

The Woman's College of
The University of North Carolina
LIBRARY



CQ
no. 420

COLLEGE COLLECTION

Gift of
Gayle Gravlee

A COMPARISON OF THE EFFECTIVENESS OF TWO
METHODS OF TEACHING A FOUR-WEEK UNIT
ON SELECTED MOTOR SKILLS TO
FIRST GRADE CHILDREN

by

Gayle Gravlee
"

7057

A Thesis Submitted to
the Faculty of the Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Master of Science

Greensboro
June, 1965

Approved by

Marie Riley
Director

APPROVAL SHEET

This thesis has been approved by the following committee
of the Faculty of the Graduate School at the University of North
Carolina at Greensboro, Greensboro, North Carolina.

Thesis
Director

Marie Riley

Oral Examination
Committee Members

Ebbe Martinus

Gail M. Dennis

Nancy White

9/24/65 4, 1965
Date of Examination

280105

Gravlee, Gayle. A Comparison of the Effectiveness of Two Methods of Teaching a Four-Week Unit on Selected Motor Skills to First Grade Children. (1965) Directed by: Dr. Marie Riley. p. 86.

The purpose of this study was to determine which teaching method, a games approach or a movement exploration approach, was more effective in teaching selected motor skills to first grade children over a four-week period.

The study was conducted in two schools in Greensboro, North Carolina. Two first grade classes were selected from each school, making a total of one hundred and twenty subjects. The classes were randomly assigned to one of the teaching methods by rolling a die. At each school one class was in the experimental group and the other class was in the control group.

The skills selected for this study were running, jumping, throwing and catching, and striking. The pre-test and post-test, which measured these skills consisted of modifications of Johnson's agility run, batting test, and throwing and catching test, and the standing broad jump using twelve trials.

Each class was taught a total of sixteen lessons with four lessons devoted to each of the selected skills. The experimental classes were taught the skills through a movement exploration method which consisted of asking questions and posing problems that usually required movement responses. The skills were taught to the control

classes through demonstration, explanation, and practice. The practice generally consisted of games which involved these skills.

The results of the pre-test and post-test for each skill were statistically treated by means of the analysis of covariance. Within the limits of this study the following conclusions were made:

1. A movement exploration approach was apparently more effective than a games approach in teaching running and jumping skills to first grade children over a relatively short period of time.
2. Neither method was more effective in teaching throwing and catching and striking skills to first grade children.
3. Twelve trials should be used in the standing broad jump to determine the jumping ability of this age group.

The writer is also grateful to Mr. Robert Frazier, principal of Lorry School of the University of North Carolina at Greensboro, North Carolina, and to Miss Elizabeth Avall and her first grade class for making the pilot study possible.

The writer wishes to express her appreciation to Miss Doris Hutchison, Supervisor of Health, Physical Education, and Safety for the Greensboro Public Schools, who selected the schools that were used for this study.

ACKNOWLEDGMENTS

The writer wishes to express her sincere appreciation to Dr. Marie Riley who so willingly gave her time, guidance, and encouragement throughout this study.

The writer is indeed grateful to Martha and Myrna Stevens for their valuable assistance with the statistical procedures which were used in this study.

Sincere appreciation is also extended to Margaret Hutson who so willingly gave her time and energy throughout the study. The writer is particularly indebted to the physical education graduate students who were most cooperative and enthusiastic in administering the pre-test and post-test to the subjects.

The writer is also grateful to Mr. Herbert Vaughan, principal of Curry School of the University of North Carolina at Greensboro, North Carolina, and to Miss Elizabeth Avent and her first grade class for making the pilot study possible.

The writer wishes to express her appreciation to Miss Doris Hutchinson, Supervisor of Health, Physical Education, and Safety for the Greensboro Public Schools, who selected the schools that were used for this study.

In addition, the writer is indebted to Mrs. Helen Medlin, principal of Claxton School in Greensboro, North Carolina, and to Mr. David Johnson, principal of Proximity School in Greensboro, North Carolina, for allowing their schools to be used in this study.

Above all, the writer wishes to express her appreciation for the continuous cooperation and enthusiasm of Mrs. Nancy Williams and Mrs. Alice Wellons and their first grade classes from Claxton School and Mrs. Nancy Fryar and Mrs. Martha Proffitt and their first grade classes from Proximity School.

Grade Children	4
Test of Motor Ability and	
Achievement	7
Notes Concerning Learning	
and Performance	10
Tables	12
Movements	13
IV. PROCEDURE	25
V. ANALYSIS OF DATA	33
VI. SUMMARY AND CONCLUSIONS	44
BIBLIOGRAPHY	47
APPENDIX A	53
APPENDIX B	61

TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION	1
II. STATEMENT OF PROBLEM.	4
Definition of Terms	4
III. REVIEW OF LITERATURE	6
Characteristics of First	
Grade Children.	6
Test of Motor Ability and	
Achievement	7
Studies Concerning Learning	
and Performance	10
Games	13
Movement	15
IV. PROCEDURE	25
V. ANALYSIS OF DATA.	33
VI. SUMMARY AND CONCLUSIONS	44
BIBLIOGRAPHY	47
APPENDIX A.	53
APPENDIX B.	81

LIST OF TABLES

TABLE	PAGE
I. Analysis of Covariance of Data on the Agility Run	35
II. Tests of Nonadditivity on the Agility Run	35
III. Adjusting of the Sample Means for the Agility Run	36
IV. Analysis of Variance of Data on the Batting Test	36
V. Analysis of Covariance of Data on the Standing Broad Jump	38
VI. Tests of Nonadditivity on the Standing Broad Jump	38
VII. Adjusting of the Sample Means for the Standing Broad Jump	40
VIII. Analysis of Covariance of Data on the Throwing and Catching Test	40

LIST OF FIGURES

FIGURE	PAGE
1. The Throwing and Catching Test	85
2. The Batting Machine	86

CHAPTER I

INTRODUCTION

Milne very appropriately described the typical six year old in an excerpt from his poem "Busy".

. . . So
Round about
And round about
And round about and round about
And round about
And round about
I go. (10:13)

According to Shipley and Carpenter (41), observing a child during his play is watching him at his work. They thought that through play activities the child is able to release and express his inner feelings, to partially satisfy his curiosity, and to stimulate his imagination. They also stated that the first grader has not formed many definite movement patterns. His play is, therefore, generally active, noisy, vigorous, and filled with exploring various ways of moving.

One of the reasons for choosing the first grade was the presence of this seemingly over abundant supply of energy which the six-year-old displays. Their vivid imagination, the relatively small amount of instruction which most of them have received in motor skills, their genuine enthusiasm and interest in play activities, and previous

experiences were other factors which influenced the decision of selecting this grade level.

Man has always used various body movements, but movement exploration was not generally employed as a teaching method in physical education until recently.

Much of the pioneer experimenting in movement was done by Rudolph Laban. English experts in physical education began working with Laban's basic theories of weight, time, and space, adapting them to children's understanding and activities. (6:172)

The English were among the first to adapt the problem-solving approach to movement and it did not reach major importance on this continent until the past ten years. This interest was largely created by physical educators observing physical education classes in England. (29) By reporting their findings, experimenting with their own classes, and giving demonstrations utilizing these techniques, they have stimulated an interest in the problem-solving approach to movement education in this country.

Halsey (25) was one of the first physical educators to visit England and report her findings. She found that the English were interested in encouraging free enterprise in the children; in developing the skill of each child; and in providing opportunities for individualized experience, vigorous physical activity, and recreation. She concluded that the English met their objectives for physical education through movement education.

Ludwig (31) also reported her observations of movement education in England. She found that they begin their movement education program at the early age of five. These children were given many opportunities to find their own movement possibilities and patterns and to understand how the various parts of the body related to such factors as flow, space, time, and force. She also found that the movement education period provided continuous activity for all of the children.

From previous experiences of teaching skills by explanation, demonstration, practice, and games, and from reading experiments and studies on the problem-solving approach to movement education, the writer thought a study was needed to compare the effectiveness of the two methods in teaching selected motor skills to first grade children.

Although there have been other studies in physical education in which first grade children were used to compare these two methods of teaching, (37, 48) this writer was particularly interested in determining if any differences would occur over a relatively short period of time. She was also more concerned with a comparison between a games approach and a movement exploration approach, with both groups being taught by the same instructor.

CHAPTER II

STATEMENT OF THE PROBLEM

It was the purpose of this study to compare the effectiveness of two teaching methods, a games approach and a movement exploration approach, in teaching running, jumping, striking, and throwing and catching skills to first grade children.

