responsibility belonged to the intervention team to avert feelings of failure and to ensure that progress was recognised as such. The only source of comparison was the retarded child himself. It was difficult sometimes to realise that slow improvement had occurred over a long period of time particularly for the adults in daily contact with the child rather than the researcher's weekly involvement. The team approach served to provide a basis for planning and gave reassurance and encouragement for those working with the child (Whitman et al., 1970). The whole point of this teaching approach was to reinforce that the behavioural approach to teaching was a natural, positive, every day approach for all teaching and not just emergency apparatus to be wheeled out whenever severe problems arose. Moreover, being told how to balance or walk or jump was no substitute for direct instruction in the practice of the necessary component skills. In particular the E. S. N. (S) child learns skills by doing, not by listening. It was not a matter of "watering it down", or merely teaching what was relevant; suitable challenges within each training session had to be placed before the children. Stimulation implies, therefore, not constant change and a confusing succession of novel objects and experiences but help in finding out new possibilities in familiar objects and situations, with careful phasing in of a different experience which will widen and deepen the original desultory or unproductive attempts. Because of the highly individual nature of each child's difficulties in acquiring basic social skills, specially tailored programmes were obviously the most effective although behaviour modification techniques had also been used to promote social skills in the individual class programme settings. (Guralnick and Kravik, 1973).

The programme operation emerged as a shift of emphasis from a

clinical to a social and ecological model of special education. This meant that working in the closest possible partnership was a priority for the successful intervention. Instead of being concerned only with assessment of the child in isolation, pin pointing and remediating the child's difficulties and deficits, the child was seen as an integral part of his environment which included a team of multi-disciplinary staff. This model intervention approach, whilst working with the children, enabled the researcher to use, and interpret, a wide range of structured and unstructured situations; working with other professionals and knowing when the help of another professional was needed; communicating the nature of the problem; being able to work in a team respecting the skills and contributions of other professionals without submerging one's own professional identity was developed. The cumulative efforts helped to distinguish between opinion and fact.

The research indicated that the learning and development of the E. S. N. (S) children can be promoted by the use of structured teaching by the teacher who works in a systematic controlled fashion towards short term learning targets which closely focus on the individual's present levels of functioning. Some individual differences were recognised which were related to specific learning tasks. The problems were diagnosed by systematic evaluation. The design of the programme and the implementation of the investigation were based upon an extension of the micro teaching approach which produced some success in developing joint professional skills for the intervention, such as cueing, guiding, providing guided practice with consistent feedback which were all crucial elements of each training session. The fact that the research was developing skills through the effects of training sessions which were leading to movement and dance and simultaneously that the research was school based assisted this transfer.

Although the study was restricted, the findings point to possible programmes. At this point the difficulties are in assessing these children's abilities with the degree of precision required, but the effectiveness of such programmes requires further evaluation.

The results of this study indicate that continued practice, aimed toward taking away failure in the programme, was viable. However, it was important not to disregard the result when the differences on some measures were not statistically significant, as a corresponding change occurred during the six training sessions.

The video-taping of sessions 1 and 12 of each programme were useful as it enabled the researcher and team members to identify various teaching techniques. The main aim was to apply the video-tape results and to monitor the subject's learning in terms of the changes in their approach to the task and movement performance. The intention of the first video-recordings was to capture the level of performance of the sample and to be able to record and monitor the development of the individual's learning, participation and physical performance. The video-tape recordings were created to show the wide range of ability in the sample. When comparing individuals and groups, the recordings were useful as a basis for checking. They demonstrate that, given regular movement training, some "feeling, attention, intention and decision developed" with the retarded subjects (Laban, 1971, p. 83). Volume 2 of the thesis contains a Sony 'U'-Matic edited working - video-tape (monochrome) of the structured training sessions.

The experiment has had as a major requisite that the design and implementation be "competency based", that is, that the programme had explicit demonstrable objectives. The review of

literature inferred that it was not enough to say that the child must have movement and dance experience; the curriculum demands required that the specific objectives of the sessions and the programme required precision, for example, the child would be aided in self-help skills and socialisation (Cardarelli, 1974). If it means anything, the programme must be generally supportive to the view that any subject vehicle makes for diversity rather than conformity, for variety rather than uniformity (Evans, 1979). This research has identified relevant theory and highlighted practical implementation.

What is determined from these results is that it is a possible method of instruction and that it should be profitable. Although the study was restricted, the findings point to a possible method of assessing movement development in children that does not only involve numerical scores that may be difficult to interpret and which are often misleading for the E.S.N.(S) child.

The relatively small number of children involved in the study prevents any firm conclusions from being drawn as to the value of this type of approach. However, it is equally unreasonable to stop exploring possibilities of any suggested teaching methods after only a short period (Chazan et al., 1983).

It is widely accepted that the teacher's expectations greatly influence the children's achievement levels, that different children require different learning approaches and that teachers are right to be experimental and flexible in their programmes.

The incorporating of a movement approach into the programme of the severely educational sub-normal hospital child could aid in changing the goals of the special school child from a skills orientated approach to one based more on cognitive functioning.

# APPENDICES

# APPENDICES...2

# APPENDICES

# APPENDIX I

## MEASURES

(i) Physical Education Tests

## DESCRIPTION OF TESTS USED FOR THE INVESTIGATION

## IDENTIFICATION OF BODY PARTS

Kephart (1960). Test 3.

Identification of Body Parts from Kephart, N. C. (1960).

Slow Learner in the Classroom (Page 130).

Ask the child to stand facing the tester at a distance of about 10'.

Teacher says "Touch your shoulders", etc.

| | Pre-Test | Post-Test |
|---|---|---|
| 1. Shoulders | | |
| 2. Hips | | |
| 3. Head | | |
| 4. Ankles | | |
| 5. Ears | | |
| 6. Feet | | |
| 7. Eyes | | |
| 8. Elbows | | |
| 9. Mouth | | |

Evaluated by checking where a child responds appropriately to a command

## EVALUATION

This performance is related to the problem of body image. There are two general areas of knowledge involved. The first is awareness of the parts and their names. The second is awareness of the precise location of parts. Difficulty in this area is shown by the child who can start in the general direction of the part, but must experiment or 'feel around' to make final contact. Such a child may be aided by

training techniques designed to call attention to the parts of his body and their location.

## OBSERVATIONS

Observations were noted whether there is hesitancy in any response or whether the child is decisive in obeying each command. Observations were made whether in the paired part he touches both members of the pair. In the case of command 'touch your elbows', it is necessary for him to cross his arms over each other. A slight hesitancy here is permissible since many children are startled at the change in posture required. When he has started a movement toward a part, can he move accurately to that part, or does he start in the general direction and then 'feel around' for the final target?

## SCORING

One point is given for correctly executing each of the requests. No points are deducted for a slow response. Tests of Gross Agility and Body Perception from Cratty, B. J. (1969). Perceptual Motor Behaviour and Educational Processes. Springfield Illinois : C. C. Thomas. Cratty (1969) Six Category Gross Motor Test.

## LEVEL 1 - TEST 2. GROSS AGILITY

from Cratty (1974), Motor Activity and the Education of Retardates Appendix Page 284.

Cratty (1969) Six Category Gross Motor Tests.

Equipment:

4 x 6 foot mat; stopwatch (a second hand on the standard watch may be used in lieu of a stopwatch).

Preparation:

The child is asked to stand in the centre of the mat, facing a 4-foot side and the tester who should be 10 feet away. Then the child should be asked to lie down in the middle of the mat, his feet toward the tester.

Instructions:

After the child is in position, the tester should say, "I would like to see how fast you can stand up and face me". A stopwatch should be started as the child's head leaves the mat and stopped as his knees straighten when he assumes a standing position facing the tester. If the child does not understand, the tester should demonstrate standing up rapidly.

Scoring:

1 point if the child turns to his stomach first and arises in more than 3 seconds.

2 points if the child turns to his stomach first and arises under 3 seconds.

3 points if the child sits up without turning over and stands up without turning his back to the tester in more than 3 seconds.

4 points if the child sits up, remains facing the tester when arising, and does so in 2 seconds.

5 points if the child sits up, remains facing the tester when arising, and does so under 2 seconds.

Maximum points - 5.

## LEVEL 1 - TEST 1. BODY PERCEPTION

from Cratty (1974) Motor Activity and the Education of Retardates. Appendix page 284.

### Equipment:

P. E. mat 4 x 6 foot (if possible).

### Preparation:

The child should be placed, standing on the floor, with his toes against the mid point of the mat to permit the child to respond. The child should rise after each request and stand at the starting point described above. The child should be told "thank-you" after attempting each movement.

### Testing:

(a) "(name)_____, please lie down on the mat like this on your front or stomach." Tester then lies on his stomach, his head away from the child, remains for 2 seconds, arises, and says, "Now try to do it too". Point is given if the child lies on his stomach regardless of whether the head is turned away from or toward the tester.

(b) "(name)_____, now please lie down on the mat like this on your back". Tester lies down slowly on his back, head away from the child, remains for 2 seconds, arises and then says, "Now try to do it too".

(c) " (name) , now please lie down on the mat like this on your front or stomach, with your legs nearest me." Tester assumes lying position, with his legs nearest the child, arises and then says, "Now try to do it too". The tester should then go to the far end of the 4-foot side of the mat, and face the child with the mat between them. Point is awarded only if feet are nearest the tester, and child is on his stomach.

(d) " (name) , now please lie down on the mat on your side, like this". Tester lies down on his left side, feet toward the child, arises, and then says, "Now try to do it too". Point is awarded no matter which side the child chooses to lie upon, nor where the feet are relative to the tester.

(e) The tester should then say, "Now let me see you lie down on your left side". This should not be demonstrated. A point is awarded in this category if the child correctly lies on his left side.

Scoring:

One point is given for correctly executing each of the requests. No points are deducted for a slowly executed response.

Total of 5 points possible.

## IMITATION OF MOVEMENTS

from Kephart, N. C. (1960)

Slow Learner in the Classroom.

Child stands 8 - 10 feet away facing examiner and far enough from walls to move without obstruction. Hands loose at sides. Instructed to do whatever examiner does. Following pattern in order: 1 - 17.

Evaluate:

ability to control upper limbs independently and in combinations; translation of visual pattern into a motor pattern which will reproduce itself. Difficulty is indicated by hesitancy, lack of certainty, error in executing patterns.

To move from each position to the next requires one of the following types of movement:

u unilateral movement

b bilateral movement

c cross lateral

Observations:

1. It is desirable that the child can reverse the laterality of the examiner's movements.

2. Movements should be made promptly and with definiteness.

3. The child may fail to respond or reproduce the movement pattern on the first attempt.

Evaluation:

This activity is related to the child's ability to control his upper limbs independently and in combination.

Laterality:

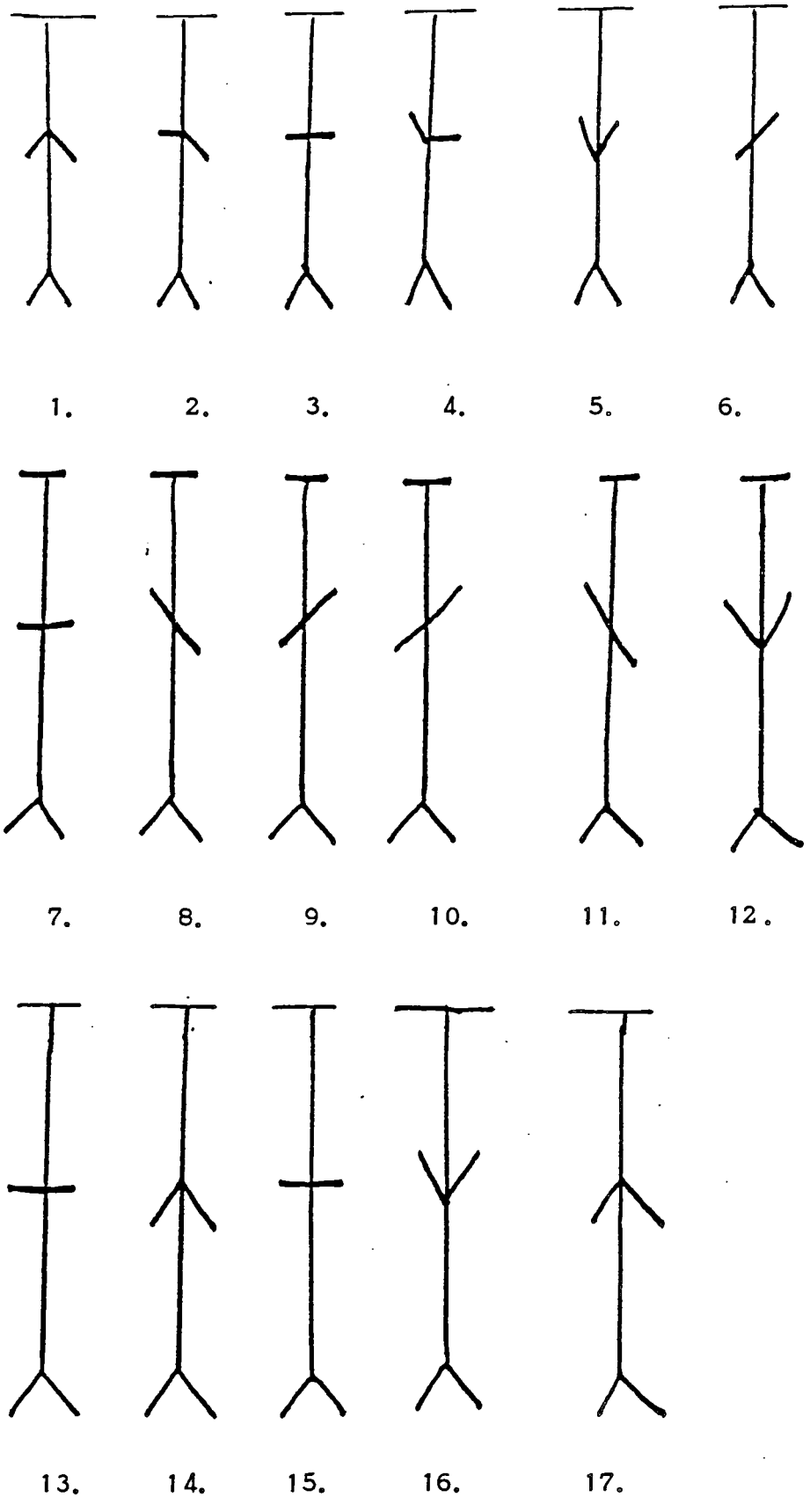
This is to distinguish between left and right side separately and simultaneously.

Directionality:

Laterality leads to directionality.

Scoring:

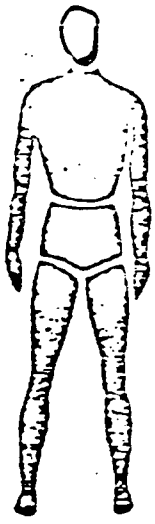
One point for each successful imitation.



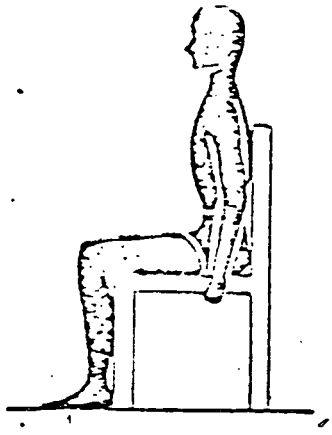

POSITIONS OF THE ARMS FOR 17 ITEMS OF THE IMITATION OF MOVEMENT TASK. KEPHART (1960).

EXERCISE TEST

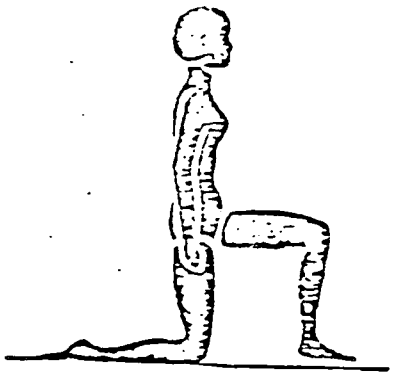
COPY AND STATE : DO T HIS



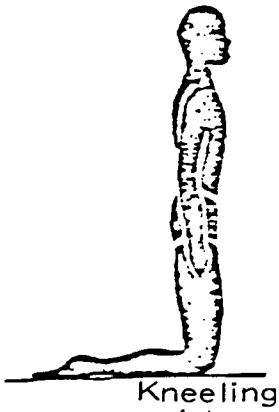
Standing
(a)



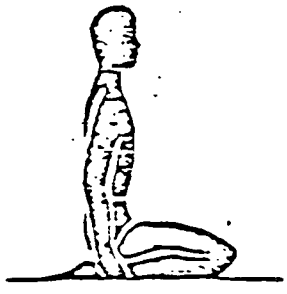
Chair Sitting
(b)



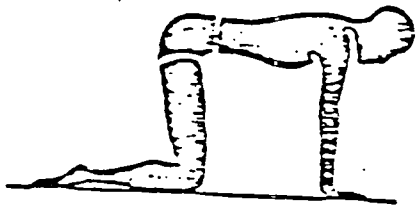
One Leg Kneeling
(c)



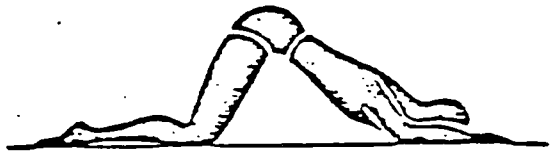
Kneeling
(d)



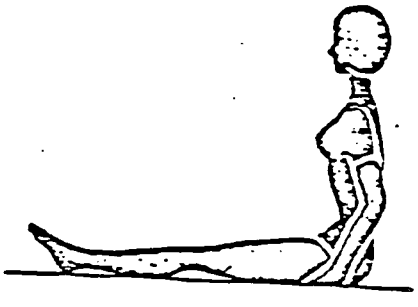
Bent Knee Sitting
(e)



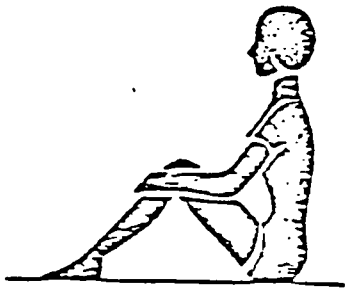
Four Point
(f)



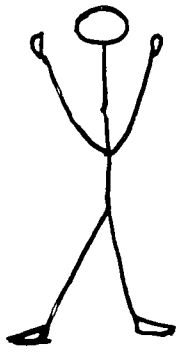
Knee-Chest
(g)



Long Sitting
(h)



Hook Sitting
(i)



Standing
Stretching
High (j)

EXERCISE POSITIONS

Arnheim, D. D., Auxter, D., Cowe, W. C. (1973) and Lishman (1977 Principles and Methods and Adapted Physical Education (p. 122). St. Louis: C. V. Mosby (pub lisher)

SCORING: One point for each successful imitation. Total Score - 10 points

The exercise test includes body balance, imitation, phys ical exercises and posture control.

## EXERCISE TEST

Pre-test score and post-test score. Adapted from: Arnheim, D. D., Auter D. and Crowe, W. C. (1973) and Lishman (1977a).

Principles and Methods and Adapted Physical Education (page 122). St. Louis: C. V. Mosby.

| Subjects | Pre-Test Score | Post-Test Score |
|---|---|---|
| A | | |
| B | | |
| C | | |
| D | | |
| E | | |
| F | | |
| G | | |
| H | | |
| J | | |
| K | | |

Total score - 10 points

## RHYTHMIC BODY RESPONSE TEST

Ashton (1953) and Lishman (1977a)

RHYTHMS PRACTICAL (VERBAL instructions that were given to the subject).

> "In a few moments, you will hear a recording." (The first part of this recording has music for listening followed by 4 excerpts for movement indicating a time factor. Each excerpt has repetition.) "Keep moving until the tape stops."

The second part of the tape consisted of musical excerpts. The subjects were informed that during the tape they may show any movement that they thought interpreted the music.

The third and fourth part of the tape followed the same procedure. Any movements that you give will be judged on its value.

The scoring is graded upon the responses achieved.

RHYTHM RATING SCALE - Ashton (1953)

To be used for the entire test.

0 No response or incorrect response
Correct beat and accent only through chance. Step and rhythm incorrect. Attempts to start self in motion: undecided as to correct step. Starts a preliminary faltering movement, then stops.

1 Correct step but not correct beat (unable to pick up new beat or tempo). Correct movement only by imitation of another student.

Awkward, uncoordinated movement. Ability to start self in movement - maintained only for a measure or two. Difficulty in changing direction.

2 Step and rhythm pattern correct... Reaction time slow Movement uncertain - lapses occasionally into incorrect beat. Movements are consistently heavy; she shows tension. Maintenance of movement is short; phrase. Movement is forced; mechanical. Lacking in style. It is prosiac - no variety.

