A DEVELOPMENTAL STUDY OF MOVEMENT EXPERIENCES FOR THE PRESCHOOL YEARS

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A DEVELOPMENTAL STUDY OF MOVEMENT EXPERIENCES FOR THE PRESCHOOL YEARS

by

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of the requirements for the degree of
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ABSTRACT

The purpose of the study was to develop a program of movement experiences for the pre-school years and to investigate the effects of such a program on children between the age of three and five years. In order to complete this investigation, a six-week exposure to movement experiences was introduced into an urban preschool which was affiliated with a university. An evaluation was made of the effects of this six-week exposure to specific activity areas contained within the total program contents. The selected areas were locomotor and balance activities.

The sample consisted of twenty-four children who ranged in age between three years five months and four years ten months. These children were randomly assigned to three equal groups, A, B and C.

There were three hypotheses tested in this study:

I: The introduction of the total contents of the daily program of movement experiences will significantly enhance the general motor skill

development of the pre-school child.

II: The specific six week program of balancing activities will significantly enhance the balancing skill of the pre-school child.

III: The specific six week program of locomotor activities will significantly enhance the locomotor skill of the pre-school child.

The three groups each received a different treatment:

Group A received locomotor activities only

Group B received balance activities only

Group C received no activities

Four tests, Balance 1 and 2 and Locomotor 1 and 2 were used in a Time Series Design. There was a pre-test, five interim tests and a post-test. All tests were administered by the investigator.

The hypotheses of the study were tested by using a one-way analysis of variance to compare the pre-test and post-test results for all three groups on all four of the tests. The .05 level of significance was set for all hypothesis testing. The tests used were acceptable on face validity. The analysis of the

data resulted in the conditional acceptance of all three hypotheses. The results seem to indicate that the six-week exposure to specific activity areas did significantly enhance the motor skill development of the pre-school child in those particular areas.

DEDICATION

"To Jason and Zoë my own preschoolers."

ACKNOWLEDGEMENTS

The successful completion of the present study depended upon the co-operation and good-will of the staff and children of the University of Memorial Pre-school Center, St. John's. Sincere appreciation is extended to these people.

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CHAPTER I

INTRODUCTION

The pre-school years play a significant role in preparing a child for later life. In fact, the pre-school experiences are possibly the most important and significant of a child's school life. This is the period when foundations are laid for his full development as an individual, both in terms of skill, confidence and independence.

The younger the child, the greater his need for movement and freedom to move. The eventual adjustment to later life depends largely upon the child's depth of experience when young.

The theory of Piaget (1952) indicates that between the ages of two and four years, a child is in the Pre-conceptual Stage of development. Cognitive development focuses upon the extraction of preconcepts from the real and direct sensory experiences. The child uses his body as a source of information, and is later able, through intuitive thinking, to translate his

information into very basic concepts, which are in effect, actual static images of reality, (Burton, 1977). To elaborate, the child has the ability to recognise such movement-related factors as distance, speed, time and length; but at this stage of development, he is unable to fully appreciate the quantity involved; this being an abstract concept too difficult for his comprehension.

Physical Education is that aspect of education which concerns itself with the harmony and development of both body and mind. The body is used as a means to express and communicate, to manipulate objects and to perform specific tasks. Children need to experience and learn the capabilities of their bodies what they can do, where they can move, how they can move. They need the opportunity to appreciate and understand the elements of movement and how their bodies are able to produce any pre-directed category of movement.

Just as children grow and develop in an orderly sequential pattern which differs in rate from one individual to the next, so do they in terms of motor development (McClenaghan and Gallahue, 1978). Here,

there is a sequential progression in the development of fundamental movement patterns although the upper potential limits are set by heredity, it is evident that skillful motor control is greatly influenced by environmental conditions.

Lawther (1968), defined learning as change due to training and experience in order to make it distinct from the changes due to either growth or maturation. Educators have stressed the importance of educating the 'whole child', but perhaps without sufficient emphasis being placed upon the fact that in order for efficent learning to take place, the child 'as a whole' must be involved in the learning process. When education is viewed in this way, it is evident that Physical Education is an integral part of the total education process:

> movement directs man's achievements and thoughts, and thought in turn directs his movement
>
> Sherrington, 1951, p.169.

Children have an inherent urge to move, vigorous physical activity is one of the more dominant character-

istics exhibited by the young. As much of a child's learning in the pre-school years results from exploratory movement activities, it can be said that movement is a natural learning medium for children.

When these facts are considered, there is an apparent need for the learning potential of movement experiences to be recognised, developed and implemented, (Cratty, 1973).

Movement experiences can be classified as individual and general. Obviously, individual experiences are unique and therefore cannot be fully shared, but general experiences are common to the interrelating group who share their physical environment. There are very few of these movement tasks which require, only intellectual concentration. Every task will require for it's solution, a combination of processes which will operate in harmony with one another. In this respect, experiences in movement will simultaneously enhance several aspects of a child's development.

The basic objective of physical education is that it aids the total development of the individual. Children should be encouraged to use their bodies as expressive units for both negative and positive reactions. The acquisition of physical or motor skill helps the child gain a sense of mastery. He will gain

confidence and will be more willing to cope with further challanges. Each successful movement experience reinforces the child's positive self-image, thus reducing negative feelings toward himself and others.

Rationale for the Study

At the present time in Newfoundland there is in existence a school program of Physical Education for Kindergarten to Grade Eleven. This program is recognised by the Provincial Government. However, there is no provision for Physical Education at the Pre-school level. Each individual has an inherent need to move, it is part of his biological make-up. Frequent participation in physical activities is essential for full development and optimal functioning. Hence, if the environment fails to present the demands to move, then there is a necessity to plan and provide activity programs that can serve as adequate substitutes. Similarly, if environmental experience can enhance the development of an individual, it is vital to provide meaningful movement experience which will aid the total development of the child. Movement activities can

provide concrete acts to experience, to observe and to think about (Cratty, 1973). Furthermore, these kinds of concrete and obvious response patterns can be incorporated well into philosophies of education, in which measurable behavioral objectives play an important role. Indeed, movement experiences with the reflection of thought, paired with academic tasks, provide evidence of the quality of a child's thought processes. This kind of response quality cannot be so easily discerned by the teacher who observes children in a more sedentary atmosphere.

It would appear then, that there are many reasons to suggest that an active approach might aid a child's cognitive development, but it is not evidenced that all children need this active involvement in order to learn best. There is a lot of evidence that relatively static contemplation is also a necessary requisite to the learning process, (Cratty, 1973).

Flavell (1963) indicates that through perception and experience in different situations, the child learns to apply past experiences to new learning situations. Therefore, it would appear that the approach to Physical

Education in the preschool years should be one of exploration through a variety of media.

Through an involvement in movement experiences, the child is given the opportunity for self-identification and is able to learn to appreciate his role as an individual within the community. This adjustment and socialization is part of a child's growth and development. By means of a child's interaction with his peers, he gradually gains in responsibility, confidence and independence.

The present study was based upon the belief that the pre-school child not only has an affinity for movement, but also relies upon movement experiences to initiate and complement all his learning experiences.

Purpose of the Study

The purpose of the present study was to develop a program of movement experiences for the pre-school years and to investigate the effects of such a program on children between the age of three and five years. In order to complete this investigation, a six-week study was introduced into an urban preschool which was affiliated with a university. An evaluation

was made of the effects of this six-week exposure to specific activity areas representative of the total program contents. (See Appendix A for total program; Appendix B, for the lessons used in this study)

Statement of the Problem

Would the introduction of the designed daily program of movement experiences have any significant effect upon motor skill development in the pre-school child?

Hypotheses of the Study

The study was designed to test three hypotheses:

Hypothesis I:

The introduction of the total contents of the daily program of movement experiences will significantly enhance the general motor skill development of the pre-school child.

Hypothesis II:

The specific six week program of balancing activities will significantly enhance the balancing skill of the pre-school child.

Hypothesis III:

The specific six week program of locomotor activities will significantly enhance the locomotor skill of the pre-school child.

The .05 level of significance was set for all hypotheses testing.

CHAPTER II

REVIEW OF RELATED LITERATURE

A computer search was performed to locate any studies which were similar to the present one. It was evident that there were no such studies of an empirical nature, only those of a commentary style. These studies dealt with complete programs for the preschool child and in many instances dealt with children in a socially or economically deprived environment. Where mention was made of physical activity it was only in reference to unrelated physical tasks suitable for that age level; there was no mention of program development in movement experiences.

Therefore, it was decided to search any literature which provided a supportive argument for the inclusion of movement experiences in the all-round educational process of the pre-school child.

Barsch, (1967) defines movement as both cause and effect. It is a constant; man moves, even during his sleep. Movement is inherent; we move to live. An

infant moves to survive, to explore, to communicate. Life reflects an interaction between the child and his environment. Early movement responses are basically undifferentiated, but gradually they become more precise and selective. Thus, it can be said that body movement causes change within the organism. Those sensed or felt impressions travel through the central nervous system, which is constantly being restructured by every action. This structuring is called imaging. The individual is able to utilize those reflections which represent the past and serve to anticipate the future, (Gerhardt, 1973, p. 5). Therefore, if images do represent recorded experiences, which in turn aid the interpretation and understanding of future events, it is important to realize that initially these images must have been derivations from motor or movement responses and experiences. An individual will perceive any new experience either in or through images already formed, or else these new experiences will result in the establishment of new images. The individual, therefore, endowed with sensory perceptions which are recorded as images, has the further capacity to identify

sort, evaluate and interpret the contents of his own movement-perception images, (Gerhardt, 1973, p. 8).

Cameron, (1971) defines Education as the result of exposure to situations which modify the development of the individual. Peel, (1956) on the other hand, defined Education as that process which promotes the development of a well integrated person who is capable of exhibiting responsibility within his own social environment. Piaget characterizes learning as a process whereby unknown externals become known internals, (Flavell, 1963). The Sensorimotor Period exhibits the infant repeating movement behaviours which he discovers by chance. The other stages reveal the development of behaviour which is purposeful and goal oriented.

According to Piaget's Theory, an individual gains his basic knowledge of the world around him from direct experience with his environment. He theorizes that the first step in the development of representational thought is the acquiring of non-verbal mental images through the direct contact with objects and situations. Therefore, this process requires that, in order to know an object, a child must contact it and mentally

assimilate it's properties. However, the ability to assimilate such information is dependent upon the existence of essential intellectual structures. In other words, children are not able to learn until they are developmentally ready to assimilate the kind of information being presented. Therefore, learning can be facilitated by both teaching methods and materials which permit the child to explore sensorily mental images or symbols which can be translated into linguistic signs. This process is followed later by direct experiences providing the necessary input for acquisition of the symbols that need to be manipulated in complex cognitive operations, (Burton, 1977).