Two first grade classes from Proximity School and two from Claxton School in Greensboro, North Carolina, were selected for this study. Each child was then randomly assigned to the experimental or control group. The methods used with each of these groups were recorded. The results of each of the four tests were statistically treated by means of the analysis of covariance.

DEFINITION OF TERMS

Movement Exploration

Movement exploration, as used in this study, was defined as a method of teaching physical activities to children by asking questions or posing problems which usually required movement responses. These responses allowed each child to explore various movements which the different parts of his body could make and to find the movement response that felt best to him.

Games Approach

The games approach was defined for purposes of this study, as a method of teaching physical activities to children by use of demonstration, explanation, and practice of selected skills. The practice usually consisted of games which contained the selected motor skills.

LIMITATIONS

The recognized limitations in this study were as follows:

1. When it was necessary to meet in the classroom, the lack of space limited maximum participation.
2. Failure of most of the children to have appropriate shoes for running and jumping may have affected the results.
3. Although striking skills are not generally recommended for this age group, the writer was interested in determining the effects of instruction and practice in further developing the hand-eye coordination which is involved in the batting skills as measured by Johnson's batting test. (47) The activities designed to develop striking skills were created by the writer and were, therefore, of an experimental nature.
4. The lesson plans were created solely by the writer without benefit of jury and most of them without previous evaluation.

CHAPTER III

REVIEW OF LITERATURE

The primary grades, and particularly the first grade, have been used as subjects for comparatively fewer studies in physical education than any of the other grade levels. However, investigation of the available literature revealed numerous studies and research that have some applications to the present study.

CHARACTERISTICS OF FIRST GRADE CHILDREN

The age of six was described by Gesell (4) as being an active age. This characteristic was emphasized by his pointing out that the child is constantly active whether he is standing or sitting, and that he often stands instead of sits to do his work at a table or desk.

Gesell found that the child enjoys being busy but does not like to attempt tasks which he is incapable of doing. He also described the six-year-old as being stubborn because he frequently chooses the opposite decision from the one suggested by the teacher. The relatively short attention span, which this age group displays, was attributed to the fact that the child is easily distracted by watching others or while working in his own activity.

Some of the physical characteristics of the six-year-old which Larson and Hill (9) listed were: incomplete and uneven muscular development; the beginning development of hand-eye coordination; relatively small lungs; rapidly growing heart; a decrease in pulse and respiration; and easily fatigued.

Gesell (4) noted that this age group enjoys throwing, catching, bouncing, and kicking balls. It was also found that they are interested in games which involve tagging, hiding and seeking, and imaginative play.

TESTS OF MOTOR ABILITY AND ACHIEVEMENT

Many of the test batteries that have been devised for first grade children contain tests which were taken from previously constructed batteries for this age group. Other batteries used tests designed for older grade levels and revised and modified them to meet the needs and abilities of lower ages. A summary of these tests and the findings and results which were pertinent to this study are given here.

Jenkins (7) investigated the expected motor achievements of five, six, and seven year olds. Her tests consisted of the thirty-five-yard dash, the fifty-foot hop, beanbag toss for accuracy, baseball throw for distance, soccer kick for distance, baseball throw for accuracy, standing broad jump, running broad jump, and jump and reach. The fifty-foot hop, the running broad jump, and the jump and reach were found to be too difficult for young children. At all age levels the boys were

superior to the girls in the thirty-five-yard dash, the soccer kick for distance, and the baseball throw for distance; whereas the girls were superior in the fifty-foot hop. Differences in achievement were greater between the sexes than between the age levels.

Cowan and Pratt (22) tested children from three to twelve years of age on the hurdle jump. They recorded the highest jump executed in good form. From the test results they concluded that the hurdle jump could be effectively used as an indicator of motor coordination. They noticed a high correlation between age and height of jumps and a low correlation between weight and height of jumps.

In her study of tests measuring the motor abilities of young children, Hartman (27) compared the hurdle jump to tests taken from Jenkins and Carpenter. She used the jump and reach, the standing broad jump, the baseball throw for distance, and the thirty-five-yard dash on boys and girls from forty-nine to seventy-eight months. Hartman, like Jenkins, found the jump and reach to be too difficult for this age group. Upon investigating the results of these tests she discovered that the individual motor profile was quite irregular. It was concluded that the hurdle jump was not a very good predictor of the other motor abilities and that the other tests, when administered singly, appeared to be just as good motor ability indicators as the hurdle jumps.

Seils (35) investigated the relationship between gross motor performance and physical growth measures of primary grade children.

The tests used for measuring gross motor performance included the forty-yard dash, tennis ball throw for distance, standing broad jump, stick test lengthwise, sidestepping, pendulum-controlled striking, and hoop controlled catching tennis balls. The means of the gross motor performance was high for both sexes at each consecutive grade level. He found that there was a low correlation between height, weight, and age and gross motor performance, and that there was some relationship between the gross motor performance of certain skills and physical maturity.

A study on the best procedure for measuring elementary school children's ability to perform the standing broad jump was done by Kane and Meredith. (30) By analyzing the collected data they concluded that twelve trials with continuous motivation were the best number of jumps to use with relatively inexperienced, young children. In the seven-year-old age group they reported that 42 per cent of the boys and 43 per cent of the girls performed their best jump in the ninth through the twelfth trials; whereas only 22 per cent of the boys and 21 per cent of the girls achieved their best jump in the first through the fourth trials.

In a study using boys and girls from the first through eighth grades, Glassow and Kruse (24) eliminated the factor of reaction time by placing the starting and finish line five yards beyond the place where the watch was started and stopped. This delayed starting

of the watch also gave the children time to develop speed. The jumping ability of the children was measured by taking the average of the two best standing broad jumps performed in four tries. They also found that velocity rather than distance was a more valid means of measuring the force employed in a throw. A baseball was used in this test and the children were scored by averaging their best two throws in four trials.

Methods of measuring the achievement of elementary school children in certain fundamental skills were developed by Johnson. (47) His battery consisted of the agility run, the jump and reach test, a batting test, a kicking for accuracy test, and a throwing and catching test. Johnson found that the scores on each of the five tests for both sexes and each grade were reliable and that ". . . the requirements for a P of .01" (47:71) were met by all of the r's. The validity at the first grade level for all of the tests satisfied the requirements for a P of .01 except kicking for boys and jump and reach and batting for girls. The kicking and batting tests met the requirements for a P of .05.

STUDIES CONCERNING LEARNING AND PERFORMANCE

Many investigations have been concerned with how children learn and perform selected motor skills. Some of these studies involved first grade children and contained motor skills which were particularly pertinent to this study.

Dusenberry (23) selected children from three to seven years of age to determine the effect of specific training in learning to throw a ball for distance. A high relationship was found between age and throwing ability. It was also discovered that instruction in throwing for distance was more beneficial to the boys than the girls.

Hicks (28) was interested in the effect practice had on young children's ability to throw a ball at a moving target. This study was administered to children whose ages ranged from two years to six years and six months. Although both groups showed an improvement, the practice group gained more than the non-practice group. The average score of the boys surpassed that of the girls at each age level. "There was evidence of practice effects within each test period as the average of the last five throws was higher than the average of the first five in the series of ten throws." (28:104)

A study was conducted by Miller (33) to investigate the effect instruction had on improving the throwing skills of first grade children. One group played games which involved ball throwing skills while the other group had instructions on how to accurately perform an overhand throw. He found that those boys and girls who received instructions showed slightly greater improvement than those children who had not received instructions. In the instructed group the girls showed greater improvement than the boys.

Using a throwing field marked with distance scale marks, an electric clock, and a camera, Wild (38) was able to describe certain characteristics of the various patterns used in the hard overhand throw by children from two to twelve years of age. The analyzed film showed that regardless of initial velocity or age, when a hard overhand throw was released the ball followed an almost horizontal path. This characteristic was more established in older children's throws, particularly older boys. She found that each age level combined certain feature patterns and that these combinations suggested a typical pattern for body, arm, and whole throw. From the film analysis she was able to clearly define four types of movement used for the whole throw.

Holloway (45) investigated the running, jumping, and throwing skills of first grade children. Since the differences between the means obtained from the various classes was so large, she concluded that the achievement of similar performances by any two groups should not be expected. She also discovered that imitation and motivation played an important role in the skill improvement of first grade children, since most of them made their better scores during their second or third trial.