3 Uses correct step, beat and accent. If student loses the accent and gets off the beat, she is aware of it and able to get back on the beat.
Ability to maintain movement throughout excerpt. Varies direction with effort but is able to maintain movement. Student shows ability in simple movement. Movement has direction but not alive.

4 Immediate response with correct step, beat, and accent.
Ability to maintain movement through excerpt. Ability to vary movement (turns, etc). Confidence shown in her movement. Movements are definite, spirited and easily accomplished. Subject is relaxed.

In a Physical Education Programme, the writer feels it is useful to know when an activity is not carried out or when it is becoming more confident, when it is reasonably safe and when the individual can be said to have "internalised the operation" so that it is said to be a skill. Therefore the skills are recorded on the following points scale with each point only being given at the end of a session. This is because a skill can be successfully completed at one lesson and completely refused at another.

SCORING

0 No attempt, not complied with at all. Completely failed.

SCORING (Cont...)

1 Only with physical prompt support and very much encouragement. To be regarded as very little success in the activity.

2 With hesitancy, with support, with encouragement, but task completed. To be regarded as in early learning stage.

3 Completed without physical support even though hesitant and not totally secure in the skill. To be regarded as taught, but in need of practice.

4 Completed without support/verbal prompt. Regarded as skill learned. Completed skill learned and safe. Operation with ease and precision. Internalised skill as part of repertoire.

| Section | Movement Quality and Time Factor | Score Pre-Test | Score Post-Test |
|---|---|---|---|
| 1 | quick and light movements (4 bands) | | |
| 2 | quick and strong movements (4 bands) | | |
| 3 | slow and light movements (4 bands) | | |
| 4 | slow and strong movements (4 bands) | | |

Example of score sheet for Rhythmic Response

| LISTEN MOVE & DANCE NO. 1 | | |
|---|---|---|
| QUALITY | | SOURCE 7. E. G. 8727 |
| L indicates "listening band"<br>M movement for bands 2, 3, 4, 5 | | |
| Side 1<br>QUICK & LIGHT MOVEMENTS | L | (1) Hop Scotch from "Music for Children" - Walton. |
| | M | (2) From finale of "Divertimento" - Francaix. |
| | | (3) From "Carnival of the Animals" - Saint Saëns. |
| | | (4) Polka - Shostakovitch. |
| | | (5) No. 6 from "For Children" Bartók. (Vol. 2) |
| QUALITY | | SOURCE |
| Side 2<br>QUICK & STRONG MOVEMENTS | L | (1) No. 29 from "For Children". Bartók. (Vol. 2) |
| | M | (2) From "Le Baiser de la fée" - Stravinsky. |
| | | (3) From "Music for Children" Prokofiev. |
| | | (4) Finale from Sonata by Malcolm Arnold. |
| | | (5) No. 31 from "For Children" Bartók. |
| L Listening, sitting by tester<br>M Move, interpretation by the subject | | |

Musical Excerpts

# APPENDIX I

## MEASURES

(ii) Movement Observation Schedules

TABLES (i) - (v)

## MOVEMENT OBSERVATION SCHEDULE

## (M. O. S.)

The vocabulary used in the Movement Observation Schedule (M. O .S. ) is the terminology commonly used in dance. The glossary in Appendix VIII provides the Laban interpretation.

The results show when the Laban movement was achieved; this correct response was required to be visible on six consecutive training sessions before it was registered as a positive learned response. The testable item that was registered was not retested as it was claimed that a confidence level and a level of mastery had been internalised.

However, the M. O. S. Laban type movement was accepted as being a crude yet significant means of monitoring the qualitative performance within a training session.

The M. O. S. levels 1 - 3 were based on Laban's principles. The levels were not hierarchical or developmental. They were related to the Laban content - (described in Appendix II) as phases in movement.

| Stage | Code | Subjects | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G | H | J | K | |
| 1 Flexible | a | | | | | | | | | | | |
| Direct | b | | | | | | | | | | | |
| Strong | c | | | | | | | | | | | |
| Light | d | | | | | | | | | | | |
| 2 Sudden | e | | | | | | | | | | | |
| Sustained | f | | | | | | | | | | | |
| 3 Use of levels | g | | | | | | | | | | | |
| Different levels | | | | | | | | | | | | |
| Use of direction | | | | | | | | | | | | |
| Awareness of direction | h | | | | | | | | | | | |
| 4 Ability to obtain a full stretch (hold) | j | | | | | | | | | | | |
| 5 The use of different body parts | k | | | | | | | | | | | |
| 6 Ability to hold/ freeze a movement with/ without stimuli | l | | | | | | | | | | | |
| | m | | | | | | | | | | | |

Table (i)

Movement Observation Schedule (M. O. S.) Based on Laban (1948)

Level 1

| Stage | Code | Subjects | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G | H | J | K | |
| 7 Follow 'the Leader' | a, k | | | | | | | | | | | |
| 8 Following/ working with a partner | h | | | | | | | | | | | |
| 9 Making a line | j | | | | | | | | | | | |
| 10 Making a circle | b, e, f | | | | | | | | | | | |
| 11 Making selected shapes | g, c | | | | | | | | | | | |
| 12 Participating in a group dance | d | | | | | | | | | | | |

Table (ii)

M. O. S.

Level 2

| Stage | Code | Subjects | | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A | B | C | D | E | F | G | H | J | K | |
| 13 Accompaniment | | | | | | | | | | | | |
| 1. Sounds | a | | | | | | | | | | | |
| 2. Materials | b, g | | | | | | | | | | | |
| 3. Rhythmic Responses | c, d, e, f, h | | | | | | | | | | | |

Table (iii)

M. O. S.

Level 3

These three levels were divided into sections:-

LEVEL 1 : twelve movement tasks

LEVEL 2 : ten movement tasks

LEVEL 3 : eight movement tasks

M. O. S. Level 1 12 items
M. O. S. Level 2 10 items
M. O. S. Level 3 8 items

| LEVEL 1 | | LEVEL 2 | | LEVEL 3 | |
|---|---|---|---|---|---|
| a | flexible movement | a | to follow the leader | a | response to a clock |
| b | direct movement | b | to join hands in a 0 | b | response to materials |
| c | strong movement | c | to join both hands with a partner | c | response to musical acc. e. g. nursery rhymes |
| d | light movement | d | to touch feet of another person | d | response to music, T. V. Programmes |
| e | sudden movement | e | to form a ⊙ | e | response to singing games |
| f | sustained movement | f | to walk in a ⊙ | f | response to nonsense rhymes |
| g | use of different levels | g | to follow a partner | g | response to foam mattresses and toys |
| h | use of different directions | h | to copy a partner | h | response to music generally |
| j | ability to maintain a full stretch | j | to move in time to a sound | | |
| k | use of different body parts | k | to work with another adult | | |
| l | ability to hold a position | | | | |
| m | sensitivity to stimuli | | | | |

Table (iv)

Summary of M. O. S.

A point was scored when the Laban movement was achieved; this correct response was required to be visible in 6 consecutive training sessions before it was registered as a positive learned response.

The testable item that was registered as being a learned response scored 1 point which was not retested as it was claimed that a confidence level and a level of movement mastery had been internalised.

In order to build profiles from the M. O. S. which had a Laban focus, the testable items were analysed on M. O. S. levels, one, two and three. The 30 movement items were reduced to six movement qualities for each level, (the letters on the tables below refer to the code on M. O. S. levels 1, 2 and 3). These summaries clarified and synthesised the movement when analysing the four cases.

Tables (v)

Movement Observation Schedules

| Subjects | Flexible Movement (a) | Direct Movement (b) | Strong Movement (c) | Light Movement (d) | Directions Movement (g) | Sensitivity Movement (m) |
|---|---|---|---|---|---|---|
| | | | | | | |

Level 1

| Subjects | Follow the Leader (a) | Join Hands (b) | Follow a Partner (c) | Form a ⊙ (e) | Move in tune to Sound (j) | To work with an Adult (k) |
|---|---|---|---|---|---|---|
| | | | | | | |

Level 2

| Subjects | Response to Object (a) | Response to Tactical Stimuli (b) | Response to Songs (c) | Response to Nonsense Rhymes (f) | Response to Singing Games (e) | Response to Music Generally (h) |
|---|---|---|---|---|---|---|
| | | | | | | |

Level 3

The individual elements within each M. O. S. level portray the subject's movement profile. (Chapter 3 provides the effort profile of the 4 cases.)

# APPENDIX II

## CONTENT MATERIAL FOR EXPERIMENT

(i) Basic Material

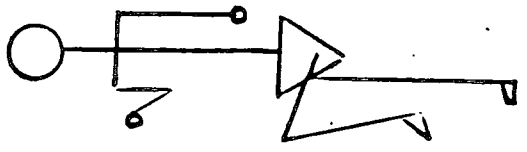
## PROGRESSIONS TO STANDING

Teaching smooth transitions from one position to another, reproducing the normal development pattern:

from lying

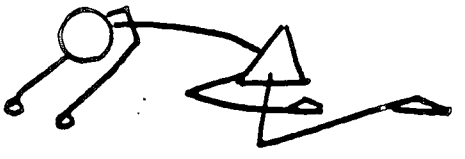
lying

progress to rolling on to one side
and bending one knee,

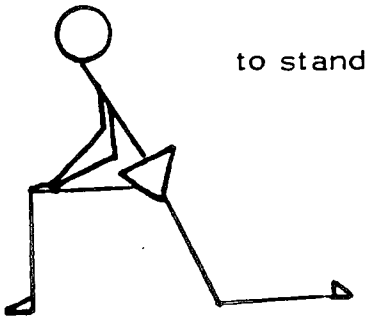


moving through the 'all fours' position
to place one foot forward,

'all fours' position

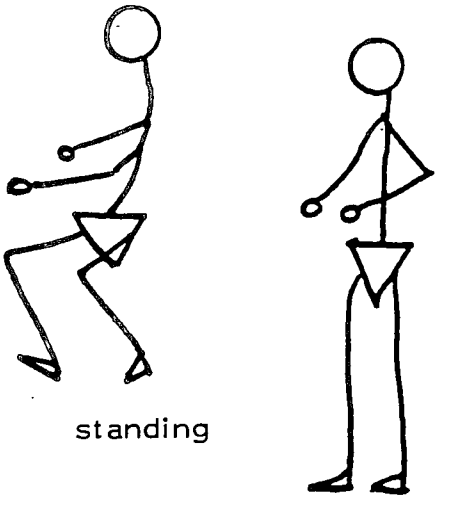


through half kneeling



to standing

half kneeling

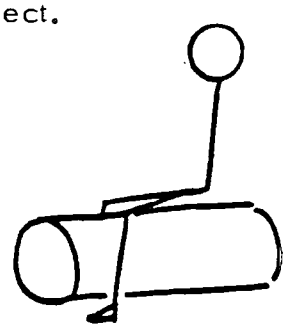


standing

## SITTING

There are several variations of 'sitting' all of which are extremely useful whether it be on a chair, at a table for meals or in school, The child's back needs to be supported, the thighs supported to the bend of the knees and the feet parallel and supported.

When sitting on a stool, low bench or piece of play equipment, the position of the hips, knees and feet are the same as when on a chair but the child's own muscles hold the back and head erect.

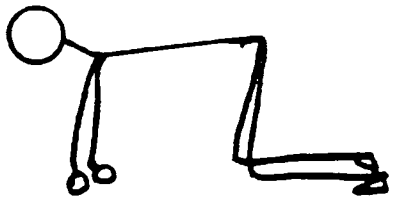


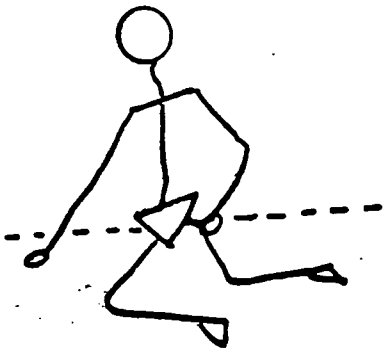
Good sitting position astride soft play equipment

## KNEELING

"All fours" kneeling.

This can be arrived at from side sitting.

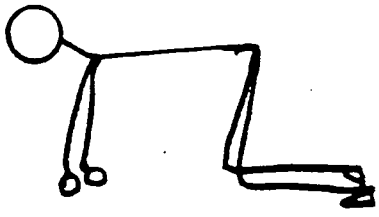




Side sitting on floor - note supporting arm takes some body weight

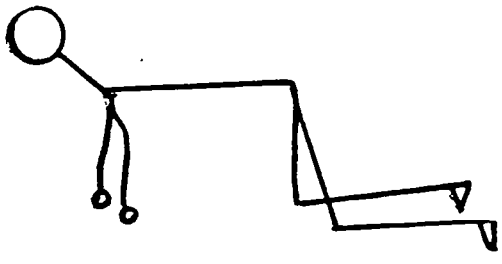
KNEELING (Cont...)

It is the starting position for crawling. Weight should be evenly distributed and the child should be able to be static, 'holding' the position. Arms should be straight and directly under the shoulders; there should be a right angle at both the hips and the knees.

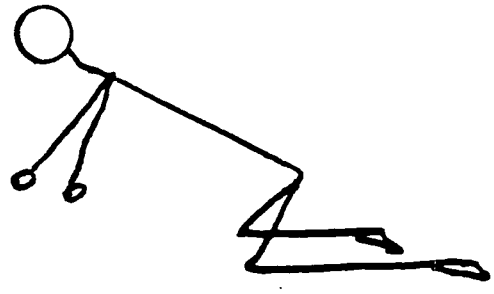


"All fours" kneeling

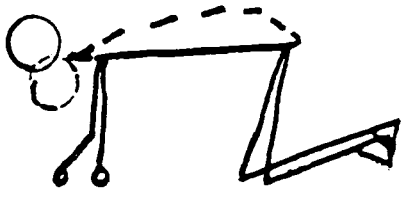
A useful activity: practice tail wagging from side to side, head movements, head turning to look from side to side; one arm raising, one leg raising, swaying body, humping and hollowing.



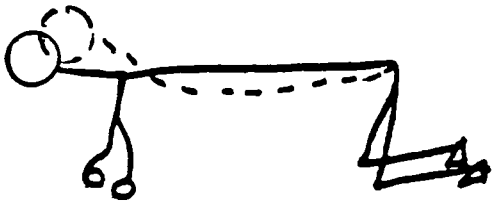
Swaying forward



Swaying backward



'Humping'

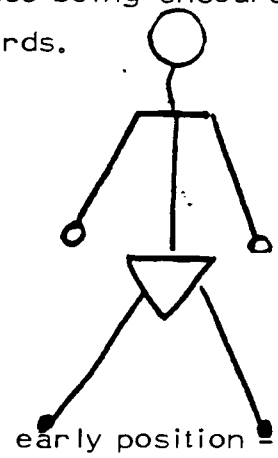


'Hollowing'

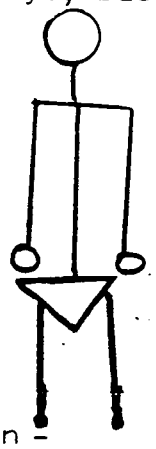
All of these movements help mobility and the 'feel' of weight being held and transferred from one part of the body to another with and without accompaniment.

## STANDING

When this position is first attempted the child needs a wide base. Balance being encouraged by gently pushing sideways, backwards or forwards.

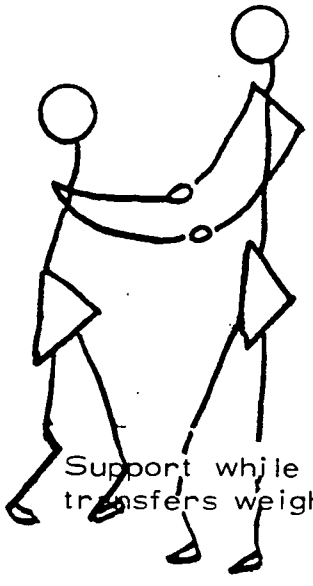


early position -
note wide base

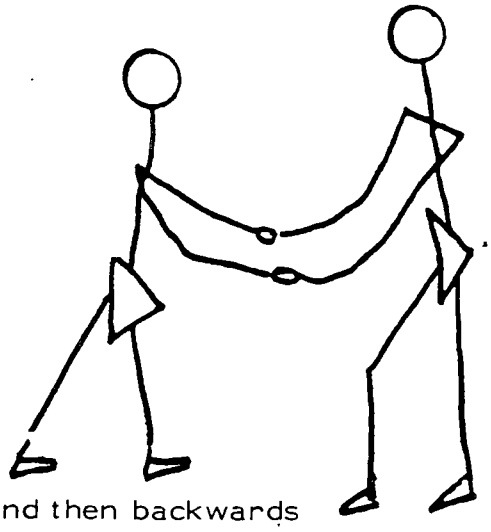


later position -
note base narrowed

Standing Position



Support while child transfers weight forwards



and then backwards

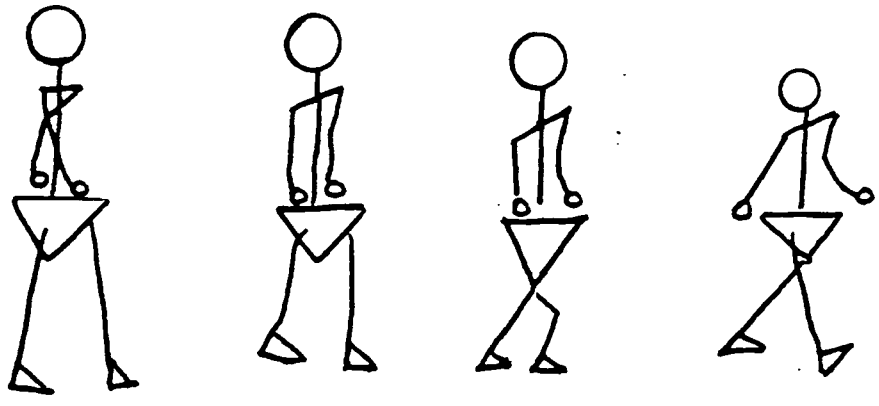
When a child can take up and maintain unaided the positions it is stated that he has achieved balance in that position e. g. sitting balance, kneeling balance, standing balance.

## WALKING

When standing balance is achieved walking is possible.

WALKING (Cont...)

The heel of the leading foot must go down first. Weight is then transferred to the ball of the foot. With weight on the front foot, the heel of the back foot is raised; impulse forwards comes from the ball of the back foot.



Correct walking pattern, side view, left foot and right arm leading.

NOTE: The right arm swings forward with the left leg and the left arm with the right leg (arm and leg movement on opposite sides).

(To be able to walk backwards, forwards and sideways is an indication of the development of balance and self control and is a further means by which a child improves body awareness.)

Materials devised and adapted from Maiden (1976). (Programme for Gross Motor Development at Lea Hospital, Bromsgrove and Lishman's (1977b) Child Study at Lea Hospital School.)

# APPENDIX II

## CONTENT MATERIAL FOR EXPERIMENT

(ii) Laban Phases

## VOCABULARY BUILDING FOR PHASES I, II & III

### PHASE I

1. Studies developed on the dynamic qualities.

   (a) Strong, but slow:
   - i) Front leg flexed, push a 'heavy object'; lift back and withdraw arms; repeat ad libitum.
   - ii) Pull the object back to place; lift forwards and pull again; repeat.

   (b) Strong, but quick:
   - i) Fling a long whip all round the body.
   - ii) Punch, kick in all directions.

   (c) Light, but quick:
   - i) Flick away the dirt or fluff or feather.
   - ii) Rap on an imaginary window pane or greenhouse window pane.
   - iii) Sitting, tap on the floor with the hands on the toes.

   (d) Light, but slow:
   - i) Glide on a slippery surface.
   - ii) Rise on toes, and float away.

2. Directions are the basis of movement orientation upon which the shape of movement depends.

   The fundamentals are:-

   (a) Up - down;
   (b) Forwards - backwards;
   (c) Right - left.

   Studies developed on:-

   (a) Up - down:

2. (a) Cont...

i) Arms stretching towards the ceiling, bounce high and sink down.

ii) Walking on toes.

(b) Forwards - backwards:

i) Arms forwards; arms backwards, retreating.

ii) Stepping backwards; slowly with big and wide steps.

(c) Side-side:

i) Slip step sideways; repeat to the other side.

ii) Making wide steps sideways.

3. Space is the area surrounding the mover

Studies developed in this area.

(a) Towards the body:

i) Kneeling, holding arms extended; bringing arms from different points in space.

ii) Standing, leading with arms, a knee, a foot, towards the body.

(b) From body into space:

i) Arms near waist, lead them slowly into various directions.

ii) Standing, push head upwards; chest forwards; shoulders backwards; hips sideways.

4. Levels are the result of an approximation of space into three horizontal movements - Strata of high, medium and low activities in relation to the floor:

(a) Lying, sitting, kneeling also developed for agility as a pre-requisite to the Laban schedule.