Piaget's Theory of the function of imitation is also directly applicable to the learning process. By imitating observable actions of others, children acquire internal representations of those actions, thus they develop the symbols that enable them to recall and reproduce any given actions. At the same time, these symbols foster the development of signifiers, defined as gestures and words, which make it possible for the child to communicate with others.

Piaget strongly emphasizes the importance of peer interaction from the standpoint of having the opportunity to compare viewpoints of others and therefore being able to gain a broader perspective of life. This process results in the child becoming less egocentric and more rational and objective, (Flavell, 1963). Thus, it is evident that interaction and group activities are very necessary aspects of an early childhood environment.

Flavell summarizes Piaget's prescription for learning by doing as follows:

> The child should first work with the principle in the most concrete and action-oriented context possible, he should be allowed to manipulate objects himself and 'see' the principle operate in his own actions. Then, it should become progressively more internalized and schematic by reducing perceptual and motor support, eg., moving from objects to symbols or objects, from motor action to speech, etc...:..
>
> (Flavell, 1963, p. 84)

The educational implications of Piaget's work may be summarized as follows:

1. The child must be developmentally ready to assimilate the kind of information being presented.

2. Certain kinds of experience are essential for optimal development of the child during each developmental period.

3. The child's ability to learn during each successive stage is partially determined by the adequacy of his or her experiences in the earlier stages of development. Therefore, it is vital for children to be provided with the correct types of learning experiences during each stage of development.

(Burton, 1977, p. 30)

The stages of intellectual development which are identified by Piaget are invariant. All children pass through these stages at different ages and different rates; however all children pass through them in the same sequence. This indicates the necessity for a continual diagnosis to ascertain the child's level of thinking at any given moment. This is vital in respect to the planning of any early childhood curriculum, (Frost and Kissinger, 1976).

During the early twentieth century, G. Stanley Hall and later Arnold Gessell, were responsible for the conceptualization of a maturational hypothesis, or

what Robert Gagné (1968) calls the 'growth-readiness model'. It was believed that environmental factors caused behavioral changes, but generally speaking, children develop the same motor patterns in a definite sequence.

Singer (1975), outlines the various progressive stages of motor development:

1.	Physical	-	reflexive, simple movement
2.	Motor	-	more purposeful
3.	Perceptual-motor	-	more complex
4.	Cognitive	-	various forms of intelligence
5.	Conceptual	-	abstract thinking

(Singer, 1975, p. 333)

In terms of movement capabilities, this would imply that initial general and gross movement patterns gradually become more specific and complex. Therefore, the relationship between being able to move and the later development of specific motor skills is justification for the inclusion of movement in the learning experiences of the young child.

During the last few decades, this interest in movement and it's effects, have spread into such areas as developmental psychology, neurology, educational

psychology and remedial reading. There has developed a recognition of the existence of a relationship between movement and cognitive development. Programs of a perceptual-motor nature have been developed as remediation for the purposes of overcoming learning disabilities. If this is the case, it would imply that a comprehensive program of movement experiences would indeed serve to prevent such learning problems. Radler and Kephart, (1960) offer the view that systematic motor exploration is the basis for all learning. They feel that all children need the background of generalized motor experiences for success in later school work. They included the following as suggested motor generalizations:

1. Balance and Posture - the child must know where gravity is as well as understand direction.
2. Propulsion and Receipt - he should be able to move himself and objects away and toward something.
3. Locomotion - this refers to body movement through space, overcoming obstacles, and changing pace. Locomotive generalizations go on unconsciously so the child may explore.

4. Contact and Manipulation - the child's relationship with objects is determined by such abilities as reaching, grasping releasing.

Delacato (1966), Godfrey and Kephart (1969) all suggest that low achievers in school lack basic readiness (motor) skills which could be grasped if the child was provided with the necessary movement experiences.

Barsch (1967) also feels that skill in movement is a basic principle underlying human development. He views the individual as having to move in space through the dual physical and cognitive aspects of movement experiences. He pinpoints the following as vital components of these experiences:

1. dynamic balance
2. body awareness
3. spatial awareness
4. temporal awareness

Marianne Frostig (1971) has developed her perceptual training program within the bounds of vision. Her emphasis is upon visual perception and assimilation with some attention to certain motor responses. She

outlines the following areas of concentration:

1. Space and body awareness
2. Locomotor movement and awareness
3. Manipulation of objects

As it has been stated, motor responses progress from reflexive and generalized movement patterns to those which are more specific and complex. Maturation is important for generalized responses, but specific experiences are the prerequisite of complex motor responses.

Concepts and skills are developed through experience and use. As several significant human characteristics develop very quickly during the first five years of life and as changes in development are more difficult with maturation, Bloom (1964), the implications are great for quality pre-school experiences which aid the development of learning patterns and general achievement.

CHAPTER III

METHOD AND PROCEDURES

Having designed a program of movement experiences for the pre-school child, the investigator attempted to evaluate the suitability of such a program by investigating it's effects on motor development after a six week exposure to specific activity areas which were included in the program.

The present chapter includes sections on each of the following: the selection of school for the sample, the selection of students for the sample, the testing instrument, the collection and analysis of the data, the limitations of the study and a summary of the chapter.

Selection of School for Sample

The school selected for the purposes of this study was an urban preschool which was affiliated with a university. The school staff readily agreed for their normal groups of children to be rearranged for the duration of the study.

Selection of Students for Sample

The children selected for the sample included both full-time and part-time students who ranged in age between three years five months and four years ten months. There were twenty four in the sample group.

Design of the Study

1. The sample was randomly assigned to three equal groups, A, B and C.
2. Each of these groups received a different treatment during the six week period.
   i. Group A was exposed to locomotor activities only, four days per week.
   ii. Group B was exposed to balance activities only, four days per week.
   iii. Group C was not exposed to any movement activity for six weeks.
3. All three groups were subjected to a pretest prior to the commencement of treatment. This test involved both locomotor activity and balance activity testing.
4. All three groups were then subjected to the same test as the pretest, on day one of each of the

next six weeks. This exhibited a Time Series Design.

5. The testing period correlated with the intended teaching time, namely, a thirty minute period during the morning.

6. On the occasion of each test the individual scores were recorded and the data collected.

The testing instrument

The two activity areas tested in this study were locomotor activities and balance activities.

Since there are no specific evaluation procedures for determining the level of motor development in the preschool child, the tests were acceptable on face validity. For example, they measure one's ability to remain in a static balance for a period of time; or else they measure the time required to move, in a specified manner, from point A to point B. As a result it was felt that no statistical study using a criterion measure was needed to establish validity for each item.

There were four tests used, Balance 1 and 2 and

Locomotor 1 and 2, these tests are explained in the following section. All tests were administered by the investigator and the same stopwatch was used on every occasion.

Balance 1

Knee Balance

This item was a one-knee balance on the preferred leg, which was used on each occasion.

The subject was asked to kneel down on both knees, arms stretched out to the sides. On the word 'go' he was directed to raise one knee and leg completely off the floor and maintain the one-knee balance for as long as possible without any other part of his body contacting the floor.

Scoring

The subject was timed to the tenth of a second, from the moment that the supporting leg was the only part of his body in contact with the ground, until such time that the balance position was lost either by;

i. contacting floor with some other body part

ii. falling over

Balance 2

Hopping

This item was a test for dynamic balance, it entailed hopping around a chair on the preferred foot, which was used on each occasion.

The subject was asked to hop around a small chair in a counterclockwise direction on the preferred foot, This same foot was used on each occasion.

A piece of tape, 6 inches in length was placed on the floor at right angles to the chair, this denoted the start and finish line.

Scoring

The subject was timed to one tenth of a second on the word 'go' until:

i. he completed the task without contact with the chair.

If he was unable to complete the task a score of zero was awarded.

Locomotor 1

Shuttle Run

This test required quick stops and changes of direction and measured the ability to run rapidly between two given marks.

1. A stop watch, calibrated to one tenth of a second intervals was used.
2. Two lines 24 inches in length were marked on the floor, parallel to each other and twenty feet apart from their further edges. One was the starting and finishing line, the other was the turning line.
3. Starting position was with one foot on, but not beyond the starting line.
4. On the word 'go', the subject ran to the turning line, touched it with one foot, turned and returned to the finishing line to touch that line with one foot.
5. This whole procedure was repeated once more.

Scoring

The time was recorded to the tenth of the second

from the word 'go' to the last contact with the finishing line.

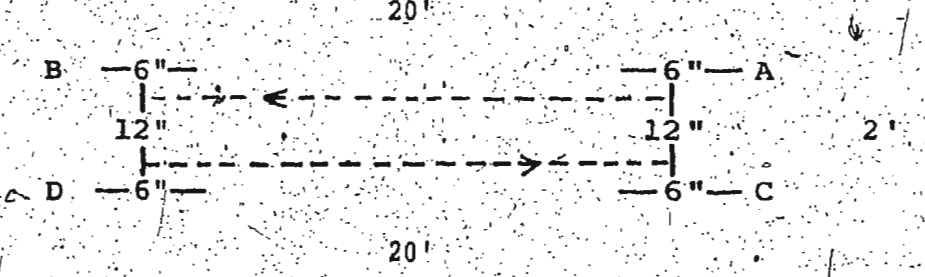
If the subject failed to correctly contact the lines at any point during his run, he was stopped immediately and no time was recorded.

The subject was allowed one attempt. The time score was recorded.

Locomotor 2

Obstacle Course

This test required different methods of locomotion to be used and measured the ability to move quickly, change direction rapidly and utilize various forms of locomotion in two opposing directions.



1. Two parallel lines, two feet in length and twenty feet apart at the further edge, were marked on the floor.
2. At a point six inches along from both ends of

these two lines a piece of tape, ten inches long was placed at right angles across the original two lines. These four pieces of tape represented four points A, B, C and D. The tape was approximately 1½ inches in width, the resulting distance between points A and C, B and D was 10½ inches.

3. A stop watch, calibrated to one tenth of a second intervals was used.

4. Starting position was with one foot on, but not beyond, the starting and finishing line on which lie points A and C.

5. On the word 'go', the subject travelled from line AC to line BD, touched the line BD with one foot, turned and travelled back to line AC, touched the line AC with one foot and finished.

6. The method and direction of travel changed

AC → BD gallop steps - forwards

BD → AC hands and feet forwards and face down.

Scoring

The time was recorded to the tenth of the second from the word 'go' to the last contact with the line AC.

If the subject failed to correctly contact either lines AC or BD at any point during this obstacle course, he was stopped immediately and no time recorded.

The subject was allowed one attempt and the time score was recorded.