Wilson (50) used boys and girls from four to twelve years of age in her study. She was concerned with the execution of the standing broad jump, the running broad jump, and the jump and

reach. A careful analysis of films taken during performance determined the most effective angle used in the crouch, take-off, flight, and landing. The results of her study indicated that jumping skills increased with age, and that boys were superior to girls in the three different jumps. Through a careful analysis of the films, she found that the standing broad jump's most important phase was the angle of the take-off. There was little variation in the jumping form used by the different age levels. The main differences pertained to strength and the correct execution of the various phases of a certain jump.

GAMES

Vannier and Foster quite adequately summarized the present existence of games in the following statements:

Although environmental conditions and standards of living change, the urge to play remains a dominant characteristic found in every race and in every country. Geographic location does not alter the original theme or idea, for games are built around age-old urges of running, jumping, hopping, chasing and fleeing, hiding and seeking, hunting, guessing and dodging. One may find hundreds of variations of these themes, with as many different names, but the original theme remains the same. (20)

Some English writers have said that the play element is the most important quality found in games because it contains both skill and chance and is entirely incalculable. These writers found that games allow for flexibility of action and thought which assures the

child of opportunities to enjoy and meet with the unexpected. They noted that games make it possible ". . . to enjoy a relationship with others which is perhaps peculiar to the playing-field." (11:58)

According to Andrews, Saurborn, and Schneider (1) games should provide active physical participation for all children most of the time. They felt that games aid children in acquiring the ability to follow directions, to play and work together, to think for themselves, to manage themselves, to gain control and develop security and agility in using their bodies, to better understand their limitations and strengths, and to enjoy participating in the various physical activities.

Games have been classified in various ways. Probably the easiest and most widely used classification in the primary grades consists of: circle games, small group games, large group games, and simple team games.

Since the circle games offer a limited amount of active physical participation, Halsey and Porter (6) recommended their use primarily at the beginning of the school year. They felt that circle games are beneficial in creating a 'we' feeling in a group and in helping an individual or a new class adjust to group situations. According to Halsey and Porter, the child is offered opportunities for greater activity and for more direct social relationships with a few children through small group games. They believed that children develop greater self-direction

by becoming accustomed to working and playing with other children. Since large group games provide many opportunities for social relationships with a large number of children, their frequent use was encouraged by the authors. It was felt that during these games the child can be taught beginning strategy, respect for the rules, and appreciation of various skills. They also suggested that simple games consisting of two teams could be used as a means of introducing the ideas of group competition and of sides.

MOVEMENT

Halsey defined movement as:

. . . the expressive or 'subjective' side of the program which gives more general training in different manner of movement, and also focuses attention on movement of different parts of the body. (25:33)

Meredith-Jones (32) stated that the term movement is being widely used and that as physical educators it should be our major concern since it is basic to all areas of physical education.

Movement Education

Halverson defined movement education as ". . . education in movement, about movement, and through movement." (44) She also stated that movement education is the result of all of the contributions made to the development of the total individual through movement experiences.

Andrews, Saurborn, and Schneider (1) listed what they considered to be basic beliefs concerning movement education. These beliefs were summarized as follows: Movement experiences can influence learning and stimulate thinking; children can be aided in understanding other people and their own feelings and ideas through movement experiences; creative expression and self-expression can be provided through movement; children can be aided in developing social interaction, common physical skills, and unique activities through movement education; opportunities for competition and cooperation can be provided through movement education; a contribution to fitness development can be made through movement education; through movement children can understand the ways their bodies work; environmental concepts can be clarified for children through movement education; and communication can be expressed through movement.

Tillotson defined movement education as:

. . . that phase of the total educational program which has as its contribution the effective, efficient and expressive movement responses of a thinking, feeling, and sharing human being. (49)

She believed that:

the aim of movement education is to develop an awareness of the self in the physical environment, of the body and its capabilities, and of the elements of movement which will, in turn, contribute to the understandings, basic knowledges, and physical skills of every child in every class. (49)

She has further stated that the main objectives of movement education are:

To encourage each child to find his own efficient, expressive and effective patterns of movement in everyday skills and in physical education activities.

To provide, through experimentation, analysis and discussion, opportunity for the development of a working movement vocabulary.

To provide opportunities for solving movement problems which are presented in the form of comments or questions which require movement response for final solution.

To provide thought-provoking experiences for children who are participating in a movement setting.

To interrelate all activities of physical education and everyday skills with a common denominator: movement.

To meet the needs of each child for daily success and satisfaction.

To give each child opportunity for inventive activity that solves a given problem.

To allow each child to progress at his own rate of development each class period.

To provide opportunity for each child to be a contributing member of a group, thus gaining in group approval and self-confidence.

To help each child grow in self-direction.

To increase awareness of the joy of moving.

To provide daily problems which encourage vigorous movement, challenge motor development and provide for creativity of response. (49)

She believed that the aim and objectives of movement education are best achieved by using the problem-solving-exploratory teaching method.

Movement Exploration

Halverson defined movement exploration as ". . . a method in the teaching-learning process, not a content area of movement education." (44) She also stated that movement exploration should not be used synonymously with movement education.

Halsey and Porter (6) described movement exploration as problem-solving experiences which are planned, which progress in difficulty, which aid the child in understanding and controlling the various ways his body is capable of moving, and which thus lead to the improvement of many skills. They stated that movement exploration not only develops useful skills, but that it is fun, vigorous, and calls for imagination, problem-solving, and invention. They observed these things when a child in his own way solves a movement problem which has been set by himself, the class, or the teacher. They felt that the problems, which are the main elements of movement exploration, should be based on the movement fundamentals which are found in all areas of physical education.

Tillotson defined movement exploration as ". . . the problem-solving approach through which effective, efficient and expressive human beings develop." (49)

The problem-solving method was interpreted by Prater (34) as being a means to offer the children many opportunities to think and to create for themselves. She encouraged the teacher to pose the problems or set the stage and then let the children experiment and initiate their own movements.

Wilt (21) believed that creativity would occur only if the child has many opportunities to experiment and find the way that is best for him to express an idea. She stated that through creativity and the process of groping for a satisfying answer, the child gains self-knowledge and finds self-realization.

Research

On a thirty-day trip to England in 1955, Halsey (25) observed the children at several schools during their physical education period. The junior school children, which are comparable to our elementary school children, were taught by the principal or the classroom teacher. Their activity consisted of movement exploration using hoops, balls, ropes, and gymnastic apparatus. By observing and asking the teachers questions, Halsey concluded that the English have met their objectives for physical education through movement education. She found that the first objective was to encourage free enterprise in the children. This was accomplished by allowing them to explore and invent various activities they could perform on the apparatus; by letting them solve in their own way

problems created by the teacher; and by allowing them opportunities to explore, create, and demonstrate different qualities and types of movement. Another objective that she reported was individualized experience. The movement education program recognized individual differences by allowing the skilled children to advance rapidly and the slow ones to progress at their own speed. Vigorous physical activity for each child was another of the objectives that Halsey found. This objective was met quite easily since the children are active throughout the period except for brief teaching interruptions. The fourth purpose of the program was to develop skill. Halsey noticed that the children seemed to have very good skills in jumping, ball handling, stunts, and apparatus. The children as well as the teacher introduced variety, thus allowing for progression to more difficult problems and skills without boredom. Another purpose was to unifiably develop the children by using integrated experiences. The last objective, which the English teachers seemed to take for granted, and which was quite successfully accomplished, was recreation.

By working and experimenting with children through the problem-solving-movement exploration method, Tillotson (36) developed seven steps which she felt could be used as guidelines in movement exploration. These steps consisted of the following: presenting a problem which required a movement response, exploring the problem, guiding

and helping individuals solve this problem, exploring the problem again, resting while discussing various responses to the problem, and perfecting and demonstrating the final solutions.

Barrett (42) also studied movement exploration as a teaching method. She recommended the following six stages: statement of the problem, initial exploration of the problem, selection or choosing responses which apply to the problem, classification or redefining and exploring the problem, selection of final movement patterns to be perfected, and practice and perfection of the final movement pattern.

By using a movement training method, which is similar to movement exploration, Foster (43) taught gymnastics to upper elementary children. From the results of questionnaires issued to the classroom teachers, he found that through movement training there is greater opportunity for developing concomitant learnings, creative ability, cooperation, confidence, originality, initiative, achievement, imagination, experimentation, and exploration. He also concluded that movement training produces a means of communication and a sense of accomplishment. Movement training was found to cater to the development and needs of each student. The activities which he used as the basis of his study are the movements and natural activities of children. These included such things as twisting, running, climbing, jumping, hanging, pulling, heaving, stretching, and rolling. He also found that movement training encourages an individual to develop his potential ability and to progress to his maximum capabilities.