4. (b) Bending and arching.
(c) Rising and jumping.

5. Muscular control depends upon spontaneous muscular response to the intended action. Since this process proved slow and exacting, practice was brief but frequently interwoven in already familiar activities.

Studies

(a) Sitting:

i) Without touching, glide alternate hand along extended arm.
ii) Pat opposite/alternate thigh.

(b) In Locomotion:

i) Stepping sideways.
ii) Skipping.

6. Movement stillness was attempted by the sudden disappearance of the activity, by using sensory, emotional and imaginative aids.

(a) Sensory : looking or listening intently; feeling a variety of materials (chiffons, fur and net); fumbling in a large cardboard box which was packed with man-made straw.

(b) Emotional : fright by using sound recordings; happiness by producing squeaky balloons and percussion instruments.

(c) Imitation : by using a variety of masks, hats (clowns, crowns, witches' hats and angel wings).

7. Rhythmic sequences containing several accents of different values developed.

7. (a) Accent at the beginning.

   (b) Accent at the end.

   (c) Accent in the middle.

   (d) Exploring and making phrases.

8. Floor patterns were controlled, and gradually it eliminated the haphazard wandering. Set movement phrases were designed into the sequences.

   Studies included:

   (a) Walking in and out of each other.

   (b) Follow the leader.

   (c) Walk, clapping hands.

   (d) Walk and turn.

   (e) Walk in single file, jump at each point.

   (f) Walking around circles, lines, shapes and in zig zag patterns.

9. Movement phrasing

   Several movement words and sequences were attempted. But, having become aware of rhythmic stress and movement completion, the children were directed to make short phrases and sequences. This part of the movement and task orientation was teacher cued and guided overall, the words and teaching offered did not flow to produce any clear phrasing. A movement sequence comprised of several phrases, comparable to a full statement of the spoken word. Some movement and dance did grow and develop and is recorded in diagram form and in simple notation. (Appendix VI)

## RHYTHMIC SEQUENCES FOR TASK ORIENTATION WORK

Rhythmic movements and activities were explored with body part involvement and alternate hopping movements with body parts. The activities were used in a variety of positions. The movement of greatest difficulty was one that required the movement to be transferred from arm to opposite leg, then to second arm and finally to the second leg.

1. Rhythmic movement with the preferred arm.
2. Rhythmic movement with the preferred leg in response to a steady beat, with the other leg and both arms.
3. Alternating movement of the arms in response to a steady tempo.
4. Alternating leg movements in response to a steady tempo.
5. Alternate arm - leg action on one side, followed by simultaneous arm-leg movements on the other side of the body.
6. Movement travelling from arm to arm and then from leg to leg and back again, the action involving one arm, then one leg, and finally the other leg until all four limbs are moved in one phase.
7. Alternate hopping, later two hops on foot and then two on the other.
8. Responding to a single movement and two movements of a demonstrator with and without coloured scarves and flags, sometimes using auditory cues or numbers spoken aloud together.

## PHASE II

Exercises related to Phase II of programme material content.

The following exercises developed:-

1. Push off with toes.

2. Swing leg from hip, flexing hip and knee.

3. Land on heel, weight transfer.

4. Point toes ahead, feet parallel.

5. Head up, look straight forward.

6. Swing arms in opposition to legs.

The exercises were developed into activities such as walking in painted footsteps, stepping onto foam surfaces and around inflatable air mattresses, footprints and a variety of lines. From these activities running and rhythmic exercises developed, such as run on ball of foot, push off with more force and lift knees higher than in a walking activity, bending elbows and swing arms vigorously in opposition to the legs, keep feet parallel and head up when the legs were not lifted high enough, running on the spot with high knee lift, imaginative movements - imitation of animals, objects; sports skills to emphasise desired movements; for difficulty in changing direction - running round or through obstacles, under ropes, dodging obstacles or people, following the leader on irregular pathways. Other basic movement skills like hopping which required the mover to push the body up with one foot and catch the weight with the same foot. Also balancing the body with arms out from the sides. Furthermore, the ability to lift the foot of the non-supporting leg by bending the knee, keeping the toes of the supporting foot pointing straight ahead and the head and the body maintaining an erect position. This required ability to balance on one foot, then jump over a low object, rope or line; later to land on a take-off foot and balance briefly; a series of hops; later hops without aids: skipping was more difficult for the retarded child to learn because of the combination of the step and the hop. However, being proficient at a step and a hop some of the retarded children succeeded in stepping forwards and then hopping on the same foot, step hop combinations being used in rhythms, phrases and dances. First stepping forward and hopping with the same foot, secondly, maintaining balance and gaining some height by swinging arms, thirdly using alternate feet to take body weight. Jumping

provided sequence activities and a variety of situations after mastery. Pushing off with vigorous extension of the legs through the arms vigorously in the direction of the movement allowed the trainer to hold the hands of the child and assist, sometimes producing in the mover a jump and a turn, or jump and a balanced position.

From this individual experimentation, safety skills were taught such as relaxed legs, bending knees and ankles to allow a "give" to reduce speed and absorbtion of body weight. Hence, it was possible to teach and re-teach landing on balls of feet with bent knees, giving or relaxing with movement to absorb landing force, extending the arms sideways for balance. This led to the development of every jump being accompanied by a landing, teaching simultaneously, and imitating animals by a jump, landing and immediate rebound or jump, landing, preceded by and followed by another type of movement. Sequencing movements using some musical accompaniment was developed and led to Phase III.

## PHASE III

An example of a warm-up.

1. Face teacher, feet apart, look at your hands held out in front of you.

2. Shake and shake and shake and grip them. (Repeat this several times emphasising the gripping as the end of the phase. Shaking can be accompanied by coaching points.) Hand and wrists only - let your fingers flop loosely during the shaking - let this shaking die down and then build up again each time before you grip.

3. Let this shaking go into arms and then shoulders and head. (Do not forget the phrasing of the shaking - these bursts of suddenness are invigorating but, if held too long will quickly become fatiguing.)

4. Let the shake travel to the foot.

5. Switch to slow bending and stretching, head flopping onto chest, chest collapsing, knees bending, one after the other and slowly rising again to full standing.

6. Again body coaching would come into this, the cannon effects of head, chest, knees and the successive unfolding of the body: "Don't let your back straighten until your knees straightened - let your head be the last part of you to come up tall " (Collins, 1969).

LABAN material developed. (The terms used are those commonly found in dance literature.)

Sequences developed.

The aim being to use basic efforts to experience, exercise and master change from one quality to another.

1. Effort action taught alone for Phase I.

(a)

| | |
|---|---|
| Float | Dab |
| Thrust | Wring |
| Glide | Flick |
| Slash | Press |

(b) Effort actions taught with Phases I and II

i) time change )
ii) weight change ) GRADUAL
iii) space change )

(c) Effort actions taught with a

i) weight/change time )
ii) time/change space ) LESS GRADUAL
iii) space/change weight )

1. (d) Float to Thrust
Thrust to Float
Glide to Slash
Slash to Glide
) ABRUPT changes or complete contrasts

Dab to Wring
Wring to Dab
Flick to Press
Press to Flick

(e) i) To get the sensation of accelerating the following effort transitions will help:
Float into Flick
Glide into Dab
Press into Thrust
Wring into Slash

ii) For crescendo and becoming firm:
Float into Wring
Glide into Press
Dab into Thrust
Flick into Slash

iii) For becoming flexible:
Glide into Float
Dab into Flick
Press into Wring
Thrust into Slash

The reader is referred to Laban (1948), Russell (1958) and Preston Dunlop (1963) for further information for the qualities of modern educational dance teaching.

RHYTHM

Phases II and III in the programme tried to investigate the following: relationships; rhythmic motor response and the perception of rhythm

through aural stimuli; rhythmic motor response and motor ability. The following definitions are assumed in this study:

Rhythm is the actual sequence of sounds, silences and stresses occurring in a given unit, such as a measure.

Rhythmic pattern refers to the arrangement of notes within a basic framework such as a measure.

Rhythmic motor response is the walking type of movement in response to rhythmic aural stimuli.

Walking movements were selected to reduce the co-ordination factor to a minimum. A tempo of 84 beats per minute, fast enough to avoid a balance factor in performance, was selected, which was near to a "normal" tempo as described by Sachs (1953). The patterns included measures of 3/4, 4/4, and 5/4 metres; they were recorded on audio tape using a drum. Items were arranged in groups of five, progressing from simple to difficult, according to the subjective judgement of the author. Thus, a relatively simple item recurred frequently. This arrangement was an attempt to avoid discouraging the subject. (Collins 1969; Drowatzky 1971; Hollis 1976, Lishman 1977b; Moule, Williams and Holland 1979; Upton 1979)

# APPENDIX III

## CHARTS FOR MONITORING PROCEDURES

(1) Observer Schedules

Tables (vi)-(x)
Awareness Schedules

# AWARENESS SCHEDULE

Adapted from AMP Index 1. Webb (1979)

The individual child was rated for responses during the period of Session 1 of Programme 1 at the outset of the investigation. The sensory systems are designated by the abbreviations following each item for "Approach" and "Integrating Memory with present Stimuli Schedules".

| | |
|---|---|
| T | Tactility |
| K | Kinesthetic |
| V | Vision |
| A | Audition |
| G | Gustatory |
| O | Olfactory |
| Me | Memory |
| At | Attention |

KEY: The Scoring

Task answered correctly - 1
Task answered uncorrectly - 0

The purpose of each schedule was to provide a base line and to aid the planning of the content for the investigation.

## Table(vi)

## Approach Schedule

(1) DRAWS closer or SMILES when cuddled (T)

(2) MAINTAINS CONTACT with or PATS pliable materials for 10 seconds:
- (a) Sand
- (b) Wet Clay
- (c) Water (T)

(3) SMILES or TURNS toward bell (A)

(4) SMILES, TURNS or REACHES toward music (V)

(5) SMILES when observer SMILES (social response) (V)

(6) TURNS toward voice from behind (A)

(7) TURNS toward mobile object (V)

(8) REACHES toward pleasant odours:
- (a) Perfume
- (b) Juice
- (c) T. C. P. (O)

(9) REACHES toward pleasant taste:
- (a) Chocolate
- (b) Sugar
- (c) Sugar Puffs (G)

Table(vii)

Integrating Memory with present Stimuli

| | | |
|---|---|---|
| (1) | LOOKS at familiar person when named | (A, V, Me) |
| (2) | OBEYS gesture command (raises arm in response to outstretched arms) | (V, Me) |
| (3) | LOOKS in direction of a BLOCK that has been dropped | (V, A, Me) |
| (4) | TURNS head or SMILES when name is called | (A, Me) |
| (5) | SHIFTS attention from one toy to another | (V, A, At) |
| (6) | TURNS toward objects as they are named | (A, V, Me) |
| (7) | REACTS to reappearance of observer | (A, V, Me) |

## Table (viii)

## Manipulation

In addition to the sensory systems designated in the Awareness Schedule, the Manipulation Schedule includes:

| | |
|---|---|
| GM | Gross Motor |
| FM | Fine Motor |
| I | Imitation |
| PP | Person Permanence |
| Int | Intentionality |
| Comm | Communication |
| OP | Object Performance |

| | | |
|---|---|---|
| (1) | REACHES for object with right, left or both hands. | (V, FM, Int) |
| (2) | GRASPS object with right, left or both hands. | (V, FM, Int) |
| (3) | HOLDS object with right, left, or both hands. | (V, A, FM, Int) |
| (4) | TRANSFERS toy from hand to hand. | (V, T, FM, Int) |
| (5) | SQUEEZES ball. | (T, I, FM, Int) |

## Table(ix)

### Responses to Commands

Gestures:

| | | |
|---|---|---|
| (1) | POUNDS table with block | (V, T, A, I, FM Int.) |
| (2) | PICKS up bread or drum stick with finger and thumb | (V, T, I, FM, Int.) |
| (3) | DROPS block in can | (V, A, I, FM, Int.) |
| (4) | PLACES ring on stick | (V, I, T, FM, Int.) |
| (5) | IMITATES poking finger into hole | (V, I, T, Int.) |
| (6) | PLAYS peek-a-boo | (I, A, PP, Int.) |
| (7) | In sitting position, PULLS toys across table or floor toward self with string or strap | (V, FM, A, Int.) |
| (8) | THROWS ball purposely | (A, V, Int.) |
| (9) | OBEYS verbal command ("Give me your hand.") | (A, Int.) |
| (10) | STACKS one block on another | (A, Int.) |

Table (x)

Expression of Intentionality

| | | |
|---|---|---|
| (1) | EXPRESSES need by:-<br>(a) Sounds,<br>(b) Eyes,<br>(c) Gestures,<br>(d) Words | (V, A, Int. Comm.) |
| (2) | PATS mirror image | (V, T, Int.) |
| (3) | PULLS observer's arm to get balloon | (V, FM, Int.) |
| (4) | PULLS observer's arm to indicate choice of toy | (V, A, Int. Comm.) |

Overall the responses helped the writer's planning for the content material of the training sessions.

# APPENDIX III

## CHARTS FOR MONITORING PROCEDURES

(ii) Schedules for Reliability of Observers

Tables xi(a), xi(b), xi(c)

Table xi (a)

Check List for Staff Behaviour

STAFF BEHAVIOUR
(time sampling)

| CATEGORIES | EXAMPLES |
|---|---|
| Nil | |
| Plays with | Cooperative play with child |
| Works with | Helps child to set out materials |
| **ACTS OF INSTRUCTION** | |
| Questions | Asks child question about task |
| Directs | Gives child order |
| Instructs | Shows how to do something |
| **ACTS OF APPROVAL** | |
| Approval | Tells child he is good |
| Physical reward | Fondles, hugs child |
| Privilege | Tells child he can have some reward (e. g. going to another teacher; doing a message) |
| **ACTS OF DISAPPROVAL** | |
| Restrains | Physically restrains a child's movements |
| Physically punishes | Hits child |
| Disapproval | Tells child he is naughty |
| Other | Tells child he will loose some benefits (e. g. swimming) |

Check Lists xi(b), xi(c)
are examples of two sheets used for the 'in service' training which produced the staff observers and testers for this research investigation.

Table xi (b)

In-Service Training Programme
Checklist A

| NAME: | DATE: | |
|---|---|---|
| OBSERVER: | | |
| DIRECTIONS:<br>Place a checkmark (✓) in the column labelled YES if the behaviour was observed. Mark the NO column if the behaviour was not observed. | | |
| | YES | NO |
| 1 Child likes activity | | |
| 2 Child pays attention | | |
| 3 Child solves problem independently | | |
| 4 Child helps other children | | |
| 5 Child enjoys the activities | | |
| 6 Child is a leader | | |
| 7 Child accepts responsibility | | |
| 8 Child exercises initiative | | |

Table xi (c)

In-Service Training Programme
Checklist B

| NAME: | DATE: |
|---|---|
| OBSERVER: | |

DIRECTIONS:

Place a checkmark (✓) in the column labelled YES if the behaviour was observed. Mark the NO column if the behaviour was not observed.

| | | YES | NO |
|---|---|---|---|
| 1 | Child smiles during an activity | | |
| 2 | Child makes a positive statement about the activity (verbal or non-verbal gesture) | | |
| 3 | When given a task, child completes it in the allocated time | | |
| 4 | Child demonstrates how to do something | | |
| 5 | Child completes the task without seeking help from the teacher or other children | | |
| 6 | Other children choose this child to be the leader in an activity | | |
| 7 | Child carries out an assigned activity without being reminded or reinforced | | |
| 8 | Child completes movement and repeats | | |

# APPENDIX III

## CHARTS FOR MONITORING PROCEDURES

(iii) Records for the Investigation

Schedules iii(1), iii(2), iii(3), iii(4)

## TRAINING SCHEDULE FOR OBSERVERS

To Practise 'on task', 'not on task'

iii (1)

| CHILD: | | | | OBSERVER: | | DATE: | | |
|---|---|---|---|---|---|---|---|---|
| OBJECTIVES FOR SESSION | | | | | | | | |
| Activity | New | Modified | Repeated | Objective | Materials | Reinforcer | Successful | Unsuccessful |
| | | | | | | | | |

| Activities classed as unsuccessful<br>Child participated but did not reach objective - describe | Child attended but did not participate as planned - describe | Child did not attend - describe | Child actively avoided the situation - describe |
|---|---|---|---|
| | | | |

## COMMENTS AND PLANS FOR NEXT SESSION

| For complexity of receptive language. Examples of verbal request (verbatim) | compiled with | not compiled with | Type of prompt: Physical | Type of prompt: Gestural | Verbal | Reinforcer |
|---|---|---|---|---|---|---|
| | | | | | | |

| Examples of verbal response | Appropriate to situation | Inappropriate to situation | Activity engaged in at time | Comment |
|---|---|---|---|---|
| | | | | |

| E. G. 's of enhanced response | Activities engaged in at time | |
|---|---|---|
| | | |
| | Maximum (state activity) | |
| | Maximum (state activity) | |

LESSON ORGANISATION AND FORMAT WITHIN PROGRAMME

(iii) 2

| | | |
|---|---|---|
| MOVEMENT: | | |
| PROGRAMME: | LESSON: | GROUP: |
| DATE: | | |
| INTRODUCTION: | | |
| TRAINING: | | |
| DEVELOPMENT: | | |
| RECORDS USED/TAPES | | |
| EVALUATION: | | |

## FORMAT FOR OBSERVATION CHECK SHEET

(iii) 3

| Date:<br>Group:<br>Teachers: | | Absentees: | | |
|---|---|---|---|---|
| I. Class reactions | Topic | Topic | II. Teacher: difficulties in: | Topic. which instruc-tions? |
| Signs of:<br>1. attention<br>2. inattention<br>3. interest<br>4. indifference<br>5. fatigue<br>6. rejection<br>7. pleasure<br>8. restlessness<br>9. uncooperativeness | | | 1. understanding the instructions<br>2. communicating the instructions<br>3. getting co-operation | |

III. Individual observations in the Movement Programme; names of children cooperating and what stimulus used:

| topic | child | stimulus | difficulties in: | | Response |
|---|---|---|---|---|---|
| | | | understand-ing the task | coordinat-ing (specify) | |
| | | | | | |

IV. Social or/and behaviour problems:

V. Material covered:

VI. Personal Remarks:

1. Are you satisfied with the response? or disappointed? Why?
2. Do you feel any progress is being made? In which topic particularly?

Adapted from Lishman (1977b) and Dickinson (1979)

(iii) 4

## RECORD KEEPING

This suggested motor development assessment chart has been included as a guide to teachers who wish to keep a simple record of children's progress through the motor programmes.

NAME: _____ DATE OF BIRTH: _____

1. Gross Motor Development:

Crawls with rhythmic cross pattern action ( )
Walks with good posture and cross pattern action ( )
Hops on either leg ( ) Right ( ) Left ( )
Jumps: On the spot ( ) Forwards ( ) Backwards ( )
Skips rhythmically ( )

2. Body Awareness

(i) Identifies on self

| | Demonstrated by teacher | Spoken & copied | Spoken Instruction only |
|---|---|---|---|
| Head | | | |
| Eyes | | | |
| Nose | | | |
| Mouth | | | |
| Ears | | | |
| Forehead | | | |
| Chin | | | |
| Arms | | | |
| Elbows | | | |
| Wrists | | | |
| Hands | | | |
| Fingers | | | |
| Legs | | | |
| Thighs | | | |
| Knees | | | |
| Ankles | | | |
| Feet | | | |
| Toes | | | |
| Shoulders | | | |
| Chest | | | |
| Waist | | | |
| Hips | | | |

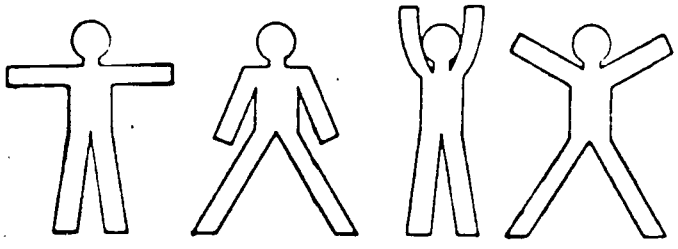
(ii) Identifies on others by touching or pointing

| | Level 1 | | Level 2 |
|---|---|---|---|
| Head | | Fingers | |
| Eyes | | Legs | |
| Nose | | Thighs | |
| Mouth | | Knees | |
| Ears | | Ankles | |
| Forehead | | Feet | |
| Chin | | Toes | |
| Arms | | Shoulders | |
| Elbows | | Chest | |
| Wrists | | Waist | |
| Hands | | Hips | |

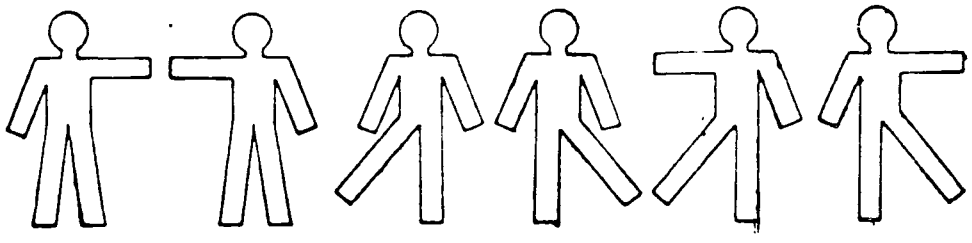
(iii) 4

(iii) Can copy when demonst rat ed

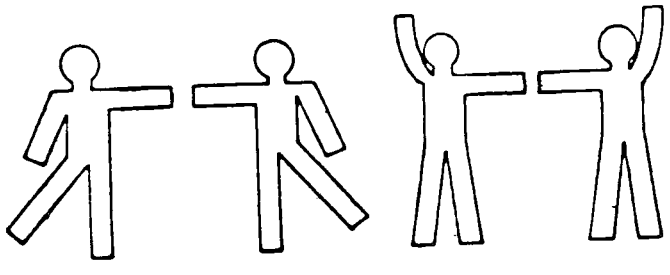
(a)



(b)



(c)



(iv) Drawing of a person satisfies the following criteria

(a) Not a stick drawing
(b) Vertical on page
(c) Symmetrical about vertical midline
(d) Main parts (head, trunk, arms and legs) are present in the right place
(e) Drawn to reasonable propo rtions

(iii) 4.