Collection of the Data

All the data of the study were collected by the investigator. As the study exhibited a Time Series Design, there were seven different occasions when the children were subjected to the testing procedure. There was a pretest, five interim tests and a post-test. On the occasion of each testing session, each child was subjected to all four tests, Balance 1, Balance 2, Locomotor 1 and Locomotor 2.

Analysis of the Data

1. The Pretest

A one way analysis of variance was performed on the pretest data, where the resulting F value proved to be significant, the Scheffé method of multiple comparisons was employed to determine exactly which

means were significantly different.

2. The Interim Period

A one way analysis of variance was performed on the data collected from the tests administered at the start of week II, III, IV, V, and VI. The Scheffé method of multiple comparisons was required, where the resulting F value proved significant.

3. The Post Test

A one way analysis of variance was performed on the data collected at the start of week VII. The Scheffé method of multiple comparisons was required, where the resulting F value proved significant.

4. A comparison was then made by performing a one way analysis of variance on the pretest and post-test data collected for each group in all four types of test administered.

The statistical findings were used to accept or reject the three hypotheses:

Hypothesis I: The introduction of the total contents of the daily program of movement experience will significantly enhance the general

motor skill development of the preschool child.

Hypothesis II: The specific six week program of balancing activities will significantly enhance the balancing skill of the preschool child.

Hypothesis III: The specific six week program of locomotor activities will significantly enhance the locomotor skill of the preschool child.

Limitations of the Study

The findings of any study have a number of inherent restrictions. These reflect the weaknesses of the chosen design, methodology, sample and testing instruments.

One of the problems with the present study was the non-compulsory nature of the preschool. There were several occasions when children from the sample were absent, due to illness or holidays, but it was assumed that these absences would not affect the study adversely.

A second problem was that some children were involved in extra-curricular activities. It was assumed that any such involvement would not have any significant effect upon the findings of the study.

A third problem was the organization of the testing procedure. It was felt by the investigator, that the children used in the sample should have been tested without the presence of their group members. Due to the nature of these children, there was a certain amount of imitation and distraction evident, which could have been avoided if the testing had been carried out on an individual basis.

A fourth problem was related to the narrow geographic representation exhibited by the sample. Due to the nature of the study, it was impractical to consider the participation of several preschools. It was assumed that this factor would not significantly effect the findings of the study.

CHAPTER IV

ANALYSIS OF DATA AND RESULTS

This chapter includes the results of the statistical analysis of the data collected to test the three hypotheses of the study.

There was a pretest, five interim tests and a post-test. On the occasion of each testing session, each child was subjected to all four tests. At the start of the study, the pretest data revealed no significant statistical difference between the three groups, A, B and C of the sample.

The same tests were administered to each member of the sample groups on day one of the next six weeks; the last occasion being that of a post-test situation. The data from these tests were subjected to a one-way analysis of variance and in the event of a statistically significant 'F' value, the Scheffé method of multiple comparisons was then administered to locate the pairs of groups which were significantly different.

Table 1 illustrates the frequency of calculated

significant 'F' values and identifies the groups which were significantly different.

TABLE 1

Frequency and location of significant 'F' values at the .05 level, recorded during the study

	TEST ITEM			
WEEK	Balance 1	Balance 2	Locomotor 1	Locomotor 2
I	*	*	*	*
II	*	*	*	*
III	*	*	*	A with B C with B
IV	*	*	*	A with B C with B
V	*	*	*	*
VI	A with B C with B	*	A with B A with C	*
VII	A with B C with B	*	*	*

* no significant difference at p = .05

The following four tables indicate the calculated group means for the four tests administered.

Table 2 illustrates the calculated group means for Balance 1. The greater number of seconds indicated the higher score.

TABLE 2

Calculated group means for test item

Balance 1: Knee Balance

WEEK	A	B	C
	Scores calculated in seconds for each group		
I	0.98	1.13	1.40
II	1.33	1.73	1.10
III	1.84	2.11	1.98
IV	1.80	2.50	1.03
V	1.31	2.61	1.33
VI	0.98	2.08	1.00
VII	0.91	2.15	0.74

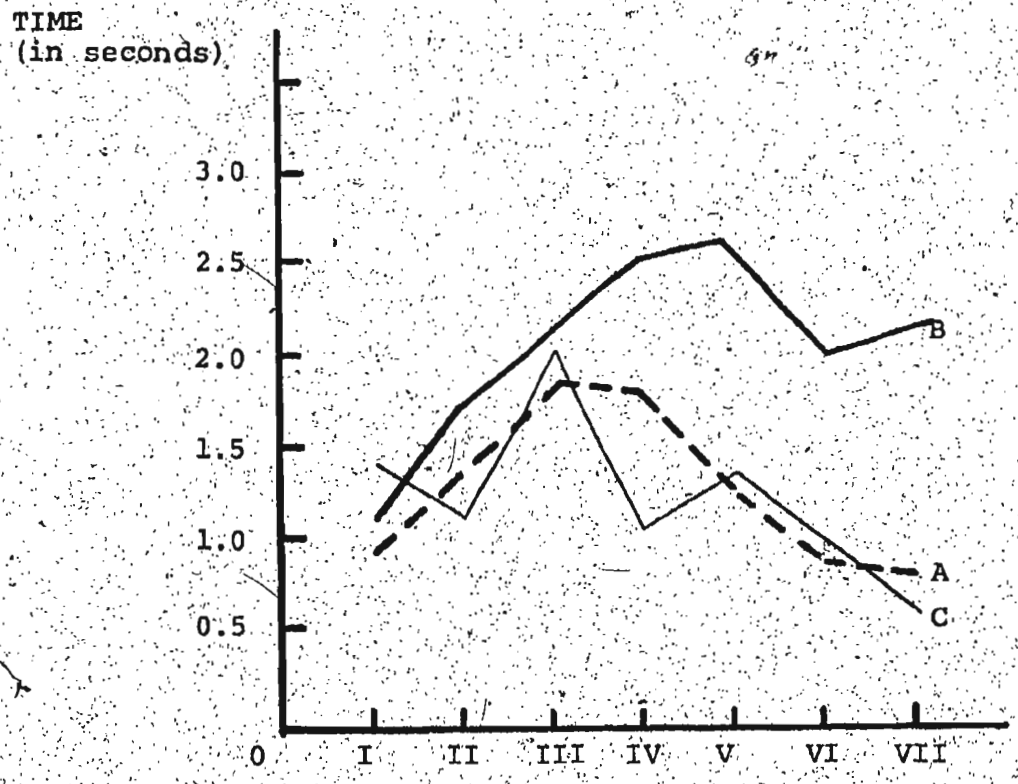


FIGURE 1

Calculated group means for test item

Balance 1: Knee Balance

Figure 1 illustrates the calculated group means for Balance 1. The greater number of seconds indicated the higher score.

Table 3 illustrates the calculated group means for Balance 2. The fewer number of seconds indicated the higher score.

TABLE 3

Calculated group means for test item

Balance 2: Hopping

WEEK	A	B	C
	Scores calculated in seconds for each group		
I	5.16	5.16	3.35
II	3.46	3.80	4.24
III	3.35	3.46	3.85
IV	4.37	3.27	4.90
V	4.43	5.09	5.33
VI	3.93	5.40	3.87
VII	5.00	4.16	3.50

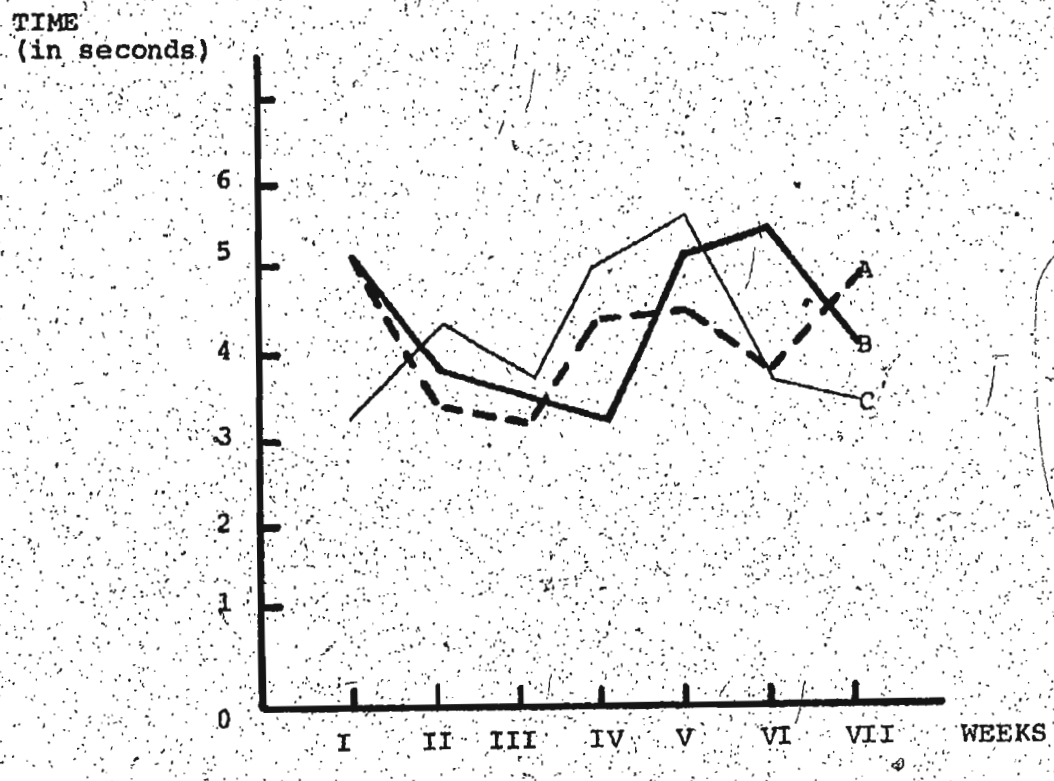


FIGURE 2

Calculated group means for test item

Balance 2: Hopping

Figure 2 illustrates the calculated group means for Balance 2. The fewer number of seconds indicated the higher score.

Table 4 illustrates the calculated means for Locomotor 1. The fewer number of seconds indicated the higher score.