In a study comparing the effectiveness of two teaching methods, Howard (46) dealt with the ball handling skills of third grade students. Ball handling skills involved in basketball and softball were taught to the control groups by the traditional method of explanation, demonstration, practice, and lead-up games. The experimental groups were taught the same skills through a movement exploration approach. She found that when skill performance is the only testing criterion used, neither teaching method is more effective than the other.

Vitalone (37) did a study of movement education with first grade children. He was interested in studying the effectiveness of an in-service training program in movement education for classroom teachers. He was also concerned with the effect a movement education program had on the performance of selected skills and the development of certain behavior traits. Vitalone taught the movement education classes once a week for twenty-four weeks and the teachers who had received in-service training taught them on the remaining days. The control classes had a regular physical education program. The classroom teachers rated the children on their ability to perform certain physical skills and on the occurrence of certain behavior traits before and after the experiment. By comparing the results of the data Vitalone found that the behavior of the children in the movement education groups had more desirable than undesirable changes than the children in the control groups. The results of the rating scales

on physical skill performance showed that the movement classes made greater improvement in skill performance and acquired more new skills than the control groups.

Kenzie (48) was interested in comparing the effectiveness of two teaching methods, conventional and movement exploration, in teaching selected motor activities to first grade children during a school year. She also compared the effectiveness of a physical education teacher with that of classroom teachers in teaching these selected skills. A physical education teacher taught two experimental classes which met twice a week for thirty-minute periods. One of these classes was taught by the conventional method and the other was taught by the movement exploration method. The classroom teachers, using the conventional method, taught the two control classes which met once a week for a twenty-minute period. The children in both groups were given two pre-tests and post-tests on the thirty-yard dash, the standing broad jump, and the overarm throw for distance. By using the analysis of covariance design on her test data, she found that there was no significant difference in the effectiveness of the two teaching methods on any of the skills. She also discovered that the physical education teacher was more effective than the classroom teacher in teaching the skills involved in jumping and throwing.

From the studies reviewed the writer concluded that many tests have been developed which successfully measure selected

motor skills of first grade children. From the literature reviewed it was concluded that there has been very little research using movement exploration as a teaching method. Since movement exploration is a relatively new teaching method in physical education on this continent, it was thought that more work needed to be done comparing this method with other methods of teaching physical activities.

method, a games approach or a movement exploration approach, was more effective in teaching selected motor skills to first grade children over a four-week period.

PILOT STUDY

Following a conference with Mr. Herbert Vaughan, principal of Curry School of the University of North Carolina at Greensboro, North Carolina, and with Miss Elizabeth Avent, it was arranged for the writer to perform a pilot study with Miss Avent's first grade class.

The pilot pre-test and post-test were administered February 5 and February 11, 1955, respectively. The purposes of these tests were to: (1) determine how many trials to use on the standing broad jump; (2) establish the length of time required to administer the tests; (3) develop a rotation system which would facilitate the administration of the tests; (4) provide practice for the test administrators; and (5) establish reliability for the batting machine.

CHAPTER IV

PROCEDURE

The purpose of this study was to determine which teaching method, a games approach or a movement exploration approach, was more effective in teaching selected motor skills to first grade children over a four-week period.

PILOT STUDY

Following a conference with Mr. Herbert Vaughan, principal of Curry School of the University of North Carolina at Greensboro, North Carolina, and with Miss Elizabeth Avent, it was arranged for the writer to perform a pilot study with Miss Avent's first grade class.

The pilot pre-test and post-test were administered February 5 and February 11, 1965, respectively. The purposes of these tests were to: (1) determine how many trials to use on the standing broad jump; (2) establish the length of time required to administer the tests; (3) develop a rotation system which would facilitate the administration of the tests; (4) provide practice for the test administrators; and (5) establish reliability for the batting machine.

The following tests were used: Johnson's throwing and catching test and kicking test for accuracy (47); the standing broad jump, which consisted of twelve trials as recommended by Kane and Meredith (30); Johnson's batting test (47) which was modified; and the agility run as described by Johnson (47) with the starting and finish line placed five feet beyond the place where the watch was started and stopped. This delayed starting of the watch was a modification of the five yards which was suggested by Glassow and Kruse. (24)

Since the Tigrett Industries had discontinued making the Batter-up Kit and had no available information on the machine, it was necessary to modify the Johnson batting test. The writer constructed a batting machine by dismantling an Easy Ironer and turning it on end. A four-foot piece of steel was mounted across the top and perpendicular to the revolving cylinder. A half of a door spring was attached to the piece of steel. A nylon cord was tied to the spring, and a plastic softball was attached to the other end of the cord. A picture of the machine may be found in the appendix. The ball made approximately six revolutions per minute in a counter-clockwise direction. Since most first graders have not had enough practice in striking skills to develop a preferred side, it was felt that this would have no effect on their scores. A reliability coefficient of .63 was obtained by correlating the odd and even trials and using the Spearman-Brown Prophecy Formula.

The results of the pilot tests showed that the children were not able to hit the throwing targets from the last two squares. Since these squares did not function, they were eliminated from the test.

It was also found that the children did not remain interested in the kicking test. Most of their scores appeared to be the result of chance rather than skill. Because of these observations and the length of time and amount of space required to administer the test, it was eliminated from the study.

It was found that each child's turn at bat required approximately two minutes and thirty seconds. Since some of the groups contained sixteen children who had to be tested in thirty minutes, the two practice swings were eliminated.

The results of the standing broad jump agreed with the Kane and Meredith (30) study in which the highest percentage of children attained their best jumps in the last four trials. In the pilot test it was found that 57 per cent of the boys and girls performed their best jump in the ninth through the twelfth trials. Only 24 per cent of the children achieved their best jump in the first through the fourth trials. Consequently, twelve trials were considered necessary in this study.

During the pilot tests it was found that some stations moved more slowly than others. In order to better equalize the time that each skill test required, two standing broad jump stations and two throwing and catching stations were established.

The pilot study, which took place February 8 through February 11, provided practice for the writer in the movement exploration approach. From this study she was able to determine the type of questions to which the children most readily responded. She was also able to establish approximately how much material could be covered in one period and how long the children could be expected to work on one problem.

SELECTION OF SUBJECTS

The schools selected for this study were Claxton School and Proximity School, Greensboro, North Carolina. The writer had conferences with the principals and first grade teachers from each of the schools and explained the purpose and procedures of the study. It was decided that each class would meet for thirty minutes on Monday, Tuesday, Wednesday, and Friday. The classes at Claxton School were to meet in the mornings and those at Proximity School in the afternoons. Arrangements were also made for the writer to observe the classes prior to the beginning of the study.

The classes were randomly assigned to one of the teaching methods by rolling a die. The 10:30 and 12:30 classes were assigned to the experimental or movement exploration method, and the 10:00 and 1:00 classes were assigned to the control or games approach method. There were fifty-nine children in the experimental group

and sixty-one in the control group, making a total of one hundred and twenty subjects.

SEQUENCE OF STUDY

The pre-test was administered to each class on February 15 and February 16, 1965. Approximately sixteen children from each class were tested each day. Five of these children were sent to the batting station, five to the throwing and catching stations, and six to the running station. All of the children rotated from the running station to the standing broad jump stations in order to avoid fatiguing the children before they ran. Under the guidance of the test administrators, each child rotated individually from station to station until he had performed all of the tests. The administrators at each station, who were the same as those who had administered the pilot tests, encouraged the children to do their best prior to each trial. Directions and scoring for each of the tests may be found in the appendix.

The general objectives of the teaching unit were to improve each child's skill in running, throwing and catching, jumping, and striking. These general objectives and the specific objectives for each lesson, which may be found in the appendix, were the same for both the experimental and the control groups.

Each class was taught a total of sixteen lessons. Four lessons were devoted to each of the four general objectives. The experimental classes were taught these skills through a movement

exploration method, and the control classes were taught by a demonstration, explanation, practice, and games method. Daily lesson plans for both groups may be found in the appendix. The writer helped children in both groups who were having difficulty accomplishing a given task or performing a certain skill.

The outdoor areas used during this study were approximately the same at each of the schools. They consisted of a cement basketball court and a large grassy area with no natural boundaries. The grassy area at Proximity School was smaller and more level than the one at Claxton School. This made it easier for the Proximity School children to remain within the set boundaries.

The classrooms at one of the schools were quite large, and it was possible for the entire class or at least one half of the class to participate at one time. Since the classrooms at the other school were smaller, only one half and sometimes one fourth of the class was able to participate in the activities which required more space. The groups were continuously rotated on those days when only a part of a class could participate. Those children who were not actively participating watched and were encouraged to think about the skills their partners were performing.