3. Body Co-ordinates

Responds quickly and correctly to requests to move body parts. Both arms ( )
Both legs ( ) Right arm ( ) Right leg ( ) Left leg ( )
Left arm and leg ( ) Right arm and leg ( )
Right arm/left leg ( ) Left arm/right leg ( )
Angels in the Snow ( )

4. Fine Motor Control - Hand/Finger Dexterity

| | |
|---|---|
| Can close fingers to palm and open to rhythm | Right ( ) Left ( ) |
| Can touch tip of thumb with top of each finger | Right ( ) Left ( ) |
| Can close fingers to palm smoothly in turn starting with little finger | Right ( ) Left ( ) |
| With eyes closed can identify which finger has been touched | Right ( ) Left ( ) |

5. Laterality and Dominance

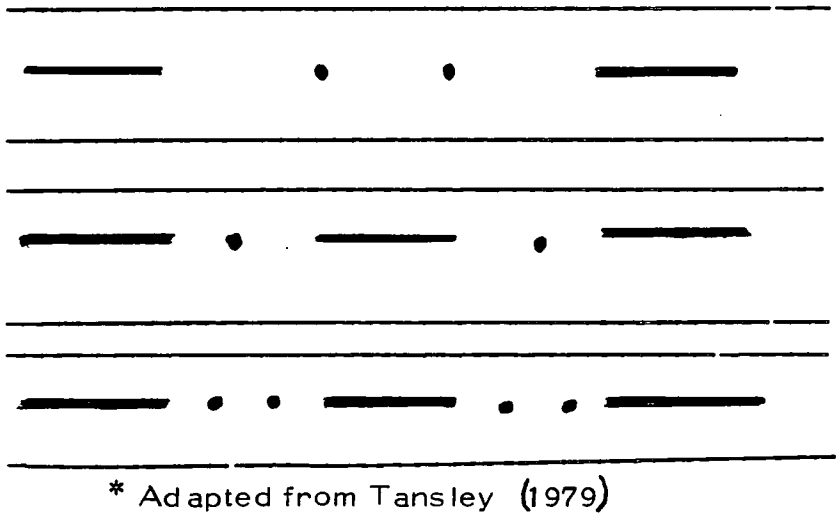
| | |
|---|---|
| Dominant hand | Right Left Mixed |
| Dominant foot | Right Left Mixed |
| Distinguishes right/left on self | Yes No |
| Distinguishes right/left on others | Yes No |
| Failure in motor inhibition | Yes No At times |

6. Directionality

| Knows | |
|---|---|
| Up/down | ( ) |
| Forwards/backwards | ( ) |
| Sideways to the right or left | ( ) |
| Under/Over/Between | ( ) |
| Can change direction on request | ( ) |

7. Rhythmic Patterns

| | |
|---|---|
| Marches in time with given rhythm | ( ) |
| Can say rhythms using dah and di | ( ) |
| Can tap or clap rhythms | ( ) |
| Can tap and say rhythms simultaneously | ( ) |



* Adapted from Tansley (1979)

# APPENDIX IV

Social and Physical Assessment (Gunzburg, 1973)

(1) The descriptive comments provides an overview of the pilot study sample (n = 24).

(a) Self Help

GROUP 1 the eight subjects all needed help with eating.

GROUP 2 the eight subjects all used cutlery for eating, however they required some help with cutting their food.

GROUP 3 the eight subjects were eating unaided.

(b) Communication (From/To)

GROUP 1 all subjects produced throaty noises and cries, listened to music and turned head to sounds.

GROUP 2 many unintelligible words were uttered polysyllabic vowels, e.g. iii, rrr, mmm, or sss sounds frequently.

GROUP 3 single words were beginning to be uttered, yet each child was able to refer to himself by his own name.

All the sample turned their heads to hear sound and looked around the room, Group 3 subjects tended to copy sounds.

Other sections included:-

socialisation, occupation (dexterity - finger movements and gross motor control) and mobility.

(2) MAIN STUDY (n = 30).

Dressing:

Group 1 subjects required assistance in dressing.

Group 2 and 3 were reasonable in dressing.

Communication and Socialisation

Group 1 subjects very occasionally used pronouns like "me" and "why."

Group 2 subjects used many unintelligible words but improved constantly in two word combinations.

Group 3 subjects were able to use names of familiar objects.

## SUMMARY

Reassessment profiles (P-A-C) and (P-E-1) Gunzburg (1973) were not available to the writer after the pilot or main studies. Reassessments by the school establishments in each case indicated that the additional training had shown improvements, particularly in socialisation and occupation sub-sections. The school assessors indicated that a "scatter" was visible showing functioning by probing in both directions (upwards and downwards). The profiles provided springboards for the design of content material and individualised teaching styles.

# APPENDIX V

## TEST RESULTS - PILOT STUDY

(i) Summary of Data

HOSPITAL SCHOOL A

Table 14(a)

| | |
|---|---|
| The tests listed provide base line data from which the motor performance of educable mentally retarded children can be compared | |
| I. | Identification of Body Parts, Kephart (1960) Test 3<br>Limb-eye co-ordination. |
| II. | Gross Agility, Cratty (1969), Level 1, Test 2<br>Explosive muscular strength. |
| III. | Body Perception, Cratty (1969), Level 1, Test 1<br>Static muscular strength. |
| IV. | Imitation of Movements, Kephart (1960), Test 5<br>Speed and co-ordination of gross limb movements. |
| V. | Exercise, Arnheim et al., (1973), Lishman (1977a)<br>Gross body co-ordination. |
| VI. | Rhythmic Body Responses, Ashton (1953), Lishman (1977a)<br>Specific selected responses which control a rhythmic response to movement. |

## TABLE TO SHOW MEAN QUANTIFIABLE RESPONSES AND DIFFERENCES WITH THE SUBJECTS (24)

Table 14(b)

| TEST | PRE-TEST MEAN | POST-TEST MEAN | RESULTS |
|---|---|---|---|
| Identification of Movements. Test 3. Kephart (1960) | 2.4 | 3.1 | Difference is not due to chance |
| Gross Agility. Level 1, Test 2, Cratty (1969) | 2.4 | 2.4 | Neither achievement is better than the other |
| Body Perception. Test 1. Cratty (1969) | 2.8 | 3.0 | Difference is not due to chance |

## TABLE TO SHOW MEAN QUANTIFIABLE RESPONSES AND DIFFERENCES WITH THE SUBJECTS (16)

These tests were too difficult for 8 subjects, the lower class (Group 1)

Table 14(c)

| TEST | PRE-TEST MEAN | POST-TEST MEAN | RESULTS |
|---|---|---|---|
| Imitation of Movements. Test 4. Kephart (1960) | 2.25 | 3.1 | Difference is not due to chance |
| Exercise. Arnheim et al., (1975); Lishman (1977a) | 6.1 | 6.2 | Difference between the means is not significant |
| Rhythmic Body Response. Ashton (1953); Lishman (1977a) | 6.0 | 5.3 | There is some difference |

# APPENDIX V

## TEST RESULTS - PILOT STUDY

(ii) Physical Skill Results
Quantitative Data

| | |
|---|---|
| Tables 15a(I) to 15a(III) | Identification of Body Parts |
| Tables 15b(I) to 15b(III) | Gross Agility |
| Tables 15c(I) to 15c(III) | Body Perception |
| Tables 15d(I) to 15d(VII) | Imitation of Movements |
| Tables 15e(I) to 15e(V) | Exercise |
| Tables 15f(I) to 15f(V) | Rhythmic Body Response |

PILOT PROGRAMME, Summer 1979

IDENTIFICATION OF BODY PARTS, Test 3, KEPHART (1960)

Summary of Results

Table 15a(1)

| DATE | TESTERS SOURCE | NO. OF SUBJECTS | RESULTS | |
|---|---|---|---|---|
| | | | no change | plus score |
| Summer, 1979 | C. D. * | 5 | / | |
| 12 weeks | Group 1 | 3 | | / |
| Summer, 1979 | C. D. * | 3 | / | |
| 12 weeks | Group 2 | 5 | | / |
| Summer, 1979 | C. D. * | 1 | / | |
| 12 weeks | Group 3 | 7 | | / |

* C. D. - Northern England

PILOT PROGRAMME, Summer 1979

IDENTIFICATION OF MOVEMENTS, Test 3, KEPHART (1960)

Identification Results

Table 15a (11)

| Group | Subject | Number | Sex | Score | | Results | |
|---|---|---|---|---|---|---|---|
| | | | | Pre-test | Post-test | Same score | Plus score |
| 1 | A | 1 | M | 3 | 3 | / | |
| | B | 2 | M | 2 | 4 | | / |
| | C | 3 | M | 1 | 1 | / | |
| | D | 4 | M | 2 | 2 | / | |
| | E | 5 | F | 3 | 4 | | / |
| | F | 6 | F | 2 | 4 | | / |
| | G | 7 | F | 2 | 2 | / | |
| | H | 8 | F | 3 | 5 | | / |
| 2 | A | 1 | M | 2 | 2 | / | |
| | B | 2 | M | 2 | 2 | / | |
| | C | 3 | M | 2 | 4 | | / |
| | D | 4 | M | 3 | 4 | | / |
| | E | 5 | F | 4 | 5 | | / |
| | F | 6 | F | 3 | 3 | / | |
| | G | 7 | F | 1 | 2 | | / |
| | H | 8 | F | 5 | 5 | / | |
| 3 | A | 1 | M | 2 | 3 | | / |
| | B | 2 | M | 3 | 4 | | / |
| | C | 3 | M | 4 | 5 | | / |
| | D | 4 | M | 2 | 3 | | / |
| | E | 5 | F | 3 | 5 | | / |
| | F | 6 | F | 2 | 3 | | / |
| | G | 7 | F | 1 | 1 | / | |
| | H | 8 | F | 1 | 2 | | / |

## IDENTIFICATION OF MOVEMENTS, Test 3, KEPHART (1960)

### Mean Scores

### Table 15a(111)

| CLASS | MEAN SCORE | | STANDARD DEVIATION | |
|---|---|---|---|---|
| | Pre-Test | Post-Test | Pre-Test | Post-Test |
| Group 1 | 2.2 | 2.8 | .6 | 1.2 |
| Group 2 | 2.7 | 3.3 | 1.1 | 1.2 |
| Group 3 | 2.2 | 3.3 | .9 | 1.2 |
| Overall Subjects | 2.4 | 3.1 | .9 | 1.2 |

PILOT PROGRAMME, Summer 1979

GROSS AGILITY TEST. LEVEL 1. Test 2. CRATTY (1969)

Summary of Results
Table 15b (1)

| DATE | TESTERS SOURCE | NO. RESULTS | RESULT | | |
|---|---|---|---|---|---|
| | | | Same Score | Plus Score | Minus Score |
| 1979 Summer 12 weeks | C. D. * Group 1 | 4<br>4 | / | | / |
| 1979 Summer 12 weeks | C. D. * Group 2 | 2<br>5 | / | / | |
| 1979 Summer 12 weeks | C. D. * Group 3 | 4<br>3<br>1 | / | / | / |

* C. D. - Northern England

PILOT PROGRAMME, Summer 1979

GROSS AGILITY, LEVEL 1, Test 2, CRATTY (1969)

Individual Results

Table 15b(11)

| Group | Subjects | Number | Sex | Score | | Results | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Pre-Test | Post-Test | Minus Score | Plus Score | Same Score |
| 1 | A | 1 | M | 3 | 2 | / | | |
| | B | 2 | M | 3 | 2 | / | | |
| | C | 3 | M | 3 | 2 | / | | |
| | D | 4 | M | 3 | 3 | | / | |
| | E | 5 | F | 4 | 5 | | / | |
| | F | 6 | F | 4 | 5 | | / | |
| | G | 7 | F | 2 | 3 | | / | |
| | H | 8 | F | 1 | 0 | / | | |
| 2 | A | 1 | M | 2 | 2 | | | / |
| | B | 2 | M | 3 | 4 | | / | |
| | C | 3 | M | 2 | 3 | | / | |
| | D | 4 | M | 3 | 3 | | | / |
| | E | 5 | F | 1 | 1 | | | / |
| | F | 6 | F | 2 | 3 | | / | |
| | G | 7 | F | 3 | 4 | | / | |
| | H | 8 | F | 3 | 4 | | / | |
| 3 | A | 1 | M | 2 | 2 | | | / |
| | B | 2 | M | 2 | 1 | / | | |
| | C | 3 | M | 1 | 2 | | / | |
| | D | 4 | M | 1 | 0 | / | | |
| | E | 5 | F | 2 | 3 | | / | |
| | F | 6 | F | 1 | 0 | / | | |
| | G | 7 | F | 1 | 2 | | / | |
| | H | 8 | F | 4 | 2 | / | | |

## GROSS AGILITY, LEVEL 1, Test 2. CRATTY (1969)

### Mean Scores

### Table 15b(111)

| GROUP | MEAN SCORE | | STD. DEVIATION | |
|---|---|---|---|---|
| | Pre-Test | Post-Test | Pre-Test | Post-Test |
| Group 1 | 2.8 | 2.7 | .9 | 1.5 |
| Group 2 | 2.3 | 3. | .6 | 1. |
| Group 3 | 1.7 | 1.5 | .9 | 1. |
| Overall Subjects | 2.3 | 2.4 | .9 | 1.3 |

## PILOT PROGRAMME, Summer 1979

## BODY PERCEPTION, Test 1. CRATTY (1969)

### Summary of Results

### Table 15c(1)

| DATE | TESTERS SOURCE | NO. RESULTS | RESULT | | |
|---|---|---|---|---|---|
| | | | Plus Score | Minus Score | No Change |
| 1979<br>12 weeks<br>Summer<br>8 subjects | Group 1 | 4<br>3<br>1 | / | / | / |
| 1979<br>12 weeks<br>Summer<br>8 subjects | Group 2 | 5<br>2<br>1 | / | / | / |
| 1979<br>12 weeks<br>Summer<br>8 subjects | Group 3 | 4<br>2<br>2 | / | / | / |

## PILOT PROGRAMME - Summer 1979

## BODY PERCEPTION. Test 1. CRATTY (1969)

### Individual Results
### Table 15 c(11)

| Group | sub-jects | num-bers | sex | Score | | Results | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Pre-Test | Post-Test | Plus Score | Minus Score | No Change |
| 1 | A | 1 | M | 3 | 4 | / | | |
| | B | 2 | M | 2 | 3 | / | | |
| | C | 3 | M | 2 | 1 | | / | |
| | D | 4 | M | 3 | 1 | | / | |
| | E | 5 | F | 2 | 3 | / | | |
| | F | 6 | F | 3 | 4 | / | | |
| | G | 7 | F | 3 | 3 | | | / |
| | H | 8 | F | 4 | 2 | | / | |
| 2 | A | 1 | M | 3 | 4 | / | | |
| | B | 2 | M | 4 | 4 | | | / |
| | C | 3 | M | 3 | 2 | | / | |
| | D | 4 | M | 2 | 3 | / | | |
| | E | 5 | F | 1 | 0 | | / | |
| | F | 6 | F | 2 | 3 | / | | |
| | G | 7 | F | 3 | 4 | / | | |
| | H | 8 | F | 4 | 5 | / | | |
| 3 | A | 1 | M | 2 | 3 | / | | |
| | B | 2 | M | 3 | 2 | | / | |
| | C | 3 | M | 2 | 3 | / | | |
| | D | 4 | M | 4 | 3 | | / | |
| | E | 5 | F | 3 | 3 | | | / |
| | F | 6 | F | 2 | 3 | / | | |
| | G | 7 | F | 4 | 5 | / | | |
| | H | 8 | F | 5 | 5 | | | / |

## BODY PERCEPTION, LEVEL 1, Test 1

## CRATTY (1969)

### Mean Scores
### Table 15c(111)

| GROUP | MEAN SCORE | | STANDARD DEVIATION | |
|---|---|---|---|---|
| | Pre-Test | Post-Test | Pre-Test | Post-Test |
| 1 | 2.7 | 2.6 | .6 | 1.1 |
| 2 | 2.7 | 3.1 | .9 | 1.4 |
| 3 | 3.1 | 3.3 | 1.0 | .9 |
| Overall subjects | 2.8 | 3.0 | .9 | 1.2 |

## IMITATION OF MOVEMENT, Test 3, KEPHART (1960)

### Summary of Results
### Test 15d(1)

| DATE | TESTERS SOURCE | NO. RESULTS | RESULT | | |
|---|---|---|---|---|---|
| | | | Plus Score | Minus Score | No Change |
| 1979 Summer 8 subjects | C.D. * GROUP 1 | OVERALL TOO DIFFICULT FOR THE SUBJECTS | | | |
| 1979 Summer 8 subjects | C.D. * GROUP 2 | 6<br>1<br>1 | / | / | / |
| 1979 Summer 8 subjects | C.D. * GROUP 3 | 6<br>2 | / | | / |

* C.D. - Northern England

PILOT PROGRAMME, Summer 1979

IMITATION OF MOVEMENTS. Test 4. KEPHART (1960)

Individual Results
Table 15d(11)

| Group | Subject | Number | Sex | Score | | Results | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Pre-Test | Post-Test | Plus Score | Same Score | Minus Score |
| 1 | A | 1 | M | OVERALL TOO DIFFICULT FOR SUBJECTS | | | | |
| | B | 2 | M | | | | | |
| | C | 3 | M | | | | | |
| | D | 4 | M | | | | | |
| | E | 5 | F | | | | | |
| | F | 6 | F | | | | | |
| | G | 7 | F | | | | | |
| | H | 8 | F | | | | | |
| 2 | A | 1 | M | 2 | 3 | / | | |
| | B | 2 | M | 2 | 3 | / | | |
| | C | 3 | M | 1 | 2 | / | | |
| | D | 4 | M | 2 | 2 | | / | |
| | E | 5 | F | 3 | 1 | | | / |
| | F | 6 | F | 1 | 4 | / | | |
| | G | 7 | F | 2 | 4 | / | | |
| | H | 8 | F | 2 | 3 | / | | |
| 3 | A | 1 | M | 3 | 4 | / | | |
| | B | 2 | M | 5 | 7 | / | | |
| | C | 3 | M | 2 | 4 | / | | |
| | D | 4 | M | 2 | 2 | | / | |
| | E | 5 | F | 1 | 1 | / | | |
| | F | 6 | F | 3 | 4 | / | | |
| | G | 7 | F | 3 | 3 | | / | |
| | H | 8 | F | 2 | 3 | / | | |

IMITATION OF MOVEMENTS, Test 4

KEPHART (1960)

Mean Scores

Table 15d (111)

| GROUP | MEAN SCORES | | STANDARD DEVIATION | |
|---|---|---|---|---|
| | Pre-Test | Post-Test | Pre-Test | Post-Test |
| 1 | TOO DIFFICULT FOR SUBJECTS | | | |
| 2 | 1.8 | 2.7 | .5 | .9 |
| 3 | 2.6 | 3.5 | 1.1 | 1.6 |
| Overall Subjects | 2.2 | 3.1 | .9 | 1.4 |

PILOT PROGRAMME, Summer 1979

MOVEMENT ANALYSIS OF IMITATION OF MOVEMENTS

Test 4. KEPHART (1960), Imitation of Movements

Table 15d(IV)