TABLE 4

Calculated group means for test item

Locomotor 1: Shuttle

WEEK	A	B	C
	Scores calculated in seconds for each group		
I	16.30	14.74	15.57
II	16.36	14.27	14.21
III	14.75	14.91	15.10
IV	13.93	15.08	14.86
V	14.23	14.51	14.53
VI	13.27	15.63	15.03
VII	14.10	15.36	14.66

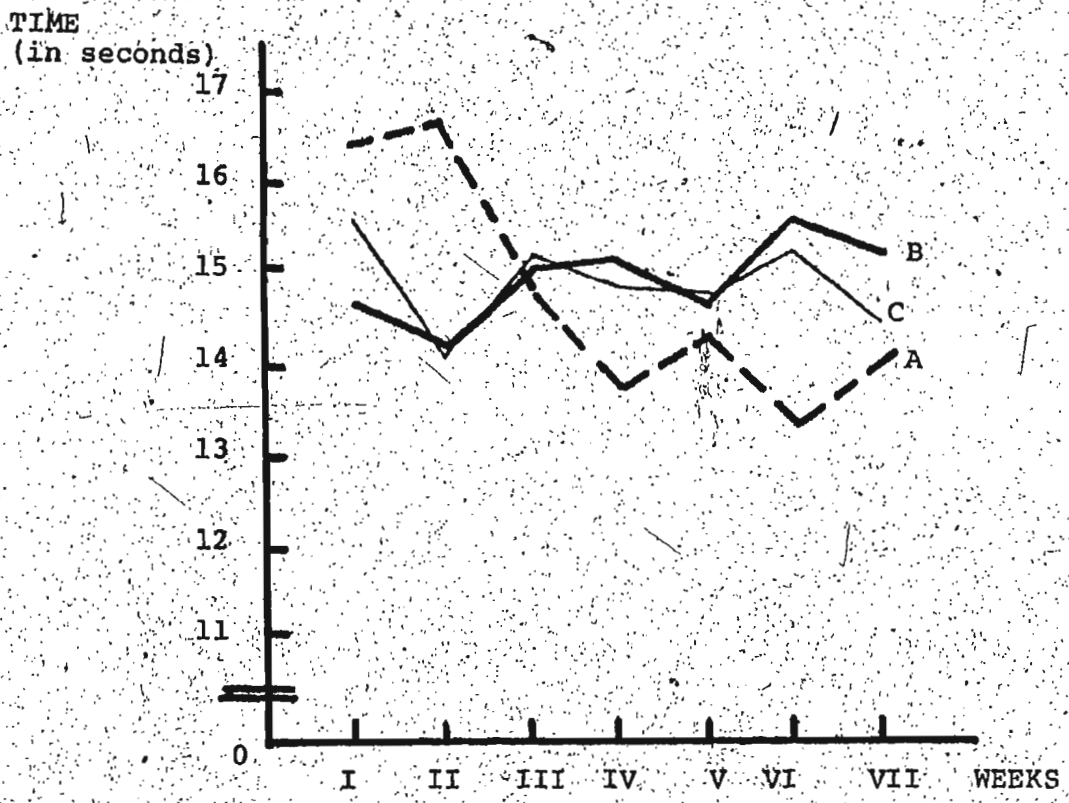


FIGURE 3

Calculated group means for test item

Locomotor 1: Shuttle

Figure 3 illustrates the calculated group means for Locomotor 1. The fewer number of seconds indicated the higher score.

Table 5 illustrates the calculated group means for Locomotor 2. The fewer number of seconds indicated the higher score.

TABLE 5

Calculated group means for test item

Locomotor 2: Obstacle

WEEK	A	B	C
	Scores calculated in seconds for each group		
I	14.54	13.54	12.27
II	12.40	13.58	12.33
III	12.40	15.37	11.18
IV	12.00	16.27	10.90
V	11.69	14.15	11.78
VI	12.03	16.22	15.02 (13.10*)
VII	11.01	13.54	16.84 (11.50*)

*The group means in brackets were calculated with the removal of one subject's scores. Such a removal was performed to indicate the effect that this one particular child had upon the overall results. (See page 47)

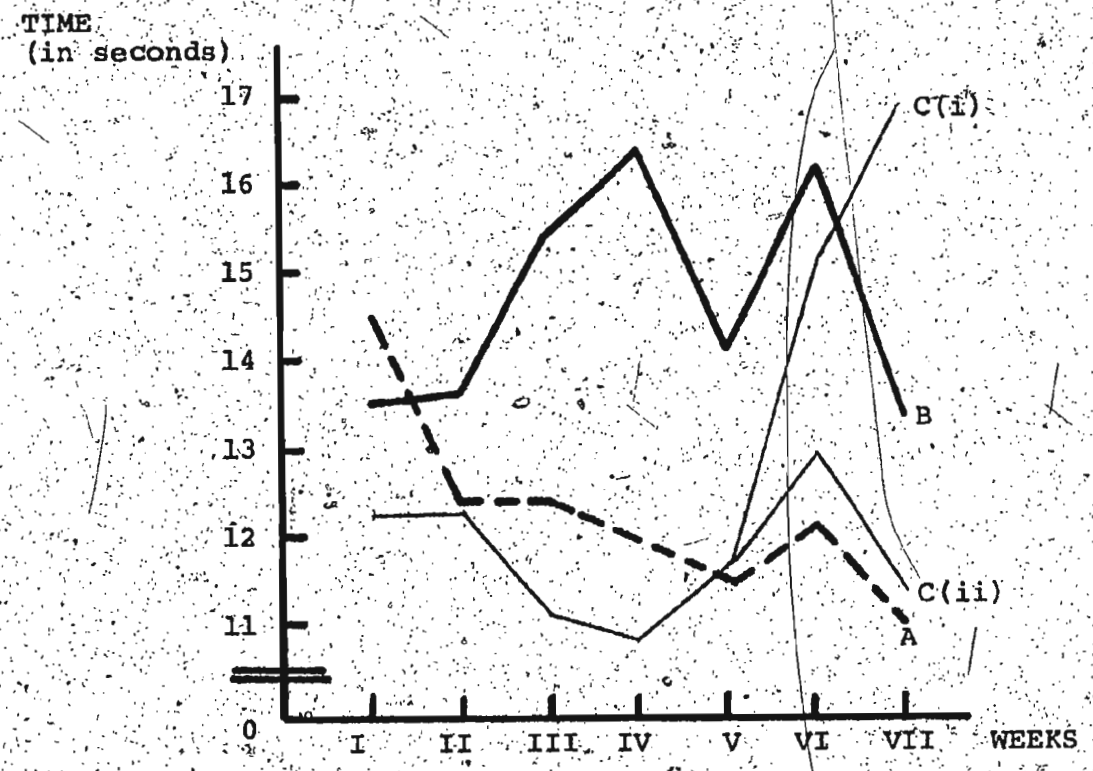


FIGURE 4

Calculated group means for test item

Locomotor 2: Obstacle

Figure 4 illustrates the calculated group means for locomotor 2. The fewer number of seconds indicated the higher score.

C(i) = Group mean for group C as recorded

C(ii) = Group mean for group C after removal of one particular score. (See page 50)

When all the tests had been administered and all the data collected, the pretest and post-test results were compared. Table 6 illustrates the calculated 'F' value after a one-way analysis of variance had been performed on the pretest and post-test data. Those results marked with an * are statistically significant at the .05 level of significance.

TABLE 6

Pre-test - Post-test comparisons

TEST ITEM	GROUP A	GROUP B	GROUP C
B 1	F = 0.067 df 1,13	F = 9.749* df 1,14	F = 1.579 df 1,9
B2	F = 0.001 df 1,13	F = 0.342 df 1,14	F = 0.065 df 1,9
L1	F = 8.241* df 1,13	F = 0.816 df 1,14	F = 0.814 df 1,9
L2	F = 6.296* df 1,13	F = 0.000007 df 1,14	F = 3.131 df 1,9

* significant at p = .05

When there was a statistically significant 'F' value recorded, further calculations were performed to ascertain the nature of this difference. In three instances this difference indicated an overall improvement in the time recorded for those particular test items. Table 7 illustrates the frequency and percentage value of such findings.

TABLE 7

The percentage improvement shown by each group on every test item

TEST ITEM	GROUP A	GROUP B	GROUP C
B1	no significant difference	90%	no significant difference
B2	no significant difference	no significant difference	no significant difference
L1	13%	no significant difference	no significant difference
L2	24%	no significant difference	no significant difference

Testing the hypotheses I, II and III

As a result of the findings which were illustrated in Table 7, it was concluded that:

i. Group A, treated only with locomotor activities, showed no significant difference between the pre-test and post-test results for either of the balance test items. However, on both the locomotor test items there was a significant difference evident at the .05 level of significance. This revealed an overall improvement as follows:

Locomotor 1, improvement was 13 percent

Locomotor 2, improvement was 24 percent

On the strength of these results it was decided to accept hypothesis III that the specific six week program of locomotor activities will significantly enhance the locomotor skill of the preschool child.

ii Group B, treated only with balance activities, showed no significant difference between the pre-test and post-test results for either of the locomotor test items or for Balance 2. However, for the Balance 1 test item there was a significant difference evident

at the .05 level of significance. This constituted an overall improvement of 90 percent. In test item Balance 2, although the pretest - post-test comparison showed that there was no statistically significant difference at the .05 level, there was an overall improvement in the time scores recorded. In this instance, Group B showed an improvement of twenty per-cent, compared with the other two groups in which no improvement was evident.

The latter finding, even though not statistically significant at the .05 level, would suggest an improvement in skill as a result of the administered treatment. It was therefore decided to partially accept hypothesis II, that the specific six-week program of balancing activities will significantly enhance the balancing skill of the pre-school child.

iii. Group C, the control group, which was not exposed to any of the movement experience program, but only subjected to the testing procedure, showed no significant difference, at the .05 level, between the pre-test and post-test results for any of the four test items. These findings infer that neither the learning effect

of the test items nor maturational factors had any significant effect upon the overall results. Furthermore, this would indicate that any positive significant differences in the performance scores were due solely to the effects of the program contents. It should be noted however, that this six week study was a concentrated exposure to the program contents, and therefore the results may be quite different if the program contents were taught over a longer period of time and by the regular preschool teachers.

Consideration of the overall results indicated supportive evidence for the acceptance of hypothesis 1; that the introduction of the total contents of the daily program of movement experiences will significantly enhance the general motor skill development of the preschool child.

Discussion of the results

It was felt that the calculated group means which were illustrated in Tables 1, 2, 3 and 4 needed further consideration and discussion.

At approximately week V of the study, it was apparent that the recorded results for all groups,

except on test item Balance 2, began a gradual decline. The investigator felt that this might have been due to two factors. Firstly, the weather conditions improved considerably around week V and consequently, the preschoolchildren who were not involved in the study, were able to spend a lot of their time in the playground. The sample group however, was restricted to the inside environment as a result of the study and it was felt that their level of concentration decreased as a direct result. Secondly, based on the subjects comments, it was evident that there was increasing boredom with the tests and testing procedure. This may have had detrimental effects on both motivation and performance towards the end of the study.

Special mention was felt necessary of the results for Group C in the test item Locomotor 2 (Table 5, page 40). The sudden decline in the group mean was attributed to the very low score of one particular child, who on weeks VI and VII, began to stop, start, turn around and hesitate during the actual timing of this test. This child only exhibited such behavior during this particular test item and on these

two specific occasions. It was calculated that without this occurence a less pronounced decline in results would have been apparent for Group C (see Table 5; Figure 4).