The weather during this study was not very conducive to outdoor activities. The rain and cold weather made it necessary to teach eight lessons in the classroom at one school and eleven at the other school. Since there was an experimental and a control

group at each of the schools, it was felt that none of the above mentioned factors affected the results of this study.

In the experimental group the children watched and discussed the movements of a child who was performing the skill well. Individuals who were having difficulty were asked questions such as: Do your arms help you jump farther? How do they help you? What do your legs do to help you jump farther? How can you keep the ball from bouncing before it reaches your partner? What helps you catch the ball? What do your fingers and hands do? Do your arms help you run faster and change directions quicker? How do they help? What does your body do when you are running? Does this help you run faster? How can you place your hands so that you can swing the bat harder? Do your feet help you swing the bat? What do they do? All of the children were encouraged to explore different ways of performing skills in order that they might find the movement pattern that was best for them.

The children in the control group were given demonstrations and explanations of how to perform the skills correctly. Individual form was corrected by demonstrating and saying such things as: Use your arms when you jump. Bend your knees more. Throw the ball harder. Place your hands nearer the bottom of the ball and push up. Close your fingers around the ball when you catch it. Use your arms and lean forward a little when you run. Place your hands close together on the bat and put your right hand on the top.

Transfer your weight to the forward foot when you swing. Each of the games used with the control group was explained and demonstrated before the children were allowed to begin.

The post-test was administered to each of the classes on March 18 and March 19, 1965. These tests were administered by the same people and in the same manner as the pre-test. The children who were absent during the pre-test or the post-test and those who missed four or more lessons were eliminated from the study. During the post-test one of the boys did not have time to perform at the jumping station, and he was absent the next day. All of his other scores were used. The same procedure was used with a boy who missed the batting post-test. The total number of subjects used in jumping and batting was one hundred and four, and the number of subjects used in running and throwing and catching was one hundred and five.

STATISTICAL TREATMENT

The analysis of covariance was the statistical tool used to evaluate the data of this experiment. By adjusting the means through an arithmetical process this method determined where the significant difference between the two groups was located.

CHAPTER V

ANALYSIS OF DATA

The purpose of this study was to compare the effectiveness of two teaching methods, a movement exploration approach and a games approach, in teaching selected motor skills to first grade children.

Each class was randomly assigned to the experimental or the control group by rolling a die. Since the analysis of covariance provides for an adjustment between the initial and the final scores, the groups were not matched or equated. Pre-test and post-test scores yielded measures of the adjusting and dependent variables, respectively. The classes were given a pre-test, the conditions were imposed, and a post-test was administered. In this chapter the analysis of the data for each of the four motor skills for both groups will be discussed on the basis of the main analysis of covariance. When the main analysis of covariance was significant, the adjusted sample means and tests of nonadditivity will be discussed.

Running

One of the assumptions of the covariance design is that there is a significant correlation between the dependent variable and the

adjusting variable. Therefore, a test of significance of regression was made and the correlation was found to be significant at the one per cent level. This justified the use of the analysis of covariance.

Table I shows that the main analysis of covariance yielded an F value of 44.88. This exceeded the criterion value of F and the null hypothesis was rejected at the one per cent level of significance. The rejection of the null hypothesis meant that the apparent treatment effects were significantly different. Tests of nonadditivity of the homogeneity of the sample correlations and the sample variances (Table II) showed that the treatment effects were constant and additive for both groups.

Table III shows that the experimental group had an adjusted sample mean of 8.09. The adjusted sample mean of the control group was 8.86. In running, the smaller adjusted sample mean shows the greater improvement.

Batting

The test of significance of regression of the dependent and the adjusting variables resulted in an F value which was less than the criterion value of F. Therefore, it was necessary to accept the null hypothesis. Since there was no significant correlation between the dependent variable and the adjusting variable, the analysis of covariance was discarded. An analysis of variance, which may be seen in Table IV, was performed on the dependent

TABLE I

ANALYSIS OF COVARIANCE OF DATA ON THE AGILITY RUN

Component of Variability	SS	df	V	F	F _C
Treatment Effect	10.77	1	10.77	44.88*	6.90
Error	24.78	102	.24		
Total	35.55	103			

*Significant at better than the one per cent level.

TABLE II

TESTS OF NONADDITIVITY

	F	F _C
Sample Correlations	2.42	5.18
Sample Variances	1.32	1.76

TABLE III

ADJUSTING OF THE SAMPLE MEANS FOR THE AGILITY RUN

Groups	N	M_x	M_y	M_{xy} (adjusted)
Control	52	9.13	8.85	8.86
Experimental	53	9.32	8.72	8.09*
Total	105	9.23		

*Indicates the group which showed the greatest improvement.

TABLE IV

ANALYSIS OF VARIANCE OF DATA ON THE BATTING TEST

Component of Variability	SS	df	V	F	F_c
Apparent treatment effect	3.37	1	3.37	1.45	3.94
Estimate of Error	235.51	101	2.33		
Total	238.88	102			

variable. This analysis also failed to produce a significant F value, and statistical treatment of the data was discontinued.

The reliability coefficient of the batting test was lowered to .44 when the two practice swings were eliminated. This could have been a factor in the results of the test scores. Ten points were possible on the batting test. Upon examining the raw scores, it was found that the means on the pre-test and the post-test for both groups ranged between 7.5 and 8.0. Since these means were so high, it might be assumed that the test was too easy and did not differentiate between the subjects.

Jumping

The test of significance of regression of the dependent and the adjusting variables yielded an F value which was large enough to reject the null hypothesis at the one per cent level of significance. This justified the use of the analysis of covariance.

In the main analysis of covariance, which is shown in Table V, an F value of 5.40 was obtained. This exceeded the criterion value of F and the null hypothesis, which states that there is no difference other than that caused by sampling variation, was rejected at the five per cent level. It was, therefore, assumed that the differences were produced by the treatment effects. Both tests of nonadditivity (Table VI) showed that the treatment effects were constant and additive for both groups.

TABLE V
ANALYSIS OF COVARIANCE OF DATA
ON THE STANDING BROAD JUMP

Component of Variability	SS	df	V	F	F _c
Treatment	83.50	1	83.50	5.40*	3.94
Error	1560.72	101	15.45		
Total	1644.22	102			

*Significant at the five per cent level.

TABLE VI
TESTS OF NONADDITIVITY

	F	F _c
Sample Correlations	1.71	5.18
Sample Variances	1.12	1.76

Table VII shows that the experimental group had an adjusted sample mean of 50.96. The control group's adjusted sample mean was 47.98. The differences, which were apparently caused by treatment effects were in favor of the experimental group.

Throwing and Catching

The test of significance of regression on the dependent and adjusting variables yielded an F value which was significant at the one per cent level. This rejection of the null hypothesis justified the use of the main analysis of covariance.

Table VIII shows that the main analysis of covariance produced an F value of .66. Since the criterion value of F at the five per cent level of significance was 3.94, the null hypothesis was accepted. The writer concluded that neither teaching method was superior to the other.

DISCUSSION OF THE RESULTS

Since there was an experimental and a control group at each school, the writer felt that both groups were equally affected by weather conditions, classroom facilities, and wearing apparel.

Within the limits of this study it was found that a movement exploration approach is apparently more effective than a games approach in teaching running skills to first grade children. This difference was significant at better than the one per cent level.

TABLE VII

ADJUSTING OF THE SAMPLE MEANS FOR
THE STANDING BROAD JUMP

Groups	N	M_x	M_y	M_{xy} (adjusted)
Control	51	49.53	50.45	49.78
Experimental	53	47.98	50.96	51.47*
Total	104	48.65		

*Indicates the group which showed the largest improvement.

TABLE VIII

ANALYSIS OF COVARIANCE OF DATA
ON THE THROWING AND CATCHING TEST

Component of Variability	SS	df	V	F	F_c
Treatment	8.90	1	8.90	.66	3.94
Error	1381.46	102	13.54		
Total	1390.36	103			

Kenzie (48) reported that there was no statistically significant difference between a conventional method and a movement exploration method in teaching running skills to first grade children. A conventional method according to Kenzie is ". . . teacher centered, with emphasis on telling and showing the children what to do and how to do it." (48:iv) This lack of agreement might have been caused by the fact that Kenzie used the thirty-yard dash to measure running skill, whereas in this study the agility run was used. It might be assumed that the agility run measured things other than speed. It is possible that teaching running skills by a movement exploration method is more effective than a games approach when used for a relatively short period of time, or during the initial stages of learning, but that the two methods are equally effective when used throughout the school year. The zig zag run, which was used in this study, might have created more interest and been more appealing to the first grade child than the dash which Kenzie used.