GROUP 1

BREAK DOWN

| Subject | Number | Sex | Unilateral | | Bilateral | | Cross Lateral | | Score | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Pre-Test | Post-Test | Pre-Test | Post-Test | Pre-Test | Post-Test | Pre-Test | Post-Test |
| A Pre- Post- | 1 Test Test | M | | | | | | | | |
| B Pre- Post- | 2 Test Test | M | | | | | | | | |
| C Pre- Post- | 3 Test Test | M | | | | | | | | |
| D Pre- Post- | 4 Test Test | M | | | | | | | | |
| E Pre- Post- | 5 Test Test | F | | | | | | | | |
| F Pre- Post- | 6 Test Test | F | | | | | | | | |
| G Pre- Post- | 7 Test Test | F | | | | | | | | |
| H Pre- Post- | 8 Test Test | F | | | | | | | | |

MUCH TOO DIFFICULT FOR THE SUBJECT, NO RESULTS RECORDED

PILOT PROGRAMME, Summer 1979

MOVEMENT ANALYSIS OF IMITATION OF MOVEMENTS

Test 4. KEPHART (1960), Imitation of Movements

Table 15d (V)

GROUP 2

BREAK DOWN

| Subject | Number | Sex | Unilateral | | Bilateral | | Cross Lateral | | Score | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Pre-Test | Post Test | Pre-Test | Post Test | Pre-Test | Post Test | Pre-Test | Post Test |
| A Pre- Post- | 1 Test Test | M | 1 | 0 | 1 | 2 | 0 | 1 | 2 | 3 |
| B Pre- Post- | 2 Test Test | M | 1 | 1 | 1 | 1 | 0 | 1 | 2 | 3 |
| C Pre- Post- | 3 Test Test | M | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 2 |
| D Pre- Post- | 4 Test Test | M | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 |
| E Pre- Post- | 5 Test Test | F | 0 | 0 | 1 | 1 | 2 | 0 | 3 | 1 |
| F Pre- Post- | 6 Test Test | F | 0 | 1 | 0 | 3 | 1 | 0 | 1 | 4 |
| G Pre- Post- | 7 Test Test | F | 1 | 2 | 0 | 2 | 1 | 0 | 2 | 4 |
| H Pre- Post- | 8 Test Test | F | 1 | 1 | 1 | 2 | 0 | 0 | 2 | 3 |

PILOT PROGRAMME, Summer 1979

MOVEMENT ANALYSIS OF IMITATION OF MOVEMENTS

Test 4. KEPHART (1960), Imitation of Movements

Table 15d(VI)

GROUP 3 BREAK DOWN

| Subject | Number | Sex | Unilateral | | Bilateral | | Cross Lateral | | Score | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Pre-Test | Post-Test | Pre-Test | Post-Test | Pre-Test | Post-Test | Pre-Test | Post-Test |
| A | 1 | M | 1 | 2 | 1 | 2 | 1 | 0 | 3 | 4 |
| Pre-Test | | | | | | | | | | |
| Post-Test | | | | | | | | | | |
| B | 2 | M | 2 | 3 | 2 | 2 | 1 | 2 | 5 | 7 |
| Pre-Test | | | | | | | | | | |
| Post-Test | | | | | | | | | | |
| C | 3 | M | 1 | 2 | 1 | 2 | 0 | 0 | 2 | 4 |
| Pre-Test | | | | | | | | | | |
| Post-Test | | | | | | | | | | |
| D | 4 | M | 1 | 1 | 1 | 1 | 0 | 0 | 2 | 2 |
| Pre-Test | | | | | | | | | | |
| Post-Test | | | | | | | | | | |
| E | 5 | F | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Pre-Test | | | | | | | | | | |
| Post-Test | | | | | | | | | | |
| F | 6 | F | 0 | 0 | 2 | 0 | 3 | 4 | 3 | 4 |
| Pre-Test | | | | | | | | | | |
| Post-Test | | | | | | | | | | |
| G | 7 | F | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 3 |
| Pre-Test | | | | | | | | | | |
| Post-Test | | | | | | | | | | |
| H | 8 | F | 1 | 0 | 1 | 2 | 0 | 1 | 2 | 3 |
| Pre-Test | | | | | | | | | | |
| Post-Test | | | | | | | | | | |

## IMITATION OF MOVEMENTS, Test 4, KEPHART (1960)

### Mean Score

### Table 15d (VII)

| GROUP | MEAN SCORE | | STD. DEVIATION | |
|---|---|---|---|---|
| | Pre-Test | Post-Test | Pre-Test | Post-Test |
| 1 | TOO DIFFICULT FOR THE SUBJECTS | | | |
| 2 | 1.8 | 2.7 | 0.5 | 0.9 |
| 3 | 2.6 | 3.5 | 1.1 | 1.6 |
| Overall Subjects | 2.2 | 3.1 | 0.9 | 1.4 |

## PILOT PROGRAMME, Summer 1979

## EXERCISE TEST

## ARNHEIM et al.(1973); LISHMAN (1977a)

### Summary of Results

### Table 15e (1)

| DATE | GROUP | NUMBER | RESULTS | | |
|---|---|---|---|---|---|
| | | | Plus Score | Minus Score | No Change |
| Summer 1979<br>12 weeks<br>(Walking, stepping, hands down) | C.D.*<br>Group 1 | Test not possible - extremely hyperactive children.<br>(Positive response in obeying instructions in lessons)<br>N.B. Test too advanced | | | |
| Summer 1979<br>12 weeks | C.D.*<br>Group 2 | 3<br>1<br>4 | / | / | / |
| Summer 1979<br>12 weeks | C.D.*<br>Group 3 | 5<br>1<br>2 | / | / | / |

* C.D. - Northern England

PILOT PROGRAMME, Summer 1979

EXERCISE TEST

PRE-TEST SCORE AND POST-TEST SCORE

ADAPTED FROM: ARNHEIM, D.D., AUTER, D., AND CROWE, W.C. (1973); LISHMAN (1977a)

PRINCIPLES AND METHODS AND ADAPTED PHYSICAL EDUCATION (Page 122) ST. LOUIS : C.V. MOSBY

Table 15e (11)

| GROUP 1 | | | | |
|---|---|---|---|---|
| Subjects | Numbers | Sex | Pre-Test Score | Post-Test Score |
| A | 1 | M | TOO ADVANCED FOR GROUP 1 | |
| B | 2 | M | | |
| C | 3 | M | | |
| D | 4 | M | | |
| E | 5 | F | | |
| F | 6 | F | | |
| G | 7 | F | | |
| H | 8 | F | | |

Table 15e (111)

| GROUP 2 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Subjects | Number | Sex | Pre-Test Score | Post-Test Score | Results | | |
| | | | | | Plus Score | Minus Score | Same Score |
| A | 1 | M | 9 | 10 | / | | |
| B | 2 | M | 7 | 8 | / | | |
| C | 3 | M | 6 | 5 | | / | |
| D | 4 | M | 4 | 4 | | | / |
| E | 5 | F | 5 | 5 | | | / |
| F | 6 | F | 7 | 7 | | | / |
| G | 7 | F | 7 | 7 | | | / |
| H | 8 | F | 4 | 5 | / | | |

PILOT PROGRAMME, Summer 1979

EXERCISE TEST

PRE-TEST SCORE AND POST-TEST SCORE

ADAPTED FROM: ARNHEIM, D.D.; AUTER, D. AND CROWE, W.C. (1973); LISHMAN (1977a)

PRINCIPLES AND METHODS AND ADAPTED PHYSICAL EDUCATION (Page 122) ST. LOUIS : C.V. MOSBY

Table 15e (IV)

| Subjects | Number | Sex | Pre-Test Score | Post-Test Score | Results | | |
|---|---|---|---|---|---|---|---|
| | | | | | Plus Score | Minus Score | Same Score |
| A | 1 | M | 7 | 8 | / | | |
| B | 2 | M | 7 | 6 | | / | |
| C | 3 | M | 8 | 9 | / | | |
| D | 4 | M | 5 | 6 | / | | |
| E | 5 | F | 5 | 2 | | / | |
| F | 6 | F | 6 | 6 | | | / |
| G | 7 | F | 5 | 6 | / | | |
| H | 8 | F | 6 | 6 | | | / |

EXERCISE TEST

ARNHEIM et al (1973), LISHMAN (1977a)

Mean Scores

Table 15e (V)

| GROUP | MEAN SCORE | | STD. DEVIATION | |
|---|---|---|---|---|
| | Pre-Test | Post-Test | Pre-Test | Post-Test |
| 1 | TOO DIFFICULT FOR THE SUBJECTS | | | |
| 2 | 6.1 | 5.7 | 1.6 | 2.8 |
| 3 | 6.1 | 6.1 | 1.0 | 1.8 |
| Overall Subjects | 6.1 | 6.2 | 1.3 | 1.8 |

PILOT PROGRAMME, Summer 1979

RHYTHMIC TEST : ASHTON (1953); LISHMAN (1977a)

Music Scoring

Individual Results

Table 15f(1)

| Group | Subject | Number | Sex | Score | | Test Results | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Pre-Test | Post-Test | Minus Score | Plus Score | No Change |
| 2 | A | 1 | M | 12 | 7 | / | | |
| | B | 2 | M | 4 | 4 | | | / |
| | C | 3 | M | 7 | 8 | | / | |
| | D | 4 | M | 8 | 6 | / | | |
| | E | 5 | F | 4 | 6 | | / | |
| | F | 6 | F | 5 | 4 | / | | |
| | G | 7 | F | 5 | 8 | | / | |
| | H | 8 | F | 5 | 2 | / | | |
| 3 | A | 1 | M | 8 | 8 | | | / |
| | B | 2 | M | 6 | 5 | / | | |
| | C | 3 | M | 6 | 6 | / | | |
| | D | 4 | M | 6 | 4 | / | | |
| | E | 5 | F | 5 | 5 | | | / |
| | F | 6 | F | 1 | 1 | | | / |
| | G | 7 | F | 6 | 5 | / | | |
| | H | 8 | F | 9 | 8 | / | | |

Table 15f (11)

## OVERALL VIEW OF RHYTHMIC RESPONSES TEST

1. Material too difficult
2. 3 plus, 1 no change, 4 minus
3. 3 no change, 5 minus

Mean Scores of Rhythmic Responses Test

| GROUP | MEAN SCORE | | STD. DEVIATION | |
|---|---|---|---|---|
| | Pre-Test | Post-Test | Pre-Test | Post-Test |
| 1 | TOO DIFFICULT FOR THE SUBJECTS | | | |
| 2 | 6.2 | 5.6 | 2.5 | 1.9 |
| 3 | 5.8 | 5.1 | 2.2 | 2.0 |
| Overall Subjects | 6.0 | 5.3 | 2.3 | 2.0 |

## INDIVIDUAL RESULTS IN PRE AND POST-TEST

### Showing areas of strength and weaknesses

GROUP 2

Table 15f (111)

| Subject | Number | Sex | Pre-Test Section (1) | Post-Test (1) | Pre-Test Section (2) | Post-Test (2) | Pre-Test Section (3) | Post-Test (3) | Pre-Test Section (4) | Post-Test (4) | TOTAL Pre-Test | TOTAL Post-Test |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1 | M | 3 | 2 | 4 | 4 | 1 | 1 | 4 | 0 | 12 | 7 |
| B | 2 | M | 0 | 1 | 2 | 2 | 0 | 0 | 2 | 1 | 4 | 4 |
| C | 3 | M | 2 | 2 | 1 | 1 | 3 | 4 | 1 | 1 | 7 | 8 |
| D | 4 | M | 1 | 0 | 2 | 2 | 3 | 4 | 2 | 0 | 8 | 6 |
| E | 5 | F | 1 | 1 | 0 | 1 | 2 | 3 | 1 | 1 | 4 | 6 |
| F | 6 | F | 2 | 2 | 0 | 0 | 2 | 2 | 1 | 0 | 5 | 4 |
| G | 7 | F | 2 | 3 | 1 | 2 | 1 | 2 | 1 | 1 | 5 | 8 |
| H | 8 | F | 2 | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 5 | 2 |

POSSIBLE TOTAL SCORE : 16

Test scores on an accurate response to a musical taped excerpt:
(1) quick light movement, (2) quick strong movements, (3) slow light movements, (4) slow strong movements

## INDIVIDUAL RESULTS IN PRE AND POST-TEST

Showing areas of strength and weakness

GROUP 3

Table 15f (IV)

| Subject | Number | Sex | Pre-Test Section (1) | Post-Test (1) | Pre-Test Section (2) | Post-Test (2) | Pre-Test Section (3) | Post-Test (3) | Pre-Test Section (4) | Post-Test (4) | TOTAL Pre-Test | TOTAL Post-Test |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 1 | M | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 8 | 8 |
| B | 2 | M | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 6 | 5 |
| C | 3 | M | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 6 | 6 |
| D | 4 | M | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 6 | 4 |
| E | 5 | F | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 5 | 5 |
| F | 6 | F | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 |
| G | 7 | F | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 2 | 6 | 5 |
| H | 8 | F | 4 | 4 | 2 | 2 | 2 | 1 | 1 | 1 | 9 | 8 |

POSSIBLE TOTAL SCORE : 16

Test scores on an accurate response to a musical taped excerpt:
(1) quick light movements, (2) quick strong movements, (3) slow light (3...) movements, (4) slow strong movements

PILOT PROGRAMME, Summer 1979

RHYTHMIC RESPONSE TEST

ASHTON (1953); LISHMAN (1977a)

RESULTS OF SUMMARY

Table 15f (V)

| DATE | GROUP | NUMBER | RESULTS | |
|---|---|---|---|---|
| | | | Plus Score | No Change |
| Summer Term 1979 8 subjects | C. D. * GROUP 1 | TOO DIFFICULT FOR GROUP 1 | | |
| Summer Term 1979 8 subjects | C. D. * GROUP 2 | 5<br>3 | /<br> | <br>/ |
| Summer Term 1979 | C. D. * GROUP 3 | 6<br>2 | /<br> | <br>/ |

* C. D. - Northern England

# APPENDIX VI

## (ii) TEST RESULTS : MAIN INVESTIGATION

### (1) Summary of data of main investigation (quantitative data)

| | |
|---|---|
| Table 16a | Pre-test 1 and post-test 6 results (male and female subjects) |
| Table 16b | Group results on each measure |
| Table 16c | Total scores of subjects on each measure |
| Table 16d | To show the distribution and change overall the programme |

MEANS AND STANDARD DEVIATION OF PRE-TEST 1 AND POST-TEST 6 OF THE PROGRAMME WITH MALE (16) AND FEMALE (14) SUBJECTS

Table 16a

| SUBJECTS | TEST | MEANS | | STD.DEVIATION | |
|---|---|---|---|---|---|
| | | Pre-Test | Post-Test | Pre-Test | Post-Test |
| Male | Identification of body parts. Kephart (1960) Test 3 | 3.9 | 4.1 | 1.5 | 1.2 |
| Female | | 4.6 | 1.1 | 1.3 | 1.4 |
| Male | Gross Agility. Cratty (1960) Level 1, Test 1 | 2.8 | 3.6 | 1.0 | .9 |
| Female | | 3.5 | 4.4 | .9 | .8 |
| Male | Body Perception Cratty (1960) Level 1, Test 1 | 2.0 | 3.6 | .9 | .8 |
| Female | | 2.7 | 4.1 | .6 | .7 |
| Male | Imitation of Movements Kephart (1960) Test 4 | 3.8 | 9.4 | 2.3 | 1.4 |
| Female | | 5.4 | 9.1 | 2.9 | 1.4 |
| Male | Exercise Arnheim et al., (1973); Lishman (1977a) | 3.8 | 5.5 | 1.5 | 1.3 |
| Female | | 4.0 | 5.2 | 1.5 | 1.3 |
| Male | Rhythmic Response Ashton (1953); Lishman (1977a) | 7.0 | 9.1 | 3.3 | 3.8 |
| Female | | 7.9 | 10.7 | 1.7 | 3.6 |

MEANS AND STANDARD DEVIATION OF PRE-TEST 1 AND POST-TEST 6 OF THE PROGRAMME WITH EACH GROUP OF 10 SUBJECTS

Table 16b

| GROUP | TEST | MEANS | | STD. DEVIATION | |
|---|---|---|---|---|---|
| | | Pre-Test | Post-Test | Pre-Test | Post-Test |
| 1 | Identification of Body Parts, Kephart (1960) Test 3 | 4.0 | 4.7 | 1.0 | 0.9 |
| 2 | | 4.1 | 3.5 | 2.1 | 1.4 |
| 3 | | 4.7 | 4.2 | 0.9 | 1.2 |
| 1 | Gross Agility, Cratty (1969) Level 1, Test 2 | 2.9 | 4.5 | 1.2 | 0.8 |
| 2 | | 2.9 | 4.5 | 1.1 | 0.8 |
| 3 | | 3.7 | 4.5 | 0.4 | 0.6 |
| 1 | Body Perception, Cratty (1969) Level 1, Test 1 | 2.2 | 3.9 | 0.6 | 0.8 |
| 2 | | 2.2 | 3.9 | 0.6 | 0.8 |
| 3 | | 2.6 | 3.5 | 1.2 | 0.9 |
| 1 | Imitation of Movements, Kephart (1960) Test 4 | 2.7 | 8.8 | 1.2 | 1.0 |
| 2 | | 4.8 | 8.5 | 3.1 | 2.2 |
| 3 | | 6.3 | 10.6 | 2.2 | 2.5 |
| 1 | Exercise, Arnheim et al, (1973); Lishman (1977a) | 3.7 | 5.2 | 1.2 | 1.3 |
| 2 | | 3.2 | 5.4 | 1.5 | 1.5 |
| 3 | | 5.0 | 5.6 | 1.0 | 1.0 |
| 1 | Rhythmic Response, Ashton (1953); Lishman (1977a) | 5.8 | 6.9 | 2.3 | 1.8 |
| 2 | | 8.4 | 14.9 | 3.3 | 1.5 |
| 3 | | 8.2 | 8.0 | 1.4 | 0.7 |

TO SHOW OVERVIEW FROM PRE-TEST 1 TO POST-TEST 6, MEAN SCORE AND DEVIATION ON THE TOTAL 30 SUBJECTS

Table 16c

| TEST | MEAN | | STD. DEVIATION | |
|---|---|---|---|---|
| | Pre-Test | Post Test | Pre-Test | Post Test |
| Identification of Body Parts. Kephart (1960) Test 3 | 4.2 | 4.1 | 1.5 | 1.3 |
| Gross Agility Cratty (1969) Level 1, Test 2 | 3.1 | 4.0 | 1.0 | 0.94 |
| Body Perception Cratty (1969) Level 1, Test 1 | 2.3 | 3.7 | 0.9 | 0.88 |
| Imitation of Movements Kephart (1960) Test 4 | 4.6 | 9.3 | 2.7 | 2.2 |
| Exercise Arnheim et al. (1973); Lishman (1977a) | 3.9 | 5.4 | 1.5 | 1.3 |
| Rhythmic Response Ashton (1953); Lishman (1977a) | 7.4 | 9.3 | 2.7 | 3.8 |

## TO SHOW THE DISTRIBUTION OF CHANGE OVERALL THE PROGRAMME

Table 16d.

| TEST | INCREMENT | | | DECREMENT | | | NO CHANGE | | |
|---|---|---|---|---|---|---|---|---|---|
| | Male | Female | Total | Male | Female | Total | Male | Female | Total |
| Identification of Body Parts | 5 | 8 | 13 | 4 | 1 | 5 | 6 | 6 | 12 |
| Gross Agility | 5 | 8 | 13 | 1 | 1 | 2 | 10 | 5 | 15 |
| Body Perception | 7 | 9 | 16 | 3 | 1 | 4 | 6 | 4 | 10 |
| Imitation of Movement | 10 | 8 | 18 | 3 | 5 | 8 | 0 | 4 | 4 |
| Exercise | 6 | 6 | 12 | 3 | 3 | 6 | 7 | 5 | 12 |
| Rhythmic Response | 8 | 5 | 13 | 6 | 7 | 13 | 1 | 3 | 4 |

# APPENDIX VI

## TEST RESULTS : MAIN INVESTIGATION

(11) Physical skill test results quantitative data

| | | |
|---|---|---|
| Tables 17a (1) | to | 17a (VI) |
| Tables 17b (1) | to | 17b (VI) |
| Tables 17c (1) | to | 17c (VI) |