Examination of the graphs in figures 1, 2, 3 and 4 indicates large random variations of scores superimposed on the underlying trends. This variation may have been due in part to the attitude of the young subjects towards the testing procedure. The investigator noted that the desire of each child to perform optimally varied from test to test and session to session. Imitative behavior on the part of the other subjects tended to result in either good or poor group performance levels on each test. In addition, such variation may have been indicative of the pre-school child's inability to reproduce consistent levels of performance in response to tasks of a gross motor nature.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER STUDY

The purpose of the present study was to develop a program of movement experiences for the pre-school years and to investigate the effects of such a program on children between the age of three and five years. In order to complete this investigation, a six-week study was introduced into an urban preschool which was affiliated with a university. An evaluation was made of the effects of this six-week exposure to specific activity areas.

As a result of the findings of this study, it was evident that the exposure to specific activity areas was indeed the factor responsible for the increased performances which were indicated by the recorded data. It can therefore be argued that, as the two areas chosen for the purposes of this study, (namely locomotor and balance activities) are fundamental components of all other aspects of the desighed

program, the introduction of the total contents of the proposed daily program of movement experiences should significantly enhance the general motor skill development of the pre-school child.

However, it is recommended that a longer pilot project (preferably for a school year) be implemented at the same preschool. In this instance the program contents should be the responsibility of the regular teachers, under the guidance of the program designer. These teachers not only possess a better understanding of the children involved, but would also be better able to correlate other areas of learning with their activity classes. They would also be more aware of each individual's stage of development and level of competence. At the end of this pilot year, a subjective teacher evaluation would be sought in terms of any modifications or recommendations for the movement experience program.

It is recommended that timed tests not be used to evaluate the child's level of skill, as was necessary in the case of the six-week study; instead some kind of informal subjective rating be employed.

This would be done through teacher observation where each child would be rated on a scale from one to five. This rating would be completed three times per academic year.

The design of such a rating system would be the responsibility of the program designer in conjunction with the teachers involved in the pilot project.

It is also recommended that the teachers retain their normal groups of children when teaching the program. This would involve approximately eight children per teacher.

The teaching area is of importance. It was felt that the room used during the six-week study was too large for the children to cope with and presented too many distractions. The Physical Area in the preschool itself would have proved more suitable for the venue on two counts: firstly, the children were familiar with being in this space and secondly, the equipment was stored adjacent to the space, which was not the case with the room used for the six-week study.

It is further recommended that the program

contents should also be implemented in an outdoor facility. The preschool involved in the study had such a playground area which could be utilized for this purpose.

It is suggested that inservice workshops be provided for the teachers who would be involved with the teaching of the program and that these be arranged at frequent intervals and be organized and conducted by the program designer.

In completing the final analysis of the proposed pilot project, a follow-up evaluation could be organized. This would entail an evaluation of children at kindergarten level, which would determine the effects, if any, that any preschool movement experiences had had upon their ability to grasp the physical skills required of them by the existing Provincial Curriculum in Physical Education.

The designed program of movement experiences, complete with relevant notes for the teachers is presented in Appendix A.

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APPENDIX A

The Movement Experience Program

TABLE OF CONTENTS

I NOTES TO TEACHERS

Rationale for the program

It is intended that the Preschools of Newfoundland should offer a daily physical activity program as part of their curriculum.

There is already in existence a recogni ed Provincial Curriculum for Physical Education. This starts with Kindergarten and concludes with Grade XI. It is intended that the classroom teacher, and not a Physical Education Specialist, be responsible for teaching Kindergarten and the first three grades.

Similarly, it is intended that the Preschool activity program should be taught by the regular teachers and not by a Specialist in physical education. This is based firstly upon the belief that the Preschool teacher would have a much closer understanding of the children involved than would a Specialist who would have to be brought into the Preschool specifically to deal with the activity sessions. Secondly, such a teacher would be better able to correlate other areas of learning with her activity classes, and she would

be more aware of each individual's stage of development and level of competence.

In planning this movement experience program, it had to be decided how this would actually relate to the rest of the existing curriculum within the Preschool environment in order for maximum cohesion to be evident.

The most suitable type of curriculum to select, for this particular physical education program is based upon concepts. This type of design allows the educator to observe the child understand, synthesize, analyze, and evaluate his psychomotor experiences. When examined at the conceptual level, physical education becomes a vital and integral part of the child's learning experience.

The conceptual curriculum is not restricted to single concepts equated to specific activities. Sliepcevich, (1967), drew up a school health curriculum based upon three key concepts:

1. Growth and development
2. Interacting
3. Decision making

The value of the conceptual curriculum lies in the use of selected activities by the teacher, which will enable the child to learn more complex ideas. Thus the focus is placed upon the quality of the program objectives.

Hilda Taba (1965), has advanced the idea of the spiral curriculum, which basically eliminates needless repetition and provides the means by which a pre-school child could start to learn the same complex concepts learned by older children, but at a more appropriate level. This too, should be incorporated into a Pre-school situation.

Basic Objectives of the Program

In stating the basic objectives of a movement experience program, they can be listed as follows:

1. Promote physical development of each child
2. Develop motor skills
3. Develop physical and mental co-ordination
4. Provide opportunities for each child to feel a sense of achievement through his efforts
5. Provide a wide experience of movement
6. Provide situations where a child has to:

a. work alone

b. work with others

7. Provide situations where a child has to use his own imigination in terms of movement and is creative

These basic objectives indicate that each lesson or period of movement experience should provide:

1. Exertion - with frequent rests.
2. Enjoyment and satisfaction through good motivation
3. Acquisition of skill - physical and mental
4. Self-expression
5. Whole body involvement
6. Social training
7. Self-discipline
8. A sense of achievement and satisfaction, which ultimately strengthens the development of a child's self concept

To expand upon these objectives:

Movement experiences should be presented through problems which have:

i one acceptable solution

ii a variety of known solutions

iii an infinite number of solutions

thus evoking intellectual processes.

The overall lesson objectives should exhibit:

1. Fun of participation
2. Motivation and stimulation
3. Maximum involvement for all - both physically and mentally
4. Individual, partner and group interaction
5. Contents which are suitable for developmental stage of each individual
6. Contents which complement those areas of learning with which the children are involved at that time, so that transfer of learning can be evident
7. Lessons which are planned to correlate concentration spans with the attention span of the class
8. Frequent rest periods should be evident
9. Lessons which emphasize use of the larger muscle groups
10. Fostering of hand-eye co-ordination, also eye-foot co-ordination
11. Practice of basic body management and control
12. Basic understanding of body and its function
13. Contents which aid all areas of the child's development

14. Awareness of space
15. Awareness of safety factors
16. Simple set rules which gradually become more complex
17. Provision for repetition and interrelationships between areas of learning

Suggested Equipment for the Program

The number of children to be supplied with equipment is assumed to be fifty. It would be beneficial to group the preschoolers into working groups which are similar to their routine daily grouping; given that this is the case. The maximum number of children per physical activity group ideally would be in the region of sixteen.

Examples of necessary small equipment would be:

20 - Small balls - plastic airflow - do not bounce too much
20 - Rubber playground balls, 8½" diameter
10 - Beach balls - very light and bright
20 - Plastic hoops - small
10 - Plastic hoops - large
25 - Bean bage - vinyl covered
20 - Skipping ropes - made from soft fabric clothes line, cut by staff and without sharp handles
25 - Individual mats - approximately 10" x 10" made

from rubber matting or indoor-outdoor carpet

10 - Larger mats - tumbling variety

6 - Wooden balance benches - can hook into climbing apparatus and also serve as a balancing surface when turned upside down

16 - Balance boards

16 - Wooden balance scooters - wooden squares on four small rubber wheels

20 - Scoops - home made from empty Javex bottles

20 - Wooden bats - round in shape, small handle, ressembling table tennis bats

- Cardboard cut-outs of the alphabet, upper and lower case, bright and large
- Cardboard cut-outs of numbers, some large in size, some smaller
- Cardboard cut-outs of geometric shapes, varying in size, brightly coloured. Each shape has one blank side and one side which identifies the name of that particular shape
- Portable wooden climbing frames which can be arranged in many different ways
- Portable record player and records
- Tape recorder, if possible

Recommended resource material

The following are recommended as valuable resource materials for the teacher:

Boorman, J., Dance and Language Experiences with Children, 1973.

Bruce, V.R., Movement in Silence and Sound, 1970.

Burton, E.C., The New Physical Education, 1977.

Cameron, W. McD., and Cameron, M., Education in Movement in the Infant School, 1969.

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Gerhardt, L.A., Moving and Knowing, The Young Child Orients Himself in Space, 1973.

Gilbert, A.G., Teaching the Three R's through Movement Experiences, 1977.

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Inner London Education Authority, Movement Education for Infants, 1969.

Layman, G., Educational Drama, Steps to Oral Language, 1974.

Werner, P.H., Inexpensive Physical Education Equipment for Children, 1976.

Wise, W.M., Games and Sports.

Additional resource suggestions

In addition to resource materials already listed it is hoped that the Provincial Physical Education Consultant would be in a position to provide any necessary workshops for the teachers involved with this program.

The Early Childhood Development Association could also be asked to sponsor workshops periodically and could enlist the assistance of any knowledgeable personnel from the local Institutes of Education.

It would be very helpful for a number of video tapes to be made of several movement experience lessons these would be sample lessons taught by the program designer, in this way, teachers would be able to fully understand what is expected of both the children and themselves. This could be a responsibility of the Provincial Department of Curriculum.

Once the program has been planned and put into practice as a pilot project for one particular Preschool, it is envisaged that modifications may be required. It is also intended that the contents be taught by the Preschool staff immediately, rather than introduced by a Specialist, who later steps down.

Obviously, it would be necessary to provide in-service training after the initial workshop is given; this could be the responsibility of the curriculum or program designer.

Lastly, there may well be members of the community who have had experience with Preschool physical activity, these might be parents of those participating in the program. Their help and advice could also be sought, on a more informal basis.

Suggested methods of implementing the program with respect to facilities

It is recognised that most preschools do not have a gymnasium or specially designed play room for physical activities. However, the program designed so that it be taught within the existing space and also out-of-doors, weather permitting. It should be recognised that the size of the participating group may have to be changed, dependent upon available space. It may even be possible for those children not participating at any given moment, to be involved with some activity which removes them from the centre of the teaching area. For example, they may be in the book area.

If the movement program is to be scheduled for the main teaching area, a large storage room is very necessary. This should be adjacent to the centre of activity.

Presentation of the program

The presentation of the program content will be by way of separate index-type cards. These will be color-coded and arranged sequentially, under separate headings. These headings will differentiate between the skills to be included in the program.