Although the writer recognized that first grade children are limited in their hand-eye coordination, the successful performances of the children in the pilot study on the batting test led the writer to pursue the effects of practice and instruction in further developing this coordination. Seils (35) used a pendulum-controlled device in a study to measure the striking ability of primary grade children. He reported that out of a possible ten points, first grade children had a mean of approximately 4.5. Seils found a reliability of .70 on his

striking test, whereas Johnson (47) found a reliability of .59 for first grade girls and .44 for first grade boys. The reliability of the striking test used in this study yielded a reliability coefficient of .44 for boys and girls when ten trials were given. The reliability which Seils reported included all three grades which might account for its being higher than that found by Johnson and the writer of this study. The relatively low reliability reported in these studies might be interpreted that while first grade children may have a certain amount of success in striking skills, they are not always consistent in this ability. Upon inspecting the test results in this study a very small change in the scores was found for either group. This could indicate a lack of readiness of learning batting skills at this age level. This lack of change could also have been caused by the fact that the children were fairly successful on the batting machine during the pre-test because of fascination, chance, or the slow revolution of the ball.

Within the limitations of this study it was found that a movement exploration method was more effective than a games approach method in teaching jumping skills to first grade children. Kenzie (48) found no statistically significant difference between the effectiveness of a movement exploration method and a conventional method of teaching jumping skills to first grade children. It might be assumed, as was previously mentioned in the discussion of running, that a movement exploration method is a more effective teaching method with this age

group over a relatively short period of time, or during the initial stages of learning, but that over a longer period of time the two methods will be equally effective. The fact that Kenzie used four trials to measure the jumping ability of her subjects, whereas the writer used twelve trials, might also account for the differences in the findings.

The analysis of the data of the throwing and catching test showed no statistically significant difference between the two methods used in this study in teaching throwing and catching skills to first grade children. These results were in agreement with those reported by Kenzie. (48) She concluded that a conventional method and a movement exploration method were equally effective in teaching throwing skills to first grade children. Howard (46) also found no statistically significant difference between a traditional method and a movement exploration method of teaching ball handling skills to third grade children. She further concluded that "the traditional method of teaching based on explanation and demonstration appears to be more effective when used in block units instead of distributed units." (46:64) It might, therefore, be assumed that both of these methods are equally effective in teaching throwing and catching skills to primary grade school children.

CHAPTER VI

SUMMARY AND CONCLUSIONS

This study was conducted to compare the effectiveness of two teaching methods, the movement exploration approach and the games approach, in teaching selected motor skills to first grade children.

SUMMARY

The subjects consisted of fifty-seven children in two first grade classes from Proximity School and sixty-one children in two first grade classes from Claxton School in Greensboro, North Carolina. The classes were randomly assigned to one of the teaching methods by rolling a die. At each school one class was in the experimental group and the other class was in the control group.

The skills selected for this study were running, jumping, throwing and catching, and striking. The pre-test and post-test, which measured these skills, consisted of modifications of Johnson's Agility Run, Batting Test, and Throwing and Catching Test (47) and the standing broad jump as suggested by Kane and Meredith. (30).

Each class was taught a total of sixteen lessons with four lessons devoted to each of the selected skills. The experimental

classes were taught the skills through a movement exploration method which consisted of asking questions and posing problems that usually required movement responses. The skills were taught to the control classes through demonstrations, explanations, and practice. The practice generally consisted of games which involved these skills.

The results of the pre-test and post-test for each skill were statistically treated by means of the analysis of covariance. The following results were obtained:

1. Running showed a statistically significant difference in favor of the experimental group.
2. There was no statistically significant difference found between the two groups in batting.
3. The results of jumping were statistically significant in favor of the experimental group.
4. Throwing and catching showed no statistically significant difference for either group.

CONCLUSIONS

Within the limits of this study the following conclusions were made:

1. The movement exploration approach is apparently more effective than the games approach in teaching running and jumping skills to first grade children.

2. Neither method is more effective in teaching throwing and catching or striking skills to first grade children.
3. The movement exploration approach can produce statistically significant differences in running and jumping over a relatively short period of time.
4. Twelve trials should be used in the standing broad jump to determine the jumping ability of this age group.

BIBLIOGRAPHY

BIBLIOGRAPHY

1. Andrews, George, William Matthews, and Elva Schneider. Physical Education for Young Boys and Girls. Boston: Allyn and Unwin, Inc., 1963. 174 pp.
2. Brown, Gertrude and Elizabeth Conway. Theory in Physical Education. New York: Holt, Rinehart and Company, 1953. 244 pp.
3. Dorn, Leonhart. Das Kind. (Frankfurt, Germany): Wilhelm Lampert Publishers, 1954. 47 pp.
4. Gosnell, Arnold and Frances L. De. Child Development, Part II, The Child from Five to Ten. New York: Harper and Brothers Publishers, 1928. 413 pp.
5. Hallock, Elizabeth. Imagery and Invention in Physical Education. Philadelphia: Lea and Febiger, 1964. 47 pp.
6. _____, and Lorena Parker. Physical Education for Children. New York: Holt, Rinehart and Company, Inc., 1963. 449 pp.
7. Jenkins, Lily Marie. A Comparative Study of Motor Achievements of Children of Five, Six, and Seven Years of Age. Teachers College, Columbia University. Contributions to Education, No. 49. New York: Teachers College, Columbia University, 1930. 94 pp.
8. Johnson, Cyril D. Physical Education for Children. New York: Philosophical Library, Inc., 1934. 129 pp.
9. Larson, Leonard A., and Lucille V. Will. Physical Education in the Elementary School. New York: Henry Holt and Company, 1937. 376 pp.
10. Miller, A. A. Age 7: The Key. New York: E. P. Dutton and Company, Inc., 1955. 104 pp.

BIBLIOGRAPHY

A. BOOKS

1. Andrews, Gladys, Jeannette Saurborn, and Elsa Schneider. Physical Education for Today's Boys and Girls. Boston: Allyn and Bacon, Inc., 1960. 431 pp.
2. Brown, Camille and Rosalind Cassidy. Theory in Physical Education. Philadelphia: Lea and Febiger, 1963. 244 pp.
3. Diem, Liselott. Who Can Frankfort, Germany: Wilhelm Limpert Publishers, 1962. 47 pp.
4. Gesell, Arnold and Frances L. Ilg. Child Development. Part II. The Child from Five to Ten. New York: Harper and Brothers Publishers, 1946. 475 pp.
5. Halsey, Elizabeth. Inquiry and Invention in Physical Education. Philadelphia: Lea and Febiger, 1964. 119 pp.
6. _____, and Lorena Porter. Physical Education for Children. New York: Holt, Rinehart and Winston, Inc., 1963. 449 pp.
7. Jenkins, Lulu Marie. A Comparative Study of Motor Achievements of Children of Five, Six, and Seven Years of Age. Teachers College, Columbia University. Contributions to Education No. 414. New York: Teachers College, Columbia University, 1930. 54 pp.
8. Joynson, Cyril D. Physical Education for Children. New York: Philosophical Library, Inc., 1954. 215 pp.
9. Larson, Leonard A., and Lucille F. Hill. Physical Education in the Elementary School. New York: Henry Holt and Company, 1957. 376 pp.
10. Milne, A. A. Now We Are Six. New York: E. P. Dutton and Company, Inc., 1955. 104 pp.

11. The Ministry of Education and the Central Office of Information. Physical Education in the Primary School. Part One. Moving and Growing. London: Her Majesty's Stationery Office, 1952. 79 pp.
12. The Ministry of Education and the Central Office of Information. Physical Education in the Primary School. Part Two. Planning the Programme. London: Her Majesty's Stationery Office, 1953. 72 pp.
13. Neilson, N. P., and Winifred Van Hagen. Physical Education for Elementary Schools. Revised Edition. New York: The Ronald Press Company, 1956. 537 pp.
14. Owen, D. B. Handbook of Statistical Tables. Reading, Massachusetts: Addison-Wesley Publishing Company, Inc., 1962. 580 pp.
15. Ray, William S. An Introduction to Experimental Design. New York: The Macmillan Company, 1960. 254 pp.
16. _____. Statistics in Psychological Research. New York: The Macmillan Company, 1962. 303 pp.
17. Richardson, Hazel A. Games for the Elementary School Grades. Minneapolis: Burgess Publishing Company, 1951. 145 pp.
18. Salt, E. Benton, Grace I. Fox, and B. K. Stevens. Teaching Physical Education in the Elementary School. Second Edition. New York: The Ronald Press Company, 1960. 460 pp.
19. Van Hagen, Winifred, Genevieve Dexter, and Jesse F. Williams. Physical Education in the Elementary School. Sacramento, California: California State Department of Education, 1951. 1008 pp.
20. Vannier, Maryhelen and Mildred Foster. Teaching Physical Education in Elementary Schools. Philadelphia: W. B. Saunders Company, 1963. 406 pp.
21. Wilt, Miriam E. Creativity in the Elementary School. New York: Appleton-Century-Crofts, Inc., 1959. 72 pp.