## IDENTIFICATION OF BODY PARTS

### KEPHART (1960), Test 3

### Table 17a (1)

| Subject | Sex | 1. Pre | 1. Post | 2. Pre | 2. Post | 3. Pre | 3. Post | 4. Pre | 4. Post | 5. Pre | 5. Post | 6. Pre | 6. Post |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **GROUP 1** | | | | | | | | | | | | | |
| A | M | 4 | 3 | 4 | 5 | 4 | 5 | 4 | 3 | 4 | 3 | 5 | 5 |
| B | M | 4 | 5 | 5 | 4 | 5 | 3 | 4 | 5 | 5 | 4 | 4 | 5 |
| C | M | 3 | 2 | 6 | 3 | 3 | 4 | 3 | 5 | 3 | 2 | 4 | 4 |
| D | M | 6 | 7 | 4 | 4 | 4 | 5 | 4 | 3 | 4 | 3 | 4 | 5 |
| E | M | 4 | 3 | 3 | 4 | 3 | 4 | 4 | 4 | 4 | 5 | 3 | 4 |
| F | M | 3 | 4 | 2 | 3 | 2 | 3 | 4 | 4 | 3 | 5 | 3 | 4 |
| G | F | 2 | 3 | 1 | 1 | 4 | 3 | 3 | 4 | 4 | 6 | 4 | 3 |
| H | F | 5 | 4 | 4 | 3 | 5 | 5 | 5 | 4 | 4 | 5 | 4 | 6 |
| J | F | 4 | 5 | 5 | 5 | 5 | 4 | 4 | 5 | 4 | 5 | 4 | 5 |
| K | F | 5 | 5 | 5 | 5 | 6 | 5 | 5 | 6 | 5 | 6 | 5 | 6 |
| **GROUP 2** | | | | | | | | | | | | | |
| A | M | 5 | 6 | 4 | 4 | 5 | 6 | 4 | 6 | 4 | 5 | 6 | 6 |
| B | M | 4 | 5 | 4 | 3 | 4 | 5 | 4 | 5 | 4 | 6 | 3 | 4 |
| C | M | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| D | M | 2 | 3 | 0 | 0 | 2 | 2 | 3 | 4 | 2 | 3 | 2 | 3 |
| E | M | 6 | 5 | 6 | 7 | 6 | 6 | 6 | 7 | 3 | 2 | 2 | 3 |
| F | F | 7 | 9 | 7 | 8 | 7 | 8 | 7 | 8 | 7 | 6 | 1 | 2 |
| G | F | 3 | 2 | 4 | 5 | 4 | 4 | 4 | 5 | 5 | 5 | 4 | 3 |
| H | F | 3 | 3 | 4 | 4 | 4 | 3 | 5 | 5 | 6 | 6 | 6 | 5 |
| J | F | 4 | 4 | 3 | 4 | 5 | 6 | 5 | 6 | 5 | 4 | 4 | 3 |
| K | F | 7 | 8 | 7 | 8 | 8 | 8 | 8 | 7 | 7 | 6 | 6 | 5 |
| **GROUP 3** | | | | | | | | | | | | | |
| A | M | 4 | 3 | 4 | 5 | 5 | 5 | 3 | 4 | 4 | 4 | 4 | 4 |
| B | M | 3 | 2 | 3 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 |
| C | M | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 3 | 3 | 3 | 3 |
| D | M | 4 | 1 | 5 | 4 | 6 | 5 | 4 | 4 | 4 | 5 | 5 | 4 |
| E | M | 6 | 5 | 3 | 6 | 0 | 0 | 5 | 4 | 5 | 6 | 6 | 6 |
| F | F | 5 | 7 | 2 | 1 | 3 | 3 | 1 | 2 | 2 | 1 | 2 | 2 |
| G | F | 6 | 5 | 4 | 4 | 5 | 6 | 3 | 3 | 3 | 3 | 3 | 3 |
| H | F | 5 | 4 | 3 | 5 | 3 | 4 | 6 | 7 | 5 | 4 | 4 | 4 |
| J | F | 4 | 5 | 5 | 5 | 3 | 4 | 4 | 4 | 5 | 5 | 5 | 5 |
| K | F | 5 | 6 | 6 | 6 | 6 | 7 | 6 | 7 | 5 | 6 | 6 | 6 |

The pre-test and post-tests of each test administered are detailed.

## GROSS AGILITY

## CRATTY (1969), Test 2, LEVEL 1

Table 17a (11)

| Subject | Sex | 1. Pre | 1. Post | 2. Pre | 2. Post | 3. Pre | 3. Post | 4. Pre | 4. Post | 5. Pre | 5. Post | 6. Pre | 6. Post |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUP 1 | | | | | | | | | | | | | |
| A | M | 3 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 3 |
| B | M | 3 | 4 | 3 | 4 | 4 | 4 | 4 | 5 | 2 | 3 | 4 | 4 |
| C | M | 1 | 2 | 1 | 2 | 1 | 0 | 2 | 3 | 0 | 0 | 2 | 3 |
| D | M | 1 | 1 | 1 | 2 | 4 | 4 | 3 | 4 | 1 | 1 | 1 | 2 |
| E | M | 3 | 2 | 4 | 5 | 3 | 3 | 2 | 3 | 2 | 2 | 1 | 3 |
| F | M | 3 | 3 | 3 | 4 | 2 | 2 | 4 | 5 | 3 | 3 | 4 | 3 |
| G | F | 2 | 5 | 4 | 3 | 4 | 4 | 2 | 3 | 1 | 1 | 2 | 3 |
| H | F | 4 | 5 | 5 | 4 | 2 | 3 | 2 | 2 | 2 | 1 | 2 | 3 |
| J | F | 5 | 5 | 5 | 4 | 4 | 4 | 3 | 3 | 3 | 4 | 4 | 4 |
| K | F | 4 | 5 | 5 | 4 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 |
| GROUP 2 | | | | | | | | | | | | | |
| A | M | 3 | 4 | 3 | 4 | 2 | 4 | 4 | 3 | 4 | 4 | 4 | 5 |
| B | M | 2 | 2 | 2 | 1 | 3 | 4 | 2 | 3 | 2 | 3 | 3 | 4 |
| C | M | 4 | 5 | 4 | 5 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 5 |
| D | M | 3 | 2 | 4 | 3 | 3 | 3 | 3 | 4 | 3 | 4 | 3 | 3 |
| E | M | 1 | 0 | 2 | 1 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 3 |
| F | F | 5 | 4 | 4 | 5 | 4 | 5 | 4 | 5 | 4 | 5 | 2 | 5 |
| G | F | 4 | 4 | 4 | 5 | 4 | 5 | 4 | 5 | 4 | 5 | 4 | 5 |
| H | F | 2 | 3 | 2 | 3 | 2 | 3 | 5 | 4 | 5 | 5 | 4 | 5 |
| J | F | 2 | 3 | 4 | 5 | 4 | 5 | 4 | 5 | 4 | 5 | 4 | 5 |
| K | F | 3 | 4 | 3 | 4 | 3 | 4 | 4 | 5 | 4 | 5 | 5 | 5 |
| GROUP 3 | | | | | | | | | | | | | |
| A | M | 4 | 2 | 4 | 2 | 4 | 2 | 2 | 4 | 2 | 4 | 4 | 4 |
| B | M | 4 | 2 | 3 | 2 | 2 | 2 | 2 | 4 | 3 | 4 | 3 | 4 |
| C | M | 3 | 3 | 1 | 2 | 1 | 1 | 2 | 2 | 3 | 4 | 4 | 3 |
| D | M | 4 | 3 | 3 | 2 | 2 | 3 | 4 | 3 | 4 | 4 | 4 | 5 |
| E | M | 4 | 2 | 4 | 4 | 4 | 5 | 4 | 5 | 4 | 5 | 5 | 5 |
| F | F | 3 | 4 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| G | F | 3 | 4 | 1 | 2 | 2 | 3 | 2 | 4 | 2 | 4 | 3 | 5 |
| H | F | 4 | 2 | 3 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 4 | 5 |
| J | F | 4 | 5 | 4 | 4 | 3 | 4 | 3 | 5 | 3 | 5 | 4 | 5 |
| K | F | 4 | 5 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 5 |

The pre-tests and post-tests of each test administered are detailed.

## BODY PERCEPTION

### CRATTY (1969), Test 1, LEVEL 1

Table 17a(111)

| Subject | Sex | 1. Pre | 1. Post | 2. Pre | 2. Post | 3. Pre | 3. Post | 4. Pre | 4. Post | 5. Pre | 5. Post | 6. Pre | 6. Post |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **GROUP 1** | | | | | | | | | | | | | |
| A | M | 3 | 5 | 3 | 4 | 4 | 5 | 3 | 4 | 4 | 5 | 5 | 4 |
| B | M | 2 | 4 | 1 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 4 | 4 |
| C | M | 2 | 0 | 0 | 1 | 2 | 3 | 2 | 3 | 2 | 4 | 3 | 4 |
| D | M | 1 | 2 | 1 | 3 | 1 | 2 | 1 | 1 | 2 | 0 | 2 | 2 |
| E | M | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 2 | 3 | 4 |
| F | M | 2 | 2 | 3 | 3 | 3 | 2 | 4 | 4 | 3 | 3 | 4 | 5 |
| G | F | 2 | 3 | 2 | 2 | 4 | 5 | 3 | 3 | 4 | 4 | 3 | 3 |
| H | F | 2 | 2 | 3 | 3 | 4 | 5 | 4 | 4 | 4 | 4 | 3 | 4 |
| J | F | 3 | 4 | 2 | 3 | 2 | 5 | 2 | 1 | 3 | 4 | 5 | 4 |
| K | F | 3 | 3 | 3 | 3 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 5 |
| **GROUP 2** | | | | | | | | | | | | | |
| A | M | 3 | 5 | 3 | 4 | 4 | 5 | 3 | 4 | 4 | 5 | 5 | 4 |
| B | M | 2 | 4 | 1 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 4 | 4 |
| C | M | 2 | 0 | 0 | 1 | 2 | 3 | 2 | 3 | 2 | 4 | 3 | 4 |
| D | M | 1 | 2 | 1 | 3 | 1 | 2 | 1 | 1 | 2 | 0 | 2 | 2 |
| E | M | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 2 | 3 | 4 |
| F | F | 2 | 2 | 3 | 3 | 3 | 2 | 4 | 4 | 3 | 3 | 4 | 5 |
| G | F | 2 | 3 | 2 | 2 | 4 | 5 | 3 | 3 | 4 | 4 | 3 | 3 |
| H | F | 2 | 2 | 3 | 3 | 4 | 5 | 4 | 4 | 4 | 4 | 3 | 4 |
| J | F | 3 | 4 | 2 | 3 | 2 | 5 | 2 | 1 | 3 | 4 | 5 | 4 |
| K | F | 3 | 3 | 3 | 3 | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 5 |
| **GROUP 3** | | | | | | | | | | | | | |
| A | M | 4 | 5 | 3 | 2 | 4 | 4 | 3 | 2 | 4 | 4 | 4 | 3 |
| B | M | 0 | 1 | 4 | 5 | 3 | 4 | 4 | 4 | 4 | 3 | 4 | 2 |
| C | M | 2 | 3 | 1 | 2 | 4 | 2 | 4 | 3 | 4 | 4 | 3 | 4 |
| D | M | 1 | 0 | 1 | 3 | 4 | 3 | 4 | 4 | 4 | 3 | 4 | 4 |
| E | M | 3 | 2 | 3 | 4 | 3 | 4 | 5 | 3 | 2 | 4 | 5 | 3 |
| F | F | 4 | 3 | 3 | 3 | 3 | 3 | 4 | 2 | 5 | 4 | 4 | 4 |
| G | F | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 4 | 3 | 2 |
| H | F | 3 | 3 | 2 | 4 | 3 | 3 | 2 | 2 | 3 | 3 | 4 | 4 |
| J | F | 2 | 1 | 3 | 5 | 2 | 2 | 4 | 2 | 4 | 4 | 3 | 4 |
| K | F | 3 | 4 | 2 | 4 | 4 | 3 | 3 | 1 | 2 | 2 | 4 | 5 |

The pre-test and post-tests of each test administered are detailed.

## MOVEMENT ANALYSIS OF IMITATION OF MOVEMENTS

## KEPHART (1960), Test 4, IMITATION OF MOVEMENTS

Table 17a (IV)

| Subject | Sex | 1. Pre | 1. Post | 2. Pre | 2. Post | 3. Pre | 3. Post | 4. Pre | 4. Post | 5. Pre | 5. Post | 6. Pre | 6. Post |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUP 1 | | | | | | | | | | | | | |
| A | M | 2 | 5 | 4 | 7 | 3 | 6 | 6 | 8 | 8 | 9 | 7 | 10 |
| B | M | 4 | 4 | 3 | 3 | 7 | 7 | 4 | 6 | 5 | 6 | 9 | 7 |
| C | M | 2 | 5 | 1 | 4 | 6 | 1 | 4 | 5 | 6 | 8 | 8 | 9 |
| D | M | 3 | 0 | 2 | 3 | 1 | 2 | 3 | 3 | 6 | 7 | 6 | 8 |
| E | M | 3 | 2 | 4 | 4 | 5 | 9 | 5 | 7 | 0 | 6 | 6 | 7 |
| F | M | 3 | 3 | 4 | 4 | 3 | 3 | 6 | 6 | 5 | 7 | 7 | 9 |
| G | F | 2 | 3 | 6 | 5 | 4 | 9 | 4 | 2 | 5 | 4 | 8 | 9 |
| H | F | 0 | 5 | 4 | 5 | 4 | 5 | 4 | 5 | 8 | 10 | 8 | 10 |
| J | F | 3 | 5 | 4 | 6 | 4 | 7 | 4 | 4 | 5 | 9 | 7 | 9 |
| K | F | 5 | 3 | 2 | 5 | 3 | 4 | 6 | 8 | 6 | 6 | 7 | 10 |
| GROUP 2 | | | | | | | | | | | | | |
| A | M | 4 | 5 | 7 | 7 | 9 | 10 | 10 | 11 | 11 | 10 | 12 | 9 |
| B | M | 3 | 7 | 6 | 7 | 9 | 12 | 9 | 10 | 11 | 10 | 10 | 11 |
| C | M | 1 | 1 | 0 | 2 | 4 | 6 | 4 | 6 | 6 | 8 | 3 | 5 |
| D | M | 0 | 0 | 0 | 4 | 2 | 3 | 2 | 3 | 4 | 1 | 2 | 4 |
| E | M | 3 | 7 | 7 | 5 | 5 | 7 | 6 | 6 | 8 | 7 | 9 | 10 |
| F | F | 5 | 3 | 10 | 7 | 7 | 7 | 8 | 8 | 8 | 8 | 7 | 7 |
| G | F | 8 | 9 | 11 | 11 | 9 | 11 | 9 | 11 | 10 | 8 | 10 | 11 |
| H | F | 11 | 12 | 12 | 9 | 9 | 9 | 9 | 11 | 8 | 6 | 8 | 9 |
| J | F | 6 | 7 | 12 | 13 | 10 | 10 | 10 | 10 | 9 | 7 | 9 | 10 |
| K | F | 7 | 6 | 6 | 8 | 5 | 7 | 5 | 6 | 8 | 6 | 8 | 9 |
| GROUP 3 | | | | | | | | | | | | | |
| A | M | 7 | 5 | 7 | 6 | 8 | 7 | 10 | 12 | 8 | 9 | 11 | 13 |
| B | M | 5 | 7 | 6 | 7 | 7 | 7 | 9 | 11 | 10 | 10 | 10 | 15 |
| C | M | 9 | 6 | 6 | 7 | 6 | 7 | 9 | 12 | 12 | 12 | 12 | 13 |
| D | M | 5 | 4 | 2 | 3 | 6 | 6 | 6 | 9 | 10 | 12 | 9 | 11 |
| E | M | 8 | 5 | 8 | 5 | 6 | 5 | 10 | 12 | 9 | 9 | 7 | 10 |
| F | F | 5 | 5 | 9 | 7 | 6 | 7 | 6 | 9 | 8 | 14 | 7 | 10 |
| G | F | 1 | 3 | 3 | 6 | 6 | 6 | 8 | 8 | 9 | 6 | 8 | 9 |
| H | F | 9 | 5 | 4 | 6 | 12 | 6 | 11 | 14 | 8 | 12 | 5 | 5 |
| J | F | 7 | 6 | 5 | 6 | 13 | 7 | 8 | 11 | 10 | 12 | 11 | 10 |
| K | F | 7 | 5 | 8 | 5 | 7 | 8 | 11 | 11 | 11 | 15 | 11 | 10 |

The pre-test and post-tests of each test administered are detailed.

## EXERCISE

ADAPTED FROM ARNHEIM, AUTER AND CROWE (1973); LISHMAN (1977a)

Table 17a (V)

| Sub-ject | Sex | 1. Pre | 1. Post | 2. Pre | 2. Post | 3. Pre | 3. Post | 4. Pre | 4. Post | 5. Pre | 5. Post | 6. Pre | 6. Post |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GROUP 1 | | | | | | | | | | | | | |
| A | M | 3 | 3 | 7 | 6 | 6 | 7 | 4 | 5 | 5 | 6 | 6 | 4 |
| B | M | 6 | 5 | 4 | 4 | 5 | 4 | 4 | 5 | 6 | 7 | 7 | 7 |
| C | M | 4 | 4 | 3 | 3 | 6 | 6 | 3 | 4 | 4 | 5 | 5 | 6 |
| D | M | 3 | 5 | 3 | 2 | 4 | 4 | 2 | 3 | 3 | 2 | 2 | 3 |
| E | M | 2 | 3 | 6 | 6 | 4 | 3 | 6 | 4 | 6 | 4 | 4 | 5 |
| F | M | 5 | 6 | 6 | 7 | 3 | 4 | 7 | 6 | 7 | 6 | 6 | 6 |
| G | F | 3 | 4 | 3 | 4 | 5 | 6 | 4 | 4 | 4 | 3 | 3 | 4 |
| H | F | 4 | 5 | 4 | 5 | 4 | 5 | 6 | 6 | 6 | 5 | 6 | 7 |
| J | F | 2 | 3 | 5 | 6 | 3 | 4 | 5 | 5 | 5 | 6 | 4 | 4 |
| K | F | 5 | 6 | 6 | 6 | 4 | 3 | 6 | 5 | 6 | 6 | 5 | 6 |
| GROUP 2 | | | | | | | | | | | | | |
| A | M | 4 | 6 | 5 | 6 | 6 | 7 | 6 | 7 | 7 | 7 | 7 | 7 |
| B | M | 6 | 7 | 6 | 7 | 7 | 8 | 8 | 8 | 9 | 8 | 8 | 8 |
| C | M | 0 | 0 | 1 | 1 | 2 | 3 | 3 | 2 | 1 | 2 | 2 | 4 |
| D | M | 4 | 4 | 3 | 3 | 4 | 5 | 4 | 3 | 4 | 5 | 6 | 5 |
| E | M | 3 | 4 | 5 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 6 |
| F | F | 4 | 5 | 3 | 4 | 3 | 2 | 3 | 4 | 4 | 4 | 4 | 4 |
| G | F | 2 | 1 | 3 | 4 | 4 | 6 | 4 | 5 | 4 | 5 | 3 | 3 |
| H | F | 2 | 1 | 4 | 5 | 4 | 6 | 5 | 4 | 5 | 6 | 7 | 6 |
| J | F | 3 | 5 | 3 | 3 | 4 | 7 | 4 | 5 | 5 | 6 | 7 | 7 |
| K | F | 4 | 6 | 5 | 7 | 6 | 8 | 7 | 5 | 7 | 7 | 6 | 4 |
| GROUP 3 | | | | | | | | | | | | | |
| A | M | 6 | 6 | 6 | 7 | 7 | 7 | 6 | 7 | 5 | 6 | 6 | 7 |
| B | M | 4 | 5 | 4 | 4 | 4 | 5 | 4 | 5 | 4 | 5 | 5 | 5 |
| C | M | 3 | 4 | 3 | 4 | 4 | 5 | 4 | 4 | 5 | 6 | 6 | 6 |
| D | M | 4 | 5 | 4 | 5 | 5 | 6 | 5 | 5 | 5 | 7 | 7 | 4 |
| E | M | 5 | 6 | 5 | 6 | 6 | 7 | 6 | 6 | 6 | 6 | 6 | 6 |
| F | F | 6 | 7 | 6 | 6 | 4 | 3 | 4 | 4 | 4 | 5 | 5 | 6 |
| G | F | 4 | 3 | 4 | 5 | 6 | 5 | 6 | 3 | 5 | 6 | 4 | 5 |
| H | F | 5 | 4 | 6 | 5 | 7 | 6 | 7 | 6 | 6 | 5 | 6 | 6 |
| J | F | 6 | 5 | 7 | 6 | 8 | 7 | 8 | 7 | 7 | 6 | 5 | 7 |
| K | F | 7 | 6 | 6 | 6 | 4 | 5 | 6 | 6 | 6 | 7 | 6 | 4 |

The pre-test and post-tests of each test administered are detailed.