Each index-card of the program will present suggested content and implementation for the activity it classifies. The teacher will select whether her entire group become involved in this one particular activity, or whether whe will incorporate different aspects of the same activity into one activity session. If she chooses the latter option, each child will be given a task relevant to his needs.

Whenever possible the material should be presented in a problem-solving or guided discovery fashion. Thus the children are stimulated cognitively. It should also be stated that no one teaching method is stipulated, given that each teacher will already have an established methodology and relationship with her group.

Emphasis should also be placed upon frequent informal rest periods which can be disguished as discussion times. Here the teacher should attempt to stimulate imaginative responses from her children whilst informally correlating their movement activities to past experiences and other areas of learning and interest. In other words, make the children alert to facts that carry-over from their experiences in movement to other aspects of their every-day life.

Finally, it should be stated that each teacher can add to the repertoire of activities. She may well feel the need to plan her own lessons to correlate with the other learning experiences within her group of children. It is hoped that once the teachers have a basic idea of what is expected in terms of learning, content and organization, they will indeed be able to do their own planning.

Factors to consider when teaching

The key to the program is participation, enjoyment and purpose. The child has a need to explore his physical environment in terms of movement and the teacher needs to ensure that this exploration is constructive and with consideration for the movement of others.

Thus, the teacher must attempt to:

1. Provide opportunities, through movement experiences, for the child to discover the capabilities and movement range of his own body
2. Create tasks which will encourage each individual to work within his own capacity, be creative and consequently gain a wider range of movement experiences.
3. Foster a child's acquisition of the required basic skills fundamental to the advanced skills of gymnastics, games and dance

Safety should be a major consideration at all times in respect to:

1. Facilities and equipment
2. Organization of lesson
3. Behavior of class
4. Clothing of children

1. Facilities and Equipment - attempt to ensure that the following items are given consideration:

i. There are no potential danger zones, eg. live electric outlets without plastic cover, sharp corners to encounter

ii. Any furniture close by is stacked safely and placed out of the way

iii. The floor is clean and safe, eg. if wooden, no splinters, if tile, should be dry, if ground, free from glass and stones

iv. Equipment is safe to use, without damage of any sort

v. Equipment is carried properly, treated with respect and stored safely

vi. Equipment is always returned to it's proper place, not merely left at the edge of the working area when not in use

2. Organization of Lesson - attempt to provide for:

i. Maximum participation for every child

ii. Work with and without equipment

iii. Individual, partner and small group work

iv. Numerous informal rest periods; disguise these as discussion times

v. Space useage so that all the available space is being utilized by the children as they work and move

vi. Organization of group work so that all children can be observed easily at all times

vii. Organization of group games or relays so that the groups are working safely within the available space, eg. do not use walls as the turning point for any game or relay - the children will crash into these and hurt themselves

viii. Organization of the equipment in such a way that the children are not required to crowd together in order to collect it for use

3. Behavior of Class - attempt to ensure that:

i. Children react positively and immediately to instructions, both when they are stationary and in motion

ii. Children respect the safety of other class members eg. they know that they must not push anyone else, or interfer with another child who is working

iii. Children are constantly looking and moving toward a big space in which they will be working. A similar emphasis should be placed upon partner and group work

4. Clothing of Children

If the children are not required to bring additional special clothing for the purposes of this activity program, the teacher should ensure that they remove at least one layer of their every-day dress; maybe a thick sweater, so that they will remain as cool as possible during active participation, and will have extra clothing to put on afterwards.

Footwear should be of concern. Preferably the children should wear sneakers; failing this, shoes which have a very flexible sole; or else they should be barefoot. The latter option should be considered only if the floor surface is suitably clean and smooth. At no time should a child be allowed to participate in stocking feet on a smooth floor.

II THE MOVEMENT EXPERIENCE PROGRAM

The program consists of five areas:

1. Space and body awareness
2. Locomotor and non-locomotor activities
3. Balance activities
4. Manipulation of objects
5. Creative dance

As this program is designed to be taught daily, one lesson from each of the five activity areas could be covered each week. Several sample lesson plans are also included; it is hoped however, that the teacher herself will be able to plan many of her own lessons in order to correlate the learning experiences of her particular group of children. A suggested lesson plan outline is included to illustrate the various components of the lesson and to aid organization of the lesson.

Lesson plan outline

Date_____ Number of children_____

Main theme of lesson_____

1. Introduction:
   (individually - something known, something new)
   _____

2. Development:
   (individually, partner, small group)_____
   Theme of lesson is expanded here

3. Final Activity:
   (partner, small group)_____
   Reinforcement situation for main material taught

Equipment needed:

Points to emphasize:

Comments and observations:

When presenting your lesson attempt to:

1. Recognize the opportunities to correlate the material being taught with other areas of the children's experience
2. Stimulate the children cognitively by provision of many simple problemssolving situations
3. Foster good peer interaction and co-operation
4. Encourage immediate responses to your instructions, these should be in movement terms whenever possible. eg, 'How many ways can you...?' 'Show me'!

Progression within lesson:

Working either

a. alone
b. with a partner
c. in a small group

i. without small equipment

ii. with small equipment

Areas of the program

The following section of this appendix presents the five areas of the movement experience program.

Area I Space and body awareness

Objectives - to develop aspects of:

1. Safety
2. Response to instructions
3. Control of actions
4. Co-operation and sharing
5. Self-concept
6. Body function
7. Space usage
8. Directionality
9. Level of movement
10. Speed of movement
11. Shape of body in action
12. Imitation of movement exhibited by others with and without small apparatus and equipment

Area II Locomotor and non-locomotor activities

i. Locomotor skills - the basic objective is to develop:

   i. gross motor skills
   ii. an expansion of movement vocabularly
   iii. Agility (general control of the body as it moves)

The following are suggested areas of concentration for this particular section.

A. Transference of weight

   a. Ability to move in all directions using different parts of the body for support
   b. Ability to move in all directions and control small equipment at the same time
   c. Ability to copy movement of others (imitation of people, things or animals)

B. Techniques of specific locomotor skills:

   a. walking pattern
   b. running pattern
   c. gallop - both feet should be able to lead

d. standing jump

e. running jump

f. leaping pattern - both feet should be able to lead

g. hopping pattern - use of right and left feet

h. slide step - to the right and the left

i. skip step

C. Locomotion which emphasizes:

a. use of all body parts

b. Stopping and starting

c. Continuity

d. Change of direction

e. Change of speed

f. Change of level

g. Space useage

h. Body shape in action

i. Floor pattern created

j. Application of Force

k. Use of rhythm

l. Negoiation of obstacles

Individually

with a partner

In a small group

Without equipment

With equipment

Definition of Terms - these will aid the teacher's understanding of the skills involved.

1. Walking Pattern - refined or mature version
   a. Rhythmical series of steps on alternate feet
   b. Heel contacts ground first, then the ball of the foot, lastly the toes
   c. Always one foot in contact with the ground
   d. Legs swing in a controlled manner, toes point forwards
   e. Fairly long, quick steps
   f. Arms are moved in opposition to the legs
   g. Arms are held at the side of the body
   h. Body is held errect, head looks forward

2. Running Pattern - refined or mature version
   a. Rhymical series of steps on alternate feet
   b. Ball of foot contacts ground first then the heel, lastly the toes
   c. There is a period of non-support or suspension evident
   d. The recovery knee (leg which is about to move ahead, past the other one), is raised high and swings forward quickly.

e. The supporting leg bends slightly upon contact with the ground and then extends (stretches) completely and quickly through the hip, knee and ankle

f. The stride is long

g. The legs move forward in a straight line; very little rotation of the recovery knee or foot is noticeable

h. The arms, bent at the elbows (approximately at right angles) swing vertically backward and forward in opposition to the leg action

i. There is a slight forward lean of the whole body, head looks forward

3. Gallop

a. One foot always leads, toes pointing forwards

b. The other foot is quickly brought up to meet the leading leg, (toes to heel, or just past heel) the toes of this second foot also point forward

c. Rhythm of step-close, step-close, step-close

d. Arms held by the side of the body, they swing in a relaxed manner

e. Body is held erect, head looks forward

4. Standing Jump

a. Two foot take-off; two foot landing. Toes point ahead

b. Stand-up straight

c. Raise arms forward and up

d. Swing arms down and backwards as legs bend

e. Arms swing vigorously forward and up at take-off

f. Body (trunk) is propelled at approximately 45 degrees at take-off - arms still pointing forwards

g. During flight, the hips bend, causing the thighs to hold a position almost horizontal to the ground

h. The leg, from the knee down is at approximately right angles to the thigh

i. Upon landing, momentum is absorbed and the weight of the body continues forward and down slightly

5. Running Jump

a. One foot take-off; two foot landing

b. From a running situation the take-off is achieved by bending the take-off leg as the arms are swinging backwards - they are then swung vigorously forward and up as the supporting leg extends and pushes off from the ground.

c. Body (trunk) is propelled at approximately 45 degrees at take-off - arms still pointing forwards

d. During flight, the hips bend, causing the thighs to hold a position almost horizontal to the ground

e. The leg, from the knee down is at approximately right angles to the thigh

f. Upon landing, momentum is absorbed and the weight of the body continues forward and down slightly

6. Leaping

a. One foot take-off; land on the other foot

b. Basically, a leap is an extension of a

running step, but with more height and distance exhibited

c. As the leap is performed, the arms are moved so they are held pointing diagonally, forward left and backward right or vice versa, dependant upon the leading leg

d. The arm on the same side of the body as the leading leg, points diagonally forward

e. Upon landing after this leap step, the landing leg should bend slightly to act as a 'shock absorber'

f. Head should be kept up at all times

7. Hopping

a. Take-off on one foot, land on the same foot

b. On take-off, the toes of the supporting foot are last to thrust away from the ground they are the first to touch on landing

c. Next follows contact by the ball of the foot, followed by the heel

d. The arms are used simultaneously in an upward or forward thrust

8. Slide Step

a. A method of travel with the side of the body leading

b. A series of rhythmical step-close, step-close step-close - one foot leads

c. Body in upright position, head looks forward

d. Arms by side of body

e. The weight is taken on the ball on each foot - the side of each foot in the direction of travel leads