B. PERIODICALS

22. Cowan, Edwina A. and Bertha M. Pratt. "The Hurdle Jump as a Developmental and Diagnostic Test of Motor Coordination for Children from Three to Twelve Years of Age," Child Development, Vol. 5, No. 2 (June, 1934), pp. 107-121.
23. Dusenberry, Lois. "A Study of the Effects of Training in Ball Throwing by Children Ages Three to Seven," Research Quarterly, Vol. 23, No. 1 (March, 1952), pp. 9-14.
24. Glassow, Ruth B. and Pauline Kruse. "Motor Performance of Girls Age 6 to 14 Years," Research Quarterly, Vol. 31, No. 3 (October, 1960), pp. 426-433.
25. Halsey, Elizabeth. "English Children Invent Activities," Journal of Health, Physical Education, and Recreation, Vol. 26, No. 9 (December, 1955), pp. 32-34, 39.
26. _____. "First Step Toward Fitness," Journal of Health Physical Education, and Recreation, Vol. 29, No. 8 (November, 1958), pp. 40-41, 68.
27. Hartman, Doris M. "The Hurdle Jump as a Measure of the Motor Proficiency of Young Children," Child Development, Vol. 14, No. 4 (December, 1943), pp. 201-211.
28. Hicks, J. Allan. "The Acquisition of Motor Skills in Young Children," Child Development, Vol. 1, No. 2 (June, 1930), pp. 90-105.
29. Hussey, Delia and Ruth Murray. "Anglo-American Workshop in Elementary Physical Education," Journal of Health, Physical Education, and Recreation, Vol. 27, No. 8 (November, 1956), pp. 22-23.
30. Kane, Robert J., and Howard V. Meredith. "Ability in Standing Broad Jump of Elementary School Children Seven, Nine, and Eleven Years of Age," Research Quarterly, Vol. 23, No. 2 (May, 1952), pp. 198-208.
31. Ludwig, Elizabeth A. "Basic Movement Education in England," Journal of Health, Physical Education, and Recreation, Vol. 32, No. 9 (December, 1961), pp. 18-19.

32. Meredith-Jones, Betty. "Understanding Movement," Journal of Health, Physical Education, and Recreation, Vol. 26, No. 5 (May-June, 1955), pp. 14, 59.
33. Miller, James L. "Effect of Instruction on Development of Throwing for Accuracy of First Grade Children," Research Quarterly, Vol. 28, No. 2 (May, 1957), pp. 132-137.
34. Prater, Betty L. "Improving the Product," Journal of Health, Physical Education, and Recreation, Vol. 32, No. 4 (April, 1961), pp. 24, 25.
35. Seils, Leroy G. "The Relationship between Measures of Physical Growth and Gross Motor Performance of Primary Grade School Children," Research Quarterly, Vol. 22, No. 2 (May, 1951), pp. 244-260.
36. Tillotson, Joan. "The Seven Steps of Movement Exploration," State Journal of the Iowa Association for Health, Physical Education, and Recreation, Winter, 1961.
37. Vitalone, Gabriel E. "Movement Education in Grade One," Physical Education Newsletter, Vol. 9, Letter 9 (January 1, 1965).
38. Wild, Monica R. "The Behavior Pattern of Throwing and Some Observations Concerning Its Course of Development in Children," Research Quarterly, Vol. 9, No. 3 (October, 1938), pp. 20-24.

C. PAMPHLETS

39. Detroit Public Schools. Exploration of Basic Movements in Physical Education. Detroit: Duplicating Department of the Detroit Public Schools, 1960. 21 pp.
40. Rowen, Betty. Learning Through Movement. New York: Bureau of Publications Teachers College, Columbia University, 1963. 77 pp.
41. Shipley, Ferne and Ethelouise Carpenter. Freedom to Move. Washington, D. C.: National Education Association, Department of Elementary-Kindergarten-Nursery Education, 1962. 31 pp.

D. UNPUBLISHED MATERIALS

42. Barrett, Kate Ross. "An Analysis of Exploration as a Method for Teaching Movement." Unpublished Master's Thesis, University of Wisconsin, Madison, Wisconsin, 1964.
43. Foster, Matthew John. "A Suggested Methodology in Functional Movement Training for Boys' Gymnastics in Elementary Schools." Master's Thesis, Springfield College, Springfield, Massachusetts, 1962. 185 pp. (Micro card)
44. Halverson, L. E. "Movement Education - Some Fundamental Concepts." Paper read at the Midwest District Meeting of the American Association for Health, Physical Education, and Recreation, Detroit, Michigan, April 11, 1964.
45. Holloway, Marion Davis. "A Study of Performance of First Grade Children in Three Selected Motor Skills." Unpublished Master's Thesis, Illinois State Normal University, Normal, Illinois, 1948. 40 pp.
46. Howard, Shirley Ann. "A Comparison of Two Methods of Teaching Ball Handling Skills to Third Grade Students." Doctoral Dissertation, State University of Iowa, Iowa City, Iowa, 1960. 104 pp. (Micro card)
47. Johnson, Robert D. "Measurement of Achievement in Fundamental Skills of Elementary School Children." Doctoral Dissertation, State University of Iowa, Iowa City, Iowa, 1960. 81 pp. (Micro card)
48. Kenzie, Leota Pauline. "A Comparison of the Effectiveness of Two Methods of Instruction on the Performance of First Grade Children in Selected Motor Activities." Unpublished Master's Thesis, The University of Wisconsin, Madison, 1963.
49. Tillotson, Joan. "Movement Education Defined." March, 1964. (Mimeographed.)
50. Wilson, Marjorie U. "Development of Jumping Skill in Children." Unpublished Doctoral Dissertation, State University of Iowa, Iowa City, Iowa, 1945. 97 pp.

APPENDIX A

LESSON PLANS

Lesson One

OBJECTIVES:

1. To increase an awareness of space, an awareness of others, and an awareness of boundaries.
2. To increase an understanding of how different parts of the body affect running.

APPENDIX A

Control Group

A. Brownies and Fairies (6:285)

1. Review meaning of tag.
2. Emphasize quick starts, fast running, good dodging, and trying to tag more than one person.
3. Stress spreading out.

B. Wind and Flowers (4:142-143)

1. Same as Brownies and Fairies.
2. Emphasize not running until the correct flower is chosen.

Experimental Group

A. Exploration and exploration of space (6:179)

1. Find a space.
2. Show me your space.

APPENDIX A

LESSON PLANS

Lesson One

OBJECTIVES:

1. To increase an awareness of space, an awareness of others, and an awareness of boundaries.
2. To increase an understanding of how different parts of the body affect running.

Control Group

A. Brownies and Fairies (6:286)

1. Review meaning of tag.
2. Emphasize quick starts, fast running, good dodging, and trying to tag more than one person.
3. Stress spreading out.

B. Wind and Flowers (18:142-143)

1. Same as Brownies and Fairies
2. Emphasize not running until the correct flower is guessed.

Experimental Group

A. Explanation and exploration of space (6:179)

1. Find a space.
2. Show me your space.

3. Point to another space. Be sure that no one else is pointing to this space. Can you walk to this space without touching anyone?
4. Point to another space. Can you run to this space without touching anyone? Stop when you reach this space.

B. Exploration of running.

1. How high can you be when you are running? How low? How wide?
2. How loudly can you run? How quietly? How fast? How slowly?
3. What can your feet do while you are running? Your arms?
4. Can you run in a way that no one else can?

LESSON TWO

OBJECTIVES:

1. To improve throwing and catching skills.
 - a. To increase an understanding of how to throw the ball in a variety of ways.
 - b. To improve accuracy in throwing.
 - c. To increase an understanding of how to catch a ball.
2. To improve hand-eye coordination.

Control Group

A. Hot Potato (1:114)

1. Children in one circle with two large balls.
2. Emphasize passing balls in the same direction.
3. Stress passing balls to the nearest child.
4. Emphasize closing fingers around ball.

B. Ball Goes Round and Round (1:110)

1. Same as Hot Potato.
2. Explanation, demonstration, and practice of bounce pass, overhand pass, underhand pass, and one hand pass.