## RHYTHMIC TEST

## ASHTON (1953); LISHMAN (1977a)

Table 17a (VI)

| Subject | Sex | 1. Pre | 1. Post | 2. Pre | 2. Post | 3. Pre | 3. Post | 4. Pre | 4. Post | 5. Pre | 5. Post | 6. Pre | 6. Post |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **GROUP 1** | | | | | | | | | | | | | |
| A | M | 10 | 8 | 10 | 6 | 10 | 7 | 9 | 8 | 6 | 9 | 5 | 6 |
| B | M | 9 | 6 | 9 | 9 | 8 | 7 | 8 | 8 | 6 | 8 | 6 | 5 |
| C | M | 3 | 5 | 4 | 6 | 5 | 7 | 6 | 8 | 7 | 7 | 8 | 10 |
| D | M | 4 | 6 | 4 | 7 | 4 | 6 | 6 | 6 | 4 | 6 | 3 | 6 |
| E | M | 4 | 7 | 4 | 6 | 5 | 3 | 5 | 4 | 4 | 6 | 7 | 3 |
| F | M | 3 | 8 | 4 | 7 | 4 | 3 | 6 | 5 | 2 | 6 | 5 | 7 |
| G | F | 7 | 6 | 7 | 8 | 7 | 5 | 6 | 6 | 6 | 6 | 7 | 8 |
| H | F | 6 | 7 | 10 | 10 | 7 | 6 | 7 | 8 | 6 | 7 | 6 | 8 |
| J | F | 7 | 5 | 8 | 9 | 7 | 7 | 8 | 10 | 7 | 8 | 7 | 8 |
| K | F | 5 | 4 | 8 | 9 | 6 | 7 | 9 | 9 | 10 | 10 | 8 | 8 |
| **GROUP 2** | | | | | | | | | | | | | |
| A | M | 10 | 11 | 14 | 12 | 13 | 14 | 14 | 14 | 14 | 15 | 14 | 15 |
| B | M | 10 | 10 | 13 | 13 | 13 | 16 | 14 | 16 | 14 | 15 | 17 | 18 |
| C | M | 14 | 14 | 11 | 9 | 10 | 10 | 6 | 8 | 1 | 4 | 7 | 11 |
| D | M | 1 | 0 | 3 | 5 | 8 | 12 | 8 | 11 | 10 | 9 | 15 | 14 |
| E | M | 7 | 7 | 12 | 12 | 11 | 12 | 10 | 9 | 12 | 12 | 14 | 15 |
| F | F | 8 | 9 | 10 | 10 | 11 | 11 | 13 | 16 | 14 | 11 | 16 | 16 |
| G | F | 7 | 11 | 10 | 11 | 14 | 16 | 13 | 14 | 14 | 11 | 17 | 16 |
| H | F | 6 | 10 | 8 | 10 | 12 | 11 | 14 | 12 | 11 | 10 | 13 | 14 |
| J | F | 10 | 13 | 13 | 9 | 11 | 13 | 11 | 12 | 14 | 11 | 12 | 17 |
| K | F | 11 | 12 | 11 | 12 | 11 | 12 | 12 | 8 | 13 | 8 | 18 | 19 |
| **GROUP 3** | | | | | | | | | | | | | |
| A | M | 10 | 8 | 8 | 10 | 9 | 8 | 7 | 7 | 7 | 7 | 8 | 9 |
| B | M | 8 | 8 | 8 | 6 | 5 | 8 | 7 | 7 | 7 | 7 | 8 | 8 |
| C | M | 6 | 7 | 6 | 9 | 6 | 3 | 6 | 5 | 8 | 4 | 6 | 7 |
| D | M | 7 | 7 | 3 | 12 | 7 | 5 | 4 | 6 | 7 | 7 | 10 | 8 |
| E | M | 7 | 5 | 6 | 7 | 7 | 7 | 1 | 3 | 5 | 5 | 10 | 7 |
| F | F | 7 | 6 | 6 | 10 | 7 | 5 | 4 | 6 | 6 | 8 | 9 | 8 |
| G | F | 9 | 8 | 8 | 10 | 7 | 9 | 10 | 9 | 8 | 10 | 10 | 7 |
| H | F | 8 | 9 | 9 | 7 | 7 | 8 | 12 | 6 | 8 | 10 | 9 | 9 |
| J | F | 10 | 10 | 7 | 6 | 7 | 9 | 12 | 10 | 8 | 12 | 9 | 9 |
| K | F | 10 | 9 | 10 | 10 | 10 | 10 | 12 | 9 | 10 | 11 | 9 | 8 |

The pre-test and post-tests of each test administered are detailed.

## IDENTIFICATION OF BODY PARTS

## KEPHART (1960) Test 3

The results from the responses of the pre and post-test from each programme

Table 17b (1)

| GROUP 1 | | | | |
|---|---|---|---|---|
| Subjects and Class | | Overview | | |
| Subject | Sex | Plus | Minus | Same |
| A | M | 2 | 3 | 1 |
| B | M | 3 | 3 | 0 |
| C | M | 2 | 3 | 1 |
| D | M | 3 | 2 | 1 |
| E | M | 4 | 1 | 1 |
| F | M | 5 | 1 | 0 |
| G | F | 3 | 2 | 1 |
| H | F | 2 | 3 | 1 |
| J | F | 3 | 2 | 1 |
| K | F | 2 | 1 | 2 |
| GROUP 2 | | | | |
| A | M | 3 | 1 | 2 |
| B | M | 5 | 1 | 0 |
| C | M | 5 | 0 | 1 |
| D | M | 4 | 0 | 2 |
| E | M | 3 | 2 | 1 |
| F | F | 4 | 2 | 0 |
| G | F | 2 | 2 | 2 |
| H | F | 1 | 1 | 4 |
| J | F | 3 | 2 | 1 |
| K | F | 1 | 3 | 1 |
| GROUP 3 | | | | |
| A | M | 2 | 1 | 3 |
| B | M | 2 | 1 | 3 |
| C | M | 0 | 3 | 2 |
| D | M | 1 | 4 | 1 |
| E | M | 2 | 2 | 2 |
| F | F | 2 | 2 | 2 |
| G | F | 1 | 1 | 4 |
| H | F | 3 | 2 | 1 |
| J | F | 2 | 0 | 4 |
| K | F | 4 | 0 | 2 |

## GROSS AGILITY

### CRATTY (1969), Test 2

The results from the responses of the pre and post-test from each programme

Table 17b (11)

| GROUP 1 | | | | |
|---|---|---|---|---|
| Subjects and Class | | Overview | | |
| Subject | Sex | Plus | Minus | Same |
| A | M | 2 | 2 | 2 |
| B | M | 4 | 0 | 2 |
| C | M | 4 | 1 | 1 |
| D | M | 3 | 0 | 3 |
| E | M | 3 | 1 | 2 |
| F | M | 2 | 1 | 3 |
| G | F | 3 | 1 | 2 |
| H | F | 3 | 2 | 1 |
| J | F | 1 | 1 | 4 |
| K | F | 1 | 3 | 2 |
| GROUP 2 | | | | |
| A | M | 4 | 1 | 1 |
| B | M | 4 | 1 | 1 |
| C | M | 4 | 0 | 2 |
| D | M | 2 | 2 | 2 |
| E | M | 1 | 4 | 1 |
| F | F | 5 | 1 | 0 |
| G | F | 5 | 0 | 1 |
| H | F | 4 | 1 | 1 |
| J | F | 6 | 0 | 0 |
| K | F | 6 | 0 | 0 |
| GROUP 3 | | | | |
| A | M | 3 | 2 | 1 |
| B | M | 3 | 2 | 1 |
| C | M | 2 | 1 | 3 |
| D | M | 2 | 3 | 1 |
| E | M | 3 | 1 | 2 |
| F | F | 1 | 1 | 4 |
| G | F | 6 | 0 | 0 |
| H | F | 3 | 1 | 2 |
| J | F | 5 | 0 | 1 |
| K | F | 3 | 0 | 3 |

## BODY PERCEPTION

## CRATTY (1969), Test 1, LEVEL 1

The results from the responses of the pre and post-test from each programme

Table 17b (111)

| GROUP 1 | | | | |
|---|---|---|---|---|
| Subjects and Class | | Overview | | |
| Subject | Sex | Plus | Minus | Same |
| A | M | 5 | 1 | 0 |
| B | M | 4 | 0 | 2 |
| C | M | 5 | 1 | 0 |
| D | M | 3 | 1 | 2 |
| E | M | 4 | 1 | 1 |
| F | M | 1 | 1 | 4 |
| G | F | 2 | 0 | 4 |
| H | F | 1 | 1 | 4 |
| J | F | 4 | 2 | 0 |
| K | F | 2 | 0 | 4 |
| GROUP 2 | | | | |
| A | M | 5 | 1 | 0 |
| B | M | 4 | 0 | 2 |
| C | M | 5 | 1 | 0 |
| D | M | 3 | 0 | 2 |
| E | M | 4 | 1 | 1 |
| F | F | 1 | 1 | 4 |
| G | F | 1 | 1 | 4 |
| H | F | 1 | 1 | 4 |
| J | F | 4 | 2 | 0 |
| K | F | 2 | 0 | 4 |
| GROUP 3 | | | | |
| A | M | 1 | 3 | 2 |
| B | M | 3 | 2 | 1 |
| C | M | 3 | 2 | 1 |
| D | M | 1 | 3 | 2 |
| E | M | 3 | 3 | 0 |
| F | F | 0 | 3 | 3 |
| G | F | 1 | 1 | 4 |
| H | F | 1 | 0 | 5 |
| J | F | 2 | 2 | 2 |
| K | F | 3 | 2 | 1 |

## MOVEMENT ANALYSIS OF IMITATION OF MOVEMENTS

## KEPHART (1960), Test 4, IMITATION OF MOVEMENTS

The results from the responses of the pre and post-test from each programme

Table 17b (IV)

| GROUP 1 | | | | |
|---|---|---|---|---|
| Subjects and Class | | Overview | | |
| Subject | Sex | Plus | Minus | Same |
| A | M | 6 | 0 | 0 |
| B | M | 2 | 1 | 3 |
| C | M | 5 | 1 | 0 |
| D | M | 3 | 2 | 1 |
| E | M | 4 | 1 | 1 |
| F | M | 2 | 0 | 4 |
| G | F | 3 | 3 | 0 |
| H | F | 6 | 0 | 0 |
| J | F | 5 | 0 | 1 |
| K | F | 4 | 1 | 1 |
| GROUP 2 | | | | |
| A | M | 3 | 2 | 1 |
| B | M | 5 | 1 | 0 |
| C | M | 5 | 0 | 1 |
| D | M | 4 | 1 | 1 |
| E | M | 3 | 2 | 1 |
| F | F | 1 | 1 | 4 |
| G | F | 4 | 1 | 1 |
| H | F | 3 | 2 | 1 |
| J | F | 3 | 1 | 2 |
| K | F | 4 | 2 | 0 |
| GROUP 3 | | | | |
| A | M | 3 | 3 | 0 |
| B | M | 4 | 0 | 2 |
| C | M | 4 | 1 | 1 |
| D | M | 3 | 2 | 1 |
| E | M | 3 | 2 | 1 |
| F | F | 4 | 1 | 1 |
| G | F | 3 | 1 | 2 |
| H | F | 3 | 2 | 1 |
| J | F | 3 | 3 | 0 |
| K | F | 2 | 3 | 1 |

EXERCISE

ADAPTED FROM ARNHEIM, AUTER AND CROWE (1 973);

LISHMAN (1977a)

The results from the responses of the pre and post-test from each programme

Table 17b (V)

| GROUP 1 | | | | |
|---|---|---|---|---|
| Subjects and Class | | Overview | | |
| Subject | Sex | Plus | Minus | Same |
| A | M | 3 | 2 | 1 |
| B | M | 2 | 2 | 2 |
| C | M | 3 | 0 | 3 |
| D | M | 3 | 2 | 1 |
| E | M | 2 | 3 | 1 |
| F | M | 3 | 2 | 1 |
| G | F | 3 | 2 | 1 |
| H | F | 4 | 1 | 1 |
| J | F | 4 | 0 | 2 |
| K | F | 2 | 2 | 2 |
| GROUP 2 | | | | |
| A | M | 4 | 0 | 2 |
| B | M | 3 | 1 | 2 |
| C | M | 3 | 1 | 2 |
| D | M | 2 | 2 | 2 |
| E | M | 3 | 1 | 2 |
| F | F | 3 | 1 | 2 |
| G | F | 4 | 1 | 1 |
| H | F | 3 | 3 | 0 |
| J | F | 4 | 0 | 2 |
| K | F | 3 | 2 | 1 |
| GROUP 3 | | | | |
| A | M | 4 | 0 | 2 |
| B | M | 4 | 0 | 2 |
| C | M | 3 | 1 | 2 |
| D | M | 4 | 1 | 1 |
| E | M | 3 | 0 | 3 |
| F | F | 2 | 2 | 2 |
| G | F | 3 | 3 | 0 |
| H | F | 0 | 5 | 1 |
| J | F | 1 | 5 | 0 |
| K | F | 2 | 2 | 2 |

## RHYTHMIC TEST

## ASHTON (1953); LISHMAN (1977a)

The results from the responses of the pre and post-test from each programme

### Table 17b (VI)

| GROUP 1 | | | | |
|---|---|---|---|---|
| Subjects and Class | | Overview | | |
| Subject | Sex | Plus | Minus | Same |
| A | M | 2 | 4 | 0 |
| B | M | 1 | 3 | 2 |
| C | M | 5 | 0 | 1 |
| D | M | 5 | 0 | 0 |
| E | M | 5 | 1 | 0 |
| F | M | 4 | 2 | 0 |
| G | F | 2 | 2 | 2 |
| H | F | 4 | 1 | 1 |
| J | F | 4 | 1 | 1 |
| K | F | 2 | 1 | 3 |
| GROUP 2 | | | | |
| A | M | 4 | 1 | 1 |
| B | M | 4 | 0 | 2 |
| C | M | 3 | 1 | 2 |
| D | M | 3 | 3 | 0 |
| E | M | 2 | 1 | 3 |
| F | F | 2 | 1 | 3 |
| G | F | 5 | 1 | 0 |
| H | F | 4 | 2 | 0 |
| J | F | 4 | 2 | 0 |
| K | F | 4 | 2 | 0 |
| GROUP 3 | | | | |
| A | M | 2 | 2 | 2 |
| B | M | 1 | 1 | 4 |
| C | M | 3 | 3 | 0 |
| D | M | 2 | 2 | 2 |
| E | M | 2 | 2 | 2 |
| F | F | 3 | 3 | 0 |
| G | F | 3 | 3 | 0 |
| H | F | 2 | 3 | 1 |
| J | F | 2 | 2 | 2 |
| K | F | 1 | 3 | 2 |

## IDENTIFICATION OF BODY PARTS

### KEPHART (1960), Test 3

The responses of the pre and post-test in each programme of each class

Table 17c (1)

| GROUP 1 | | | | |
|---|---|---|---|---|
| Programme | Number of Subjects | Plus Score | Minus Score | Same Score |
| 1 | 10 | 4 | 5 | 1 |
| 2 | 10 | 5 | 4 | 1 |
| 3 | 10 | 3 | 3 | 4 |
| 4 | 10 | 5 | 3 | 2 |
| 5 | 10 | 6 | 4 | 0 |
| 6 | 10 | 7 | 1 | 2 |
| GROUP 2 | | | | |
| 1 | 10 | 7 | 1 | 2 |
| 2 | 10 | 6 | 1 | 3 |
| 3 | 10 | 5 | 1 | 4 |
| 4 | 10 | 8 | 1 | 1 |
| 5 | 10 | 3 | 5 | 2 |
| 6 | 10 | 4 | 4 | 2 |
| GROUP 3 | | | | |
| 1 | 10 | 4 | 6 | 0 |
| 2 | 10 | 4 | 3 | 3 |
| 3 | 10 | 4 | 2 | 4 |
| 4 | 10 | 5 | 2 | 3 |
| 5 | 10 | 3 | 2 | 5 |
| 6 | 10 | 0 | 1 | 9 |

## GROSS AGILITY

## CRATTY (1969), Test 2

The responses of the pre and post-test in each programme of each class

Table 17c (11)

| GROUP 1 | | | | |
|---|---|---|---|---|
| Programme | Number of Subjects | Plus Score | Minus Score | Same Score |
| 1 | 10 | 6 | 1 | 3 |
| 2 | 10 | 5 | 4 | 1 |
| 3 | 10 | 1 | 2 | 7 |
| 4 | 10 | 6 | 1 | 3 |
| 5 | 10 | 3 | 2 | 5 |
| 6 | 10 | 3 | 2 | 3 |
| GROUP 2 | | | | |
| 1 | 10 | 5 | 3 | 2 |
| 2 | 10 | 7 | 3 | 0 |
| 3 | 10 | 8 | 0 | 2 |
| 4 | 10 | 6 | 3 | 1 |
| 5 | 10 | 6 | 1 | 3 |
| 6 | 10 | 8 | 0 | 2 |
| GROUP 3 | | | | |
| 1 | 10 | 4 | 5 | 1 |
| 2 | 10 | 5 | 3 | 2 |
| 3 | 10 | 4 | 1 | 5 |
| 4 | 10 | 6 | 1 | 3 |
| 5 | 10 | 7 | 0 | 3 |
| 6 | 10 | 5 | 1 | 4 |

## BODY PERCEPTION

## CRATTY (1969), Test 1

The responses of the pre and post-test in each programme of each class

Table 17c (111)

| GROUP 1 | | | | |
|---|---|---|---|---|
| Programme | Number of Subjects | Plus Score | Minus Score | Same Score |
| 1 | 10 | 6 | 1 | 3 |
| 2 | 10 | 6 | 0 | 4 |
| 3 | 10 | 8 | 0 | 2 |
| 4 | 10 | 3 | 1 | 5 |
| 5 | 10 | 4 | 2 | 4 |
| 6 | 10 | 5 | 2 | 3 |
| GROUP 2 | | | | |
| 1 | 10 | 6 | 1 | 3 |
| 2 | 10 | 5 | 1 | 4 |
| 3 | 10 | 8 | 1 | 1 |
| 4 | 10 | 3 | 1 | 6 |
| 5 | 10 | 3 | 2 | 5 |
| 6 | 10 | 5 | 2 | 3 |
| GROUP 3 | | | | |
| 1 | 10 | 4 | 4 | 2 |
| 2 | 10 | 7 | 1 | 2 |
| 3 | 10 | 2 | 3 | 5 |
| 4 | 10 | 0 | 6 | 4 |
| 5 | 10 | 2 | 3 | 5 |
| 6 | 10 | 3 | 4 | 3 |

## IMITATION OF MOVEMENTS

## KEPHART (1960), Test 4, IMITATION OF MOVEMENTS

The responses of the pre and post-test in each programme of each class

Table 17c (IV)

| GROUP 1 | | | | |
|---|---|---|---|---|
| Programme | Number of Subjects | Plus Score | Minus Score | Same Score |
| 1 | 10 | 5 | 3 | 2 |
| 2 | 10 | 6 | 1 | 3 |
| 3 | 10 | 7 | 1 | 2 |
| 4 | 10 | 6 | 1 | 3 |
| 5 | 10 | 8 | 1 | 1 |
| 6 | 10 | 9 | 1 | 0 |
| GROUP 2 | | | | |
| 1 | 10 | 6 | 2 | 2 |
| 2 | 10 | 5 | 3 | 2 |
| 3 | 10 | 7 | 0 | 3 |
| 4 | 10 | 7 | 0 | 3 |
| 5 | 10 | 0 | 9 | 1 |
| 6 | 10 | 8 | 1 | 1 |
| GROUP 3 | | | | |
| 1 | 10 | 2 | 7 | 1 |
| 2 | 10 | 6 | 4 | 0 |
| 3 | 10 | 3 | 4 | 3 |
| 4 | 10 | 8 | 0 | 2 |
| 5 | 10 | 6 | 1 | 3 |
| 6 | 10 | 8 | 1 | 1 |

## EXERCISE

## ADAPTED FROM ARNHEIM, AUTER AND CROWE (1973); LISHMAN (1977a)

The responses of the pre and post-test in each programme of each class

Table 17c (V)

| GROUP 1 | | | | |
|---|---|---|---|---|
| Programme | Number of Subjects | Plus Score | Minus Score | Same Score |
| 1 | 10 | 7 | 1 | 2 |
| 2 | 10 | 4 | 2 | 4 |
| 3 | 10 | 5 | 3 | 2 |
| 4 | 10 | 4 | 3 | 3 |
| 5 | 10 | 4 | 5 | 1 |
| 6 | 10 | 6 | 3 | 1 |
| GROUP 2 | | | | |
| 1 | 10 | 6 | 2 | 2 |
| 2 | 10 | 7 | 0 | 3 |
| 3 | 10 | 9 | 1 | 0 |
| 4 | 10 | 4 | 4 | 2 |
| 5 | 10 | 5 | 1 | 4 |
| 6 | 10 | 1 | 4 | 5 |
| GROUP 3 | | | | |
| 1 | 10 | 5 | 4 | 1 |
| 2 | 10 | 5 | 3 | 2 |
| 3 | 10 | 5 | 4 | 1 |
| 4 | 10 | 2 | 4 | 4 |
| 5 | 10 | 7 | 2 | 1 |
| 6 | 10 | 4 | 2 | 4 |

## RHYTHMIC TEST

## ASHTON (1953); LISHMAN (1977a)

The responses of the pre and post-test in each programme in each class

Table 17c (VI)

| GROUP 1 | | | | |
|---|---|---|---|---|
| Programme | Number of Subjects | Plus Score | Minus Score | Same Score |
| 1 | 10 | 5 | 5 | 0 |
| 2 | 10 | 7 | 1 | 2 |
| 3 | 10 | 3 | 6 | 1 |
| 4 | 10 | 3 | 3 | 4 |
| 5 | 10 | 6 | 0 | 4 |
| 6 | 10 | 7 | 1 | 1 |
| GROUP 2 | | | | |
| 1 | 10 | 6 | 1 | 3 |
| 2 | 10 | 4 | 3 | 3 |
| 3 | 10 | 7 | 1 | 2 |
| 4 | 10 | 6 | 3 | 1 |
| 5 | 10 | 3 | 6 | 1 |
| 6 | 10 | 7 | 2 | 1 |
| GROUP 3 | | | | |
| 1 | 10 | 2 | 5 | 3 |
| 2 | 10 | 6 | 3 | 1 |
| 3 | 10 | 4 | 4 | 2 |
| 4 | 10 | 3 | 5 | 2 |
| 5 | 10 | 5 | 1 | 4 |
| 6 | 10 | 2 | 5 | 3 |

# APPENDIX VI

## TEST RESULTS : MAIN INVESTIGATION

(111) M. O. S. test (qualitative data).