9. Skip Step

a. A series of step and hop on alternate feet. eg. step right, hop on right step left, hop on left Repeat

b. Distance is covered on the step mainly, but, is also evident between the take-off and landing for the hop

c. Arms are semi-bent are swung freely with the rhythm of the skips

d. Body leans forward slightly, head looks forward

e. Knees are lifted very slightly; just enough to clear the free leg off the floor

ii. Techniques of non-locomotor skills:

a. Pulling
b. Pushing
c. Curling
d. Stretching
e. Twisting
f. Turning

Individually
With a partner
In a small group
Without equipment
With equipment

a. Pulling – Defined as movement or force towrads the body
Limb joints bend or flex

b. Pushing – Movement or force away from the body. Limb joints straighten or extend

c. Curling – Defined as pulling-in all the body parts toward the centre of the body. Body is made into a smaller shape

d. Stretching – Defined as pushing all the body parts away from the center of the body. Body is made into a bigger shape

e. Twisting – When one body part remains still

or fixed and other adjacent parts move around it. eg. Whilst sitting down, torso moves so that head and shoulders face what was originally behind the body

f. Turning - When one body part moves and adjacent parts move in succession after it in the same direction, until the position of the body is completely changed

Area III Balance Activities

The basic objective is to develop:

i. A general understanding of balance

ii. Control of the body when stationary and in motion

Stability is the most basic component of motion. It is an essential part of all fundamental movement abilities. The following are suggested areas of concentration for this particular section:-

1. Understanding a simple definition of balance and stillness (stability)
   a. Understanding the definition for a base
   b. Ability to create many different bases from a combination of body parts
   c. Basic appreciation that to maintain balance, the body must remain in a position over the base
2. Appreciation of factors which affect balance:
   a. vision
   b. Arm position

c. Head position

d. Base size

e. Stillness of base

f. Muscle tension

g. Gravity

3. Differentiation between static and dynamic balance:

4. Ability to balance a small external object whilst demonstrating:

a. Static balance

b. Moving (dynamic) balance

5. Ability to maintain balance whilst exhibiting various body shapes - with and without small equipment

6. Ability to move and stop, stay still and then continue as before

7. Ability to move on a restricted area eg. balance board

All these activities can be developed through:

a. Individual work

b. Partner work

c. Small group work

d. With and without equipment

e. Small and large equipment

Area IV Manipulation of objects

The basic objectives is to develop:

i. Visual and perceptual skills
ii. Fine motor activities
iii. Hand-eye co-ordination
iv. Foot-eye co-ordination

The following are suggested areas of concentration for this particular section:

1. Ability to pick-up and place down various named external objects of varying weight
2. Ability to pick-up carry and then place down various objects using both small and large equipment. Working either individually, with a partner, or in a small group
3. Ability to pull and push external objects
   Application of force
4. Ability to handle and control small apparatus whilst stationary or in motion
   Use of hands, feet, whole body

5. Ability to manipulate small apparatus in a variety of ways, stationary or in motion, individually or with others

6. Ability to control small apparatus whilst performing specific modes of locomotion eg. bowl the hoop whilst skipping or galloping

7. Ability to negoiate obstacles whilst controlling small apparatus with hands, feet or other body parts

8. Ability to manipulate objects in order to perform the fundamental motor patterns of:

   a. Rolling
   b. Receiving
   c. Throwing
   d. Bouncing
   e. Catching
   f. Kicking

   Use beanbags, large lightweight ball (beach type)

9. Ability to project an object, either a beanbag or a ball by using small implement (lightweight) eg. small wooden bat - similar to a table tennis bat Plastic scoop

Area V Creative Dance

The basic objective is to develop:

i. Creativity

ii. Use and exploration of words

iii. Movement as a means of communication

The following are suggested areas of concentration for this particular section:

1. Movement and stillness
   a. Whole body involvement
   b. Specific body parts
2. Speed and Force of movement
   a. Quick and slow
   b. Strong and light
3. Space awareness
   a. Personal and general
   b. Basic directions
   c. Spatial pathways
4. Action Words

   interaction between words explored in movement terms and those assimilated in thought

5. Nursery Rhymes

   extended into dance experiences

6. Partner situations - where the children have to demonstrate:

   a. Alternative movement

   b. Simultaneous movement

   c. Lead and follow situations

   d. Contrasting and matching movements

APPENDIX B

Lesson plans used in the study

(Representative of the fundamental components included in the Movement Experience Program - Appendix A)

Sample lesson for locomotor activities

2 May 1978. Group A. Lesson 1. 8 children in class

Main Theme: LOCOMOTION AND RESPONSE TO INSTRUCTIONS

Freeplay with beanbags at start of lesson

1. Introduction: no equipment

   i. move anywhere - stop on command - space out

   ii. encourage class to constantly move into the spaces and avoid collisions - repeat several times

   iii. encourage different methods of travel on feet

2. Development; no equipment

   use of body parts, other than feet to move around room (space)

   i. with all body in contact with floor

   ii. hands and feet in contact with floor

   iii. any other way you can find to travel?

3. Final Activity: one beanbag per child

   a. try to move your beanbags in many different ways:

   i. with feet

   ii. with hands

   iii. with all your body

   iv with any other body part

b. with a partner, both sitting down on the floor, push your beanbag along the floor to your partner

Equipment:

1 beanbag per child - 8

Points to emphasize:

Spacing - avoid collisions

Careful use of body

Different directions of travel

- use demonstrations - self and class idea

Comments (after lesson)

At first the group found difficulty with 'spacing' showed improvement

Found difficulty in moving beanbags and paying attention to spacing at the same time

Sample lesson for locomotor activities

3 May 1978. Group A. Lesson 2. 8 children in class.

Main Theme: LOCOMOTION AND RESPONSE TO INSTRUCTIONS

Free Play:
1 beanbag per child

move around space with beanbag on top of your body - change direction - look for spaces

1. Introduction: no equipment

   i. Run anywhere - stop on command - in own space - repeat

   ii. Run anywhere - on command - jump into own space - repeat

   iii. Stand in space - practice softly landing from jumps

   iv Run anywhere - on command - jump into space, land softly

2. Development: no equipment

   i. Stand in own space - make yourself big
      make yourself little
      Repeat - offer different ways

   ii. Place hands on floor (N.B. lift head upwards) move on hands and feet only

   iii. Change direction of travel

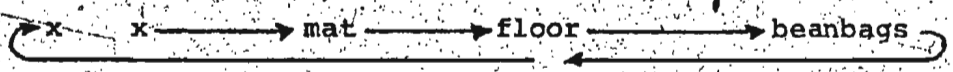
   iv. Travel with hands and feet far apart } changing
      Travel with hands and feet close together } direction

   v. Travel front-up on hands and feet

3. Final Activity: equipment

1 mat and 2 beanbags between two people

children



2 - 1

#1

i. travel along mat - make yourself as small as possible

ii. travel along floor - make yourself as big as possible

iii. pick up beanbag - travel back on hands and feet - beanbag on back

iv. travel across mat keeping curled up

v. sit down with beanbag

#2 repeat same

(allow them to have several attempts at the task)

Points to emphasize:

spacing - how to land well - deep knee bend and spring upwards

keep head up when on hands and feet

tuck in all the corners or sharp bits when curling on mat

Comments:

The group responded well. Needed to modify final activity

i. along mat on hands and feet

ii. on floor - slithering - pick up beanbag and return to partner in the same fashion

Sample lesson for locomotor activities

4 May 1978. Group A. Lesson 3. 8 children in class.

Main Theme: LOCOMOTION AND RESPONSE (CONCENTRATE ON DIRECTION)

Free Play:

with beanbags - move forwards, backwards, sideways

1. Introduction: no equipment

   i. on hands and feet - front down - move forwards and sideways, move backwards (head position: chin up)

   ii. on hands and feet - front up - move forwards and sideways, move backwards (head position: chin up)

2. Development: no equipment

   i. walk forwards - backwards (head over shoulder)

   ii. run forwards

   iii. move side-on

   Repeat above several times. Perhaps include making body

   i. small

   ii. big

3. Final Activity: no equipment

   follow the leader

   i. they follow direction of teacher's travel

   ii. and copy body position if possible

Points to emphasize:

space usage

response - instructions

head position: when on all 4's (ie. on hands and feet)

Comments:

The group enjoyed free play and introduction

In development, had to think quite a while about 'forwards and small' or 'backwards and big'

Follow-the-leader was alright - except that they started to show fatigue.

Sample lesson for locomotor activities

5 May 1978. Group A. Lesson 4. 8 children in class.

Main Theme: LOCOMOTION AND RESPONSE (CONCENTRATE ON DIRECTION)

Free Play

2 beanbags per child - move them forwards, backwards sideways

1. Introduction:

   i. walk forwards - 3 steps - stop - repeat

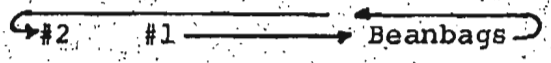
   ii. walk backwards 3 steps - stop - repeat

   iii. walk sideways - 3 steps - stop - repeat

2. Development:

   i. with beanbags 4 per 2 children

   ii. in two's - as follows, travelling to pick up and retreive 2 beanbags each



   #1 hands and feet forwards - pick up 2 beanbags
   hands and feet backwards - put down 2 beanbags in original starting position

   #2 does likewise afterwards

3. Final Activity:

   equipment: Plastic climbing frame

   Concentrate on travelling { forwards / backwards / sideways } through space

Equipment:

Beanbags - 16

Plastic unit frame

Points to emphasize:

Head up when travelling on hands and feet

Comments:

The group enjoyed the lesson, they particularly enjoyed the beanbag task and were very able to follow the instructions concerning that task.