Experimental Group

A. Working individually with small balls. (6:247)

1. How many ways can you bounce and catch the ball?
Can you catch the ball with both hands? One hand?
The other hand? How high can you bounce the ball
and catch it? How low?
2. Can you walk and still bounce and catch the ball?

B. Working with a partner.

1. How many different ways can you throw the ball to your partner? Can you throw it so he can catch it? Can you bounce the ball to your partner? How low can you throw the ball so your partner can still catch it? How high?
2. What helps you catch the ball? How do they help?

A. Follow the leader (6:32)

1. Running, walking, hopping, jumping, galloping, and skipping to various parts of the playground.

B. Jump the Brook (11:17)

1. Running and jumping - taking off from one foot and landing on the other; taking off from one foot and landing on two; taking off from two feet and landing on two feet.

2. Encourage jumping farther each time.

3. Emphasize bending knees and using arms.

C. Hopscotch Group

1. Find a space. (8:42)

1. How can you move from one space to another? Can you do things other than running and walking? What is a skip? A hop? A jump? A gallop?

2. Hopping properly.

1. What do your legs do when you jump?
2. Does your body help you jump? How does it help?
3. How lightly can you land? Can you jump high and land softly? What do you do to land softly?

LESSON THREE

OBJECTIVES:

1. To increase a knowledge and understanding of various movements the body can make.
2. To increase an understanding of what the feet and legs can do while jumping.

Control Group

A. Follow the Leader (6:292)

1. Running, walking, hopping, jumping, galloping, and skipping to various parts of the playground.

B. Jump the Brook (1:139)

1. Running and jumping - taking off from one foot and landing on the other; taking off from one foot and landing on two; taking off from two feet and landing on two feet.
2. Encourage jumping farther each time.
3. Emphasize bending knees and using arms.

Experimental Group

A. Find a space. (6:182)

1. How can you move from one space to another? Can you do things other than running and walking? What is a skip? A hop? A jump? A gallop?

B. Exploring jumping.

1. What do your legs do when you jump?
2. Does your body help you jump? How does it help?
3. How lightly can you land? Can you jump high and still land softly? What do you do to land softly? Loudly?

LESSON FOUR

OBJECTIVES:

1. To improve hand-eye coordination.
 - a. To increase an understanding of how to bounce and catch a ball with one hand.
 - b. To increase an understanding of how to bounce and hit a ball with one hand.
2. To increase an understanding of how to bounce and hit a ball in the desired direction.

Control Group

- A. Children working individually with one small ball to each child.
 1. Explanation, demonstration, and practice in bouncing the ball and catching it with two hands, one hand, and the other hand.
 2. Stress bouncing the ball near the feet and at the correct height.
- B. Children working in pairs with one small ball to each couple.
 1. Explanation, demonstration, and practice in bouncing and hitting the ball to partner.
 2. Stress bouncing the ball near the feet and at the correct height; hitting on the side of the ball; turning side to partner when hitting the ball; using a full arm swing to hit the ball; and hitting the ball with the palm of the hand.

Experimental Group

- A. Working individually with small balls.
 1. How many ways can you bounce and catch the ball?
Can you catch the ball with two hands? One hand?
The other hand?

B. Working in pairs with one small ball to each couple.

1. Can you bounce the ball and hit it to your partner?
Where do you bounce the ball so you can hit it?
2. Can you hit the ball so that it does not bounce
before it gets to your partner? Where do you hit
the ball so that it will do this?
3. How many times can you and your partner hit and
catch the ball without missing?

Physical Goals

A. Hop

1. Bouncing and jumping in place.

B. Jump the Hoop (1:15)

1. Bouncing and jumping - taking off from one foot
and landing on the other.
2. Standing and jumping - taking off from two feet
and landing on two feet.
3. Bouncing knees, using arms, and jumping
out rather than up.
4. Encourage jumping farther each time.
5. Stress falling forward.

Conceptual Goals

A. Find a space.

1. Show me your space.
2. What are some things you can do in this space?

B. Distribution of jumping.

1. How lightly can you land? What do you do to
land lightly?
2. How far can you jump? What helps you jump?
How do they help you?

LESSON FIVE

OBJECTIVES:

1. To increase an understanding of how the legs, arms, and body help in performing the standing broad jump for distance.
2. To increase an understanding of why the body sometimes falls backwards in the landing.

Control Group

A. Trip

1. Running and jumping in place.

B. Jump the Brook (1:139)

1. Running and jumping - taking off from one foot and landing on the other.
2. Standing and jumping - taking off from two feet and landing on two feet.
3. Stress bending knees, using arms, and jumping out rather than up.
4. Encourage jumping farther each time.
5. Stress falling forward

Experimental Group

A. Find a space.

1. Show me your space.
2. What are some things you can do in this space?

B. Exploration of jumping.

1. How lightly can you land? What do you do to land lightly?
2. How far can you jump? What helps you jump? How do they help you?

3. Can you jump farther by jumping up or out?

4. Why do you sometimes fall backwards when you jump?

C. Throw Words. (36, 39)

1. Popcorn. Frog. Jack-in-the box.

Circle Toss

A. Circle Toss Ball (1-113)

1. Children in groups of three with one large ball to each group.
2. Practice bounce pass, chest pass, underhand pass, one hand pass, and overhead pass.
3. Encourage catching the ball and accuracy in throwing.
4. Continue change of leaders within each group.

Experimental Group

A. Working Individually with large balls. (16-17)

1. How many ways can you bounce the ball and catch it? How high can you bounce the ball and catch it? How low?
2. Can you bounce and catch the ball while walking? While running?
3. Can you throw the ball and catch it? How high can you throw it? How low?
4. Can you throw and catch the ball while walking? While running?

LESSON SIX

OBJECTIVES:

1. To improve throwing and catching skills.
 - a. To improve skill in throwing the ball in a variety of ways.
 - b. To improve skill in catching the ball at different levels.
2. To improve hand-eye coordination.

Control Group

A. Circle Toss Ball (1:113)

1. Children in groups of three with one large ball to each group.
2. Practice bounce pass, chest pass, underhand pass, one hand pass, and overhead pass.
3. Encourage catching the ball and accuracy in throwing.
4. Continuous change of leaders within each group.

Experimental Group

A. Working individually with large balls. (6:247)

1. How many ways can you bounce the ball and catch it? How high can you bounce the ball and catch it? How low?
2. Can you bounce and catch the ball while walking? While running?
3. Can you throw the ball and catch it? How high can you throw it? How low?
4. Can you throw and catch the ball while walking? While running?

LESSON SEVEN

OBJECTIVES:

1. To improve hand-eye coordination.
2. To improve striking skills.
 - a. To increase an understanding of how to hit the ball with one hand.
 - b. To increase an understanding of how to hit the ball with a stick.

Control Group

- A. Several long ropes are strung across the room. Heavy duty thread with wool practice badminton balls attached are tied to the long ropes at five-foot intervals.
 1. Half of class practices while other half watches.
 2. Explanation, demonstration, and practice hitting ball with hand.
 3. Stress using full arm swing and hitting ball instead of string.
- B. 'Bats' are made from four-inch circumference fir which is cut into lengths of two feet.
 1. Explanation, demonstration, and practice hitting ball with 'bat'.
 2. Emphasize keeping the hands together, using a full swing, and hitting the ball.

Experimental Group

- A. Exploration with hands. (Balls as described in Control Group.)
 1. How many different ways can you hit the ball with one hand? With the other hand? Can you keep your arm straight and hit it? Can you hit the ball with the back of your hand? Your palm? Your fist?

2. How hard can you hit the ball? How lightly?

3. Can you hit the ball in different places? What happens when you hit the bottom of the ball? The middle?

B. Exploration with sticks. ('Bats' as described in Control Group.)

1. Can you hit the ball with the 'bat'?

2. How many ways can you hold the 'bat' and still hit the ball? Can you spread your hands apart on the 'bat'? Can you put them close together? What happens when you put the other hand on top?

Control Group

A. Circle Dodgeball Drill

1. The two large balls.
2. Emphasize keeping the other hand on the ball, throwing the ball in a straight path, good follow-up and accurate throwing.
3. Players who are hit change places with the person who hit them.
4. Stress hitting to person behind the waist.

Experimental Group

A. Working in pairs with one large ball in each hand.

1. How can you throw the ball to your partner? How you bounce the ball to your partner? Can you throw the ball to your partner without touching it with the floor? How many ways can you throw the ball with one hand? Two hands?
2. What helps you catch the ball? How do you catch?

LESSON EIGHT

OBJECTIVES:

1. To improve throwing