Tables 18a(1) to 18a (111)

## MOVEMENT OBSERVATION SCHEDULE
## LEVEL 1
## MOVEMENT ACTIVITY

Table 18a(1)

| Group | Sub-jects | A | B | C | D | E | F | G | H | J | K | L | M | Sub-jects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | A | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | A |
| | B | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | B |
| | C | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | C |
| | D | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | D |
| | E | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | E |
| | F | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | F |
| | G | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | G |
| | H | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | H |
| | J | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | J |
| | K | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | K |
| 2 | A | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | A |
| | B | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | B |
| | C | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | C |
| | D | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | D |
| | E | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | E |
| | F | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | F |
| | G | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | G |
| | H | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | H |
| | J | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | J |
| | K | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | K |
| 3 | A | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A |
| | B | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | B |
| | C | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | C |
| | D | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | D |
| | E | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | E |
| | F | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | F |
| | G | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | G |
| | H | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | H |
| | J | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | J |
| | K | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | K |
| | | a. Flexible movement | b. Direct movement | c. Strong movement | d. Light movement | e. Sudden movement | f. Sustained movement | g. Use of different levels | h. Use of different directions | j. Ability to maintain a full stretch | k. Use of different body parts | l. Ability to hold a position | m. Sensitivity to stimuli | |

A point was scored if the movement quality or activity had been achieved and sustained for at least 6 consecutive sessions.

## MOVEMENT OBSERVATION SCHEDULE
## LEVEL 2
## MOVEMENT ABILITY

Table 18a (11)

| Group | Sub-jects | A | B | C | D | E | F | G | H | J | K | Sub jects |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | A | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | A |
| | B | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | B |
| | C | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | C |
| | D | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | D |
| | E | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | E |
| | F | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | F |
| | G | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | G |
| | H | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | H |
| | J | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | J |
| | K | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | K |
| 2 | A | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | A |
| | B | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | B |
| | C | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | C |
| | D | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | D |
| | E | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | E |
| | F | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | F |
| | G | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | G |
| | H | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | H |
| | J | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | J |
| | K | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | K |
| 3 | A | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | A |
| | B | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | B |
| | C | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | C |
| | D | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | D |
| | E | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | E |
| | F | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | F |
| | G | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | G |
| | H | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | H |
| | J | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | J |
| | K | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | K |
| | | a. To follow the leader | b. To join hands in a circle | c. To join both hands with a partner | d. To touch feet of another person | e. To form a circle | f. To walk in a circle | g. To follow a partner | h. To copy a partner | j. To move in time to sound | k. To work with another adult | |

A point was scored if the movement quality or activity had been achieved and sustained for at least 6 consecutive sessions.

# MOVEMENT OBSERVATION SCHEDULE

## LEVEL 3

## MOVEMENT ACTIVITY

### Table 18a (111)

| Group | Subjects | A | B | C | D | E | F | G | H | Subjects |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | A | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | A |
| | B | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | B |
| | C | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | C |
| | D | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | D |
| | E | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | E |
| | F | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | F |
| | G | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | G |
| | H | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | H |
| | J | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | J |
| | K | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | K |
| 2 | A | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | A |
| | B | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | B |
| | C | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | C |
| | D | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | D |
| | E | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | E |
| | F | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | F |
| | G | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | G |
| | H | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | H |
| | J | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | J |
| | K | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | K |
| 3 | A | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | A |
| | B | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | B |
| | C | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | C |
| | D | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | D |
| | E | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | E |
| | F | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | F |
| | G | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | G |
| | H | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | H |
| | J | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | J |
| | K | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | K |

a. Response to sounds - clock

b. Response to materials

c. Response to nursery rhymes - musical

d. Response to T.V. programmes - musical

e. Response to singing games

f. Response to nonsense rhymes

g. Response to cushions, foam mattresses

h. Response to music generally

A point was scored if the movement quality or activity had been achieved and sustained for at least 6 consequtive sessions.

## MOVEMENT OBSERVATION SCHEDULE

## (M. O. S.)

KEY to tables:-

1. One point was scored if the movement quality or activity had been achieved and sustained for 6 consecutive training sessions.

2. Zero point was scored if the element was not evident for the minimum period.

The movement motifs achieved are recorded in notation form. (Preston Dunlop, 1966 , Appendix VII)

The dance shapes and patterns are in diagram format in Appendix VII.

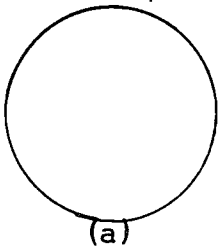
# APPENDIX VII

## LABAN INTERPRETATION

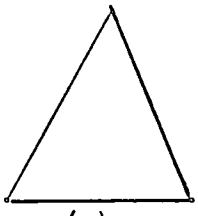
(1) Movement Groupings

## MOVEMENT GROUPINGS

These groupings were used with all the subjects and the case studies in particular participated in each stage.


(a)


(b)


(c)

### General Groupings

showing the general shape of the group.

### General Formations

(a) Line (file) facing "the entrance".



(b) Line facing a window.

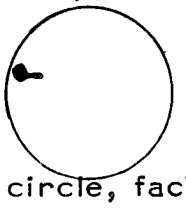
(c) Line facing "the music".



Diagonal line facing the classroom

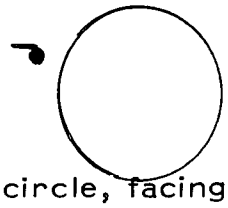
(d)

(i)



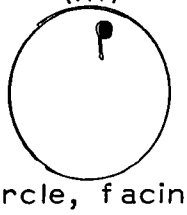
circle, facing in

(ii)



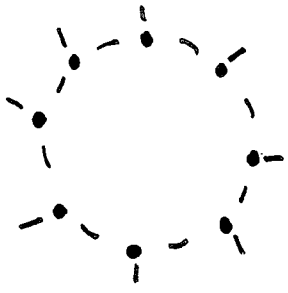
circle, facing out

(iii)



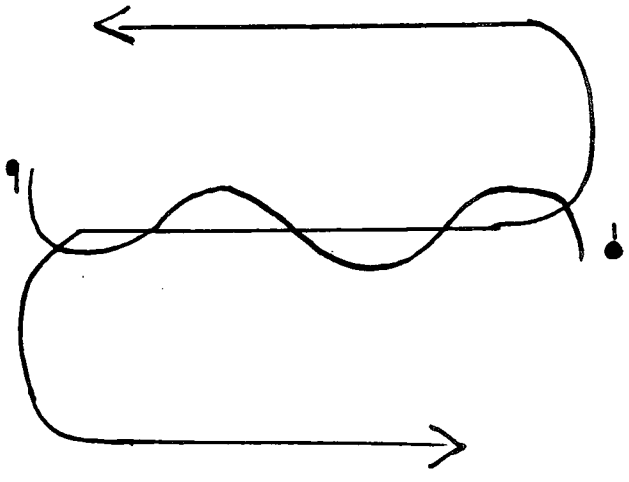
circle, facing clockwise

B. Circular Directions with groups 2 and 3.



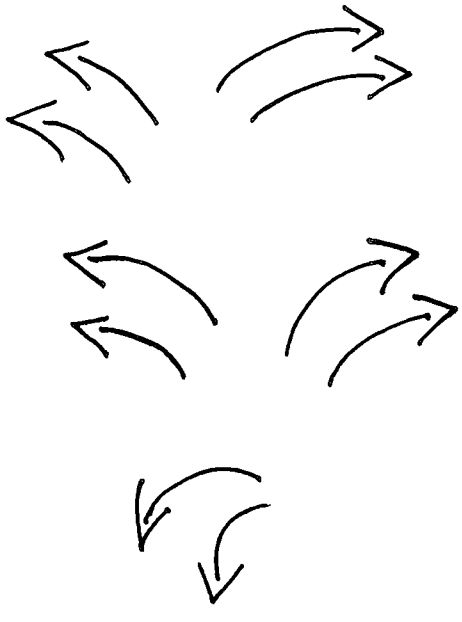
facing inwards

C. Interweaving with groups 1, 2 and 3



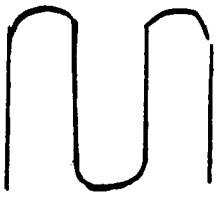
B. The "circular directions and group making" formats are the norm in M. E. D. teaching (Collins, 1969).

E. The sequence of actions developed with "the case study" children.

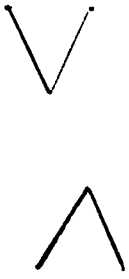


D. Groups making patterns, shapes and circles

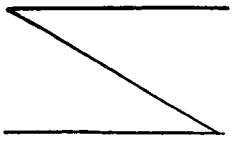
(a) 1.



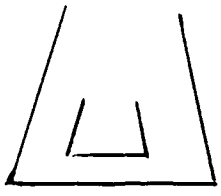
2.



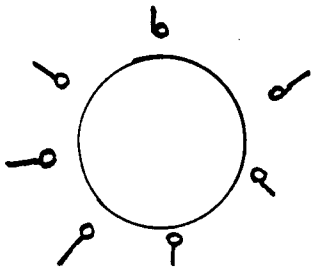
(b) 1.



2.

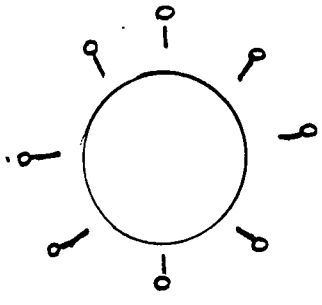


(c) 1.



facing inwards with no contact

2.



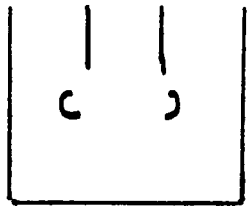
facing outwards with contact

The subjects Greta, Bryan, Ben and Helen proceeded on (a), (b) and (c). Helen was the first subject in the sample and in the group to work at the activity in (c) 2.

## E. Sequence of Action

Groups 2 and 3 proceeded to this level and the subjects Bryan, Ben and Helen participated.

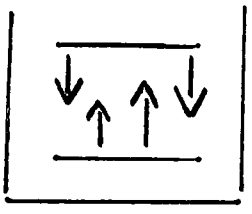
(a)



Two curved formations that move into 2 lines.

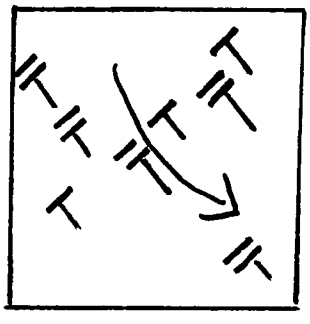
Greta did not proceed to (b) in the sequence of action.

(b)



The arrows are the children that cross over whilst the others are joined forming barriers.

### Description of Movement



Boy

Girl

Following 'the leader' was an activity that developed into several dance like activities with the 4 subjects

(ii) Notation of Patterns

Laban Terminology

The symbols used are those commonly used in dance teaching and in notation.

## EFFORT SIGNS

### Strong


Direct, slow (press).


Direct, fast (punch).


Flexible, slow (wring).


Flexible, fast (slash).

### Light


Direct, slow (glide).


Direct, fast (dab).


Flexible, slow (float).


Flexible, fast (flick).

### Element of Control


Press, fluent flow.


Punch, fluent flow.


Press, bound flow.


Punch, bound flow, etc.

## DEVELOPMENT SIGNS


Increase


Increase in space


Decrease


Increase in height, becoming higher

## HOLD SIGNS


Hold weight (body hold)


Space hold (K)°


Spot hold (K)°

° Symbols marked (K) were contributed by Albrecht Knust

## SPACE MEASUREMENT SIGNS

On a Lateral Plane (used for the Fingers)


Closed


Spread


Pressed tightly together


Very Spread

## SUCCESSIONS, SEQUENTIAL EVELOPMENTS


An outward development


An inward development

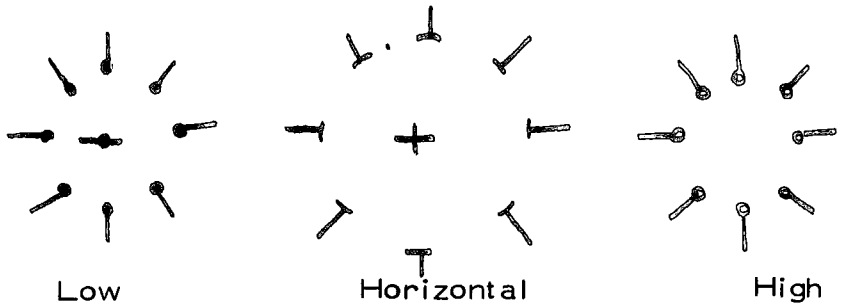

Development from the centre of the body

## BODY WAVES

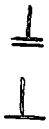

Outward development through the whole body


Inward development through the whole body

## RELATIONSHIP PINS (POSITION SIGNS)



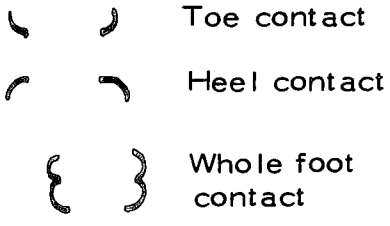

KEY:



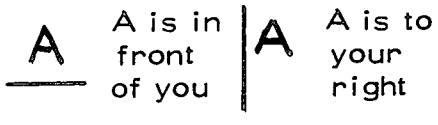
boy

girl

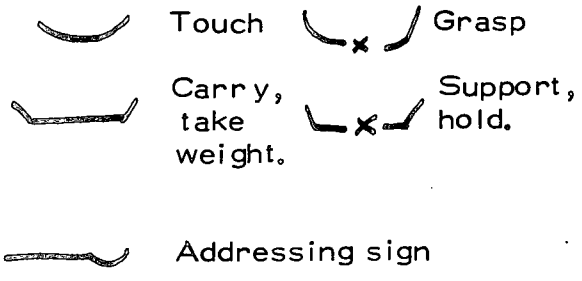
## CONTACT HOOKS




Meeting Line

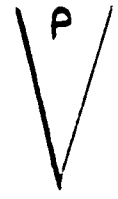



## HORIZONTAL BOWS

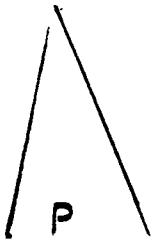


# TOWARDS AND AWAY FROM A PARTNER IN GROUP WORK

Move towards your partner




Move away from your partner




Development of Work

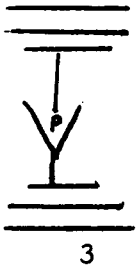
Stimulus:

Percussion work and Nonsense Rhymes

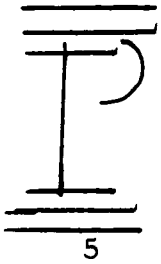
2


4

1




3



5

## FURTHER DEVELOPMENT OF MOVEMENT

6 The action starts with fine touch and increases in strength.

5 The movement begins with firmness and ends with fine touch.

4 The action is made with increasing fine touch which will feel gradually lighter in your movement.

3 As the action proceeds, the firm tension increases; and an increase of strength develops.

2 A fine touch action of some kind; the muscular tension is much less and the movement will feel light and buoyant

1 A firm action of some kind; there will be a muscular tension throughout the body and the movement will feel strong.

STAFF 1:

Firm and Fine Touch Actions (FORCE GRAPH)

DIRECT AND FLEXIBLE actions (SPACE GRAPH)

10 It becomes increasingly flexible.

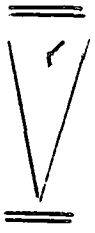
9 It becomes increasingly direct.

8 A flexible action; one which is plastic and curving.

7 A direct action; one which is straight and linear.

STAFF 2:

BOUND AND FREE actions (FLOW GRAPH)



13 The fluidity increases.

STAFF 4:

SUDDEN AND SUSTAINED actions (TIME GRAPH)

12 A long and sustained movement

11 A brief and sudden movement

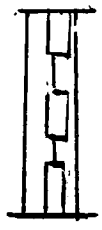
STAFF 3:

Effort symbols are sometimes written with other kinetographic symbols and sometimes alone. The purpose is to show how dynamic indications can be used in kinetography.

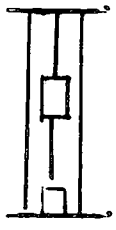
In Labanotation the most direct way in which to describe the action is recorded; "Position Writing" which describes the final position reached and not the movement which produces that position is given.

Examples of Positions used

with Listen, Move and Dance no. 4 Record, * side 2, band 12.



Tiny springs in the lower level. The body hardly rises off the ground, so the legs remain flexed.



High springs. More time is spent in the air and then landing occurs in order to rebound. The legs have ample time to extend in the air and toes are visibly stretched.

* Listen, Move and Dance no. 4 Record

# APPENDIX VIII

## GLOSSARY

## GLOSSARY OF TERMS

The following definitions are assumed:-

| | |
|---|---|
| balance | The ability to maintain or regain one's posture or equilibrium. |
| bilaterality | Using both sides of the body in simultaneous or parallel movement. |
| body awareness | Knowing the names, movements, functions and location of body parts; sensing that one side of the body is different from the other side. It includes impressions received from internal and social feedback. |
| body image | Perception of the body as derived from external and internal sensations. |
| cross pattern | Moving the opposite arm and leg at the same time. |
| direct | Straight, line like that is restricting the use of body in space. |
| directionality | Awareness of space outside the body. Involves:<br>(a) knowledge of directions in relation to right and left, in and out, and up and down,<br>(b) the projection on one's self in space,<br>(c) the judging of distances between objects. |
| earthbound | An inability to hop or jump; usually due to a lack of balance and/or cooperation. |
| fixation | The eye's ability to maintain focus upon an object. |
| flexible | Wavy and plastic lines in space resulting from body plasticity in action. |

## GLOSSARY OF TERMS....2

| | |
|---|---|
| gross-motor | The ability to use the large body muscles (arms and legs) in smooth coordinated movement for task completion. |
| laterality | An inner sense that one side of the body is different from the other. |
| lightness | A movement which is overcoming the weight of the body. |
| listening skills | Combination of the ability to hear, an inter-presentation of sounds heard and a response to those sounds. |
| manipulative skills | Combination of fine and gross motor skills, usually involving the hands. |
| motor task | Specific movement skill or pattern designed and directed by the teacher for performance by the subject. |
| movement flow | Movement that is sequenced and conducted without hesitation. |
| perception | Processing and utilising information. |
| position in space | The direct awareness of the spatial properties of an object. |
| power | Capacity of the muscles to move the entire body or any of its parts with explosive force. |
| programme | A series of twelve teaching weeks. |
| reliability | Ability of a test or to produce the same results when repeated. |
| spatial awareness | An understanding of one's relative position in space and the relationship of spatial objects to one another. The ability to see similarities in shape, size and so on, of two or more objects. |

## GLOSSARY OF TERMS ... 3

| | |
|---|---|
| space-time relationship | The ability to translate a simultaneous relationship in space to a serial relationship in time or vice versa. |
| strong | A movement which is resisting or fighting and utilising the body weight. |
| sudden | A movement which is fighting time. |
| sustained | A movement which is indulging in time. |
| teaching session | A 50 minute teaching period within the programme. |
| time | Movement speed (for example, quick, slow, sudden, sustained). |
| visual-motor ability | The ability to visualise and to assemble material from life into meaningful wholes; the ability to see and to perform with dexterity and coordination; the ability to control body or hand movements on coordination with visual perception. |

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