Equipment:

mats - 8

Points to emphasize:

spacing and response

concentrate on being still - make yourself very stiff and hard

Look straight ahead

Concentrate on focusing eyes

Comments: (after lesson)

Good response to spacing

Found some difficulity in finding different ways and positions to be still - improved quite a lot towards end of lesson

N.B. Introduce word BALANCE as being a still position which does not tip or fall over

Sample lesson for balance activities

2 May 1978. Group B. Lesson 1. 8 children in class.

Main Theme: STILLNESS

1. Introduction:

   i. Move anywhere - be quite still on command

   ii. Move anywhere - sit and be still on command

   iii. Move anywhere - kneel and be still on command

2. Development:

   In own space, show me a still position on:

   i. Both feet - repeat and say '2 feet'

   ii. Hands and feet - repeat and say '2 feet'

   iii. 2 feet and 1 hand- repeat and say '2 feet'

   iv. 2 hands and 1 foot - repeat and say '2 feet'

   Now try to show me other positions of stillness, say which part of you is touching the floor

3. Final Activity:

   Move about room on feet. On command, go to nearest mat (empty one) and show a still position of some sort - repeat several times

Sample lesson for balance activities

3 May 1978. Group B. Lesson 2. 8 children in class.

Main Theme: STILLNESS

Free Play:

with small airflow balls

1. Introduction:

   i. sit down, open legs - let ball roll about in space in front of you - place your hand on top and STOP it. Hold still for a moment

   ii. carry ball - move anywhere on feet - on command sit in space - place ball on floor and hold it still with hand

2. Development:

   i. Practice making still poses in different ways

   ii. In pairs - ball between 2

   #1 - make a still pose (stress stillness of #1)

   #2 - roll ball through a gap created or underneath partner - then retrieves ball

   #1 - take ball and #2 make pose

3. Final Activity: in pairs #1 and #2

   i. #1 - makes big shape - still pose

   ii. #2 - travels under, through or around shape created

(allow alternation of responsibilities, repeat several times)

Equipment:

plastic airflow balls - 8

Points to emphasize:

spacing and response

concentrate on being still whilst posing

Comments:

Enjoyed ball activities very much

Found it hard to alternate responsibility with partner - so, the investigator made a still pose and let them negotiate it - then they were more able to do their partner tasks

In Development ii, had class saying 'balance' when they were showing me a still position

Sample lesson for balance activities

4 May 1978. Group B. Lesson 3. 8 children in class.

Main Theme: STILLNESS AND BODY SIZE

Free Play:

with beanbags

1. Introduction: no equipment
   - i. Run - on command, stop and stand
   - ii. Run - on command, stop and sit
   - iii. Run - on command, stop and kneel

2. Development: no equipment
   - i. move on hands and feet - stop - be small
   - ii. move on hands and feet - stop - be big
   - iii. move on any body parts - stop - be small
   - iv. move on any body parts - stop - be big

3. Final Activity:

   using (Balance) scooters, one per child

   sit on scooter, push along floor, stop:-

   - i. be still and small on scooter
   - ii. be still and big on scooter

   } -allow for several repetitions

Equipment:

scooters - 8

Points to Emphasize:

make body stiff when still

Comments:

Lesson went very well

Class loved the scooters - in fact they were so excited that then tended not to listen carefully enough to instructions - wanted to 'play'

Emphasized meaning of Balance

Sample lesson for balance activities

5 May 1978. Group B. Lesson 4. 8 children in class.

Main Theme: STILLNESS AND BALANCE

Free Play:

with scooters - see how many ways you can make it move along the floor

1. Introduction: no equipment

   i. move anywhere on feet - stop, on one leg

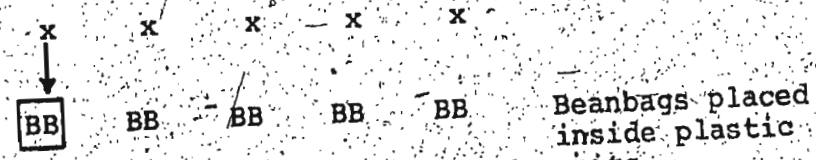
   ii. move anywhere on hands and feet - stop, on one leg

2. Development: 1 beanbag and plastic unit per child

   i. 2 foot jumps to beanbag - pick it up, return to starting position

   ii. 1 foot hops to beanbag - pick it up, return to starting position.

Arrange children:



Children moved from x to plastic unit - to arrive and stop - repeated several times

3. Final Activity:

in 2's, 1 beanbag per pair

i. #1 - 2 foot jumps to identified area; places beanbag down

ii. #2 - repeat to retrieve beanbag

Repeat above activity several times

Comments:
The lesson went smoothly.

The group really enjoyed the activity in development ii, where they had to travel and retreive the beanbags from the plastic units

APPENDIX C

Raw Data

TABLE 8

RAW DATA. Week I. Pre-test

	GROUP A n = 8		B n = 8		C n = 6		CALCULATED 'F' VALUE
B_1	1.5 1.6 1.1 1.1	0.6 0.2 0.9 0.8	1.3 0.9 1.6 1.0	1.5 0.4 0.5 1.8	1.1 0.4 0.5 3.2	2.4 0.8	F = 0.605 df 2,19
B_2	9.9 7.2 6.5 5.5	0 6.7 0 5.5	7.5 4.5 13.8 0	4.9 5.6 0 5.0	5.5 6.6 0 4.0	0 4.0	F = 0.526 df 2,19
L_1	16.0 14.9 15.8 16.8	15.8 17.4 18.3 15.5	17.7 11.8 14.0 16.5	14.6 14.2 14.3 14.8	14.0 14.9 16.9 15.0	16.2 16.4	F = 2.599 df 2,19
L_2	17.6 11.5 11.8 13.1	17.9 16.3 16.0 12.1	20.6 12.5 14.0 13.5	12.5 11.4 13.4 10.4	12.2 10.4 15.2 10.9	13.4 11.5	F = 1.262 df 2,19

TABLE 9

RAW DATA. Week II

	GROUP A n = 8		B n = 6		C n = 7		CALCULATED 'F' VALUE
B_1	1.1 0.6 1.0 1.3	0.6 0.2 4.5 1.3	1.4 2.0 3.0 0.8	1.6 1.6	1.0 1.3 1.3 0.7	1.9 0.8 0.7	F = 0.724 df 2,18
B_2	0 6.3 6.6 4.9	0 0 4.5 5.4	4.7 3.5 5.6 0	4.3 4.7	4.5 6.9 5.5 0	4.4 8.4 0	F = 0.144 df 2,18
L_1	16.3 13.9 14.6 16.2	16.6 12.9 13.9 13.6	15.5 13.0 13.9 14.5	15.4 13.3	15.0 13.5 13.5 15.0	14.5 15.5 12.5	F = 0.441 df 2,18
L_2	15.0 12.0 12.0 15.3	13.9 8.1 11.6 11.3	17.4 9.4 17.2 12.5	13.0 12.0	13.5 12.4 10.6 15.2	8.2 18.8 7.6	F = 0.316 df 2,18

TABLE 10

RAW DATA. Week III

	GROUP A n = 8		B n = 7		C n = 6		CALCULATED 'F' VALUE
B_1	1.0 1.3 1.8 0.8	1.2 0.8 2.1 6.5	1.5 1.8 2.3 3.9	2.9 0.9 1.5	3.4 2.1 1.7 1.4	6.7 2.6	F = 0.003 df 2,18
B_2	0 5.2 6.4 7.2	0 0 4.2 3.8	5.3 5.5 0 4.1	4.7 4.7 4.6	4.0 4.8 5.0 4.8	0 4.5	F = 0.007 df 2,18
L_1	16.3 13.9 14.6 16.2	16.6 12.9 13.9 13.6	16.9 14.1 14.0 13.8	14.5 17.2 13.9	16.5 15.0 14.9 14.8	17.8 11.6	F = 0.008 df 2,18
L_2	15.0 12.0 12.0 15.3	13.9 8.1 11.6 11.3	14.4 16.5 12.6 15.2	13.0 16.4 19.5	9.8 10.5 11.8 7.5	17.6 9.9	F = 4.264 df 2,18

TABLE II

RAW DATA — Week IV

	GROUP A n = 6		B n = 6		C n = 7		CALCULATED 'F' VALUE
B_1	2.0 2.1 0.8 0.9	1.0 4.0	2.4 0.9 2.3 5.2	1.3 2.9	0.9 1.1 0.9 0.7	1.2 0.6 1.8	F = 2.829 df 2,16
B_2	6.7 6.0 4.6 0	5.0 3.9	6.2 0 3.5 5.5	0 4.4	7.1 7.2 5.6 0	4.1 5.5 4.8	F = 0.707 df 2,16
L_1	15.7 12.5 12.9 17.9	12.1 12.5	17.0 15.4 15.6 14.9	14.5 13.1	17.1 16.5 13.8 15.8	15.0 14.8 11.0	F = 0.597 df 2,16
L_2	15.1 10.5 11.0 12.5	12.5 10.4	13.9 17.5 18.6 16.6	11.6 19.4	10.8 12.1 11.8 11.6	10.0 10.1	F = 12.335 df 2,16

TABLE 12

RAW DATA. Week V

	GROUP A n = 7		B n = 8		C n = 6		CALCULATED 'F' VALUE
B_1	0.6 1.6 0.9 0.2	2.0 1.6 2.2	1.6 3.5 1.8 3.6	3.0 1.8 2.6 3.0	0.8 1.4 3.5 0.3	1.1 0.9	F = 5.348 df 2,18
B_2	6.1 5.6 4.6 0	3.6 4.0 7.1	6.0 5.3 3.8 4.5	6.9 4.0 5.8 4.4	8.6 6.4 7.4 0	4.8 4.8	F = 0.309 df 2,18
L_1	16.8 14.4 12.0 17.0	13.1 11.9 14.4	17.5 14.7 14.1 15.6	14.1 12.8 14.7 12.6	15.5 14.8 15.2 14.2	15.9 11.6	F = 0.065 df 2,18
L_2	14.0 10.9 13.2 7.4	13.6 12.2 10.5	14.0 16.1 12.9 16.5	16.8 14.4 13.5 9.0	12.11 10.5 11.3 18.0	9.0 9.8	F = 2.021 df 2,18

TABLE 13

RAW DATA. Week VI

	GROUP A n = 6	Bn = 6	C n = 6	CALCULATED 'F' VALUE
B_1	1.8 1.5 0.8 1.0 0.6 0.2	1.5 1.1 3.4 2.8 1.7 2.0	1.0 2.0 0.6 0.8 0.7 0.9	F = 5.308 df 2,15
B_2	4.5 4.3 5.0 3.8 6.0 0	3.6 0 4.6 4.6 3.8 3.8	8.1 4.1 5.6 0 5.4 0	F = 0.085 df 2,15
L_1	13.9 11.6 12.9 13.0 14.7 13.5	17.2 15.0 14.8 18.0 13.9 14.9	14.0 14.4 14.2 18.4 14.9 14.3	F = 4.226 df 2,15
L_2	12.0 10.3 9.9 13.5 11.5 15.0	14.5 20.5 15.2 13.7 16.4 17.0	14.9 9.0 13.5 24.6 12.7 15.4	F = 2.269 df 2,15

TABLE 14

RAW DATA. Week VII. Post-test

	GROUP A n = 7		B n = 8		C n = 5		CALCULATED 'F' VALUE
B_1	1.0 1.5 1.0 0.5	0.2 1.3 0.9	1.2 2.1 3.2 2.1	2.8 2.0 1.0 2.8	1.1 0.7 0.5 0.9	0.5	F = 12.471 df 2,17
B_2	6.6 6.4 6.5 7.0	0 3.5 5.0	4.9 4.6 7.5 3.8	3.8 4.4 0 4.3	6.8 0 0 3.9	6.8	F = 0.505 df 2,17
L_1	14.1 11.9 13.1 16.2	16.4 12.1 14.9	14.5 16.0 16.2 16.0	14.8 13.9 16.1 15.4	14.5 16.1 17.5 12.5	12.7	F = 1.156 df 2,17
L_2	13.1 9.9 8.3 12.6	15.2 7.6 10.4	11.9 9.4 16.0 12.4	18.7 11.1 19.7 9.1	16.4 15.9 26.8 10.2	14.9	F = 2.710 df 2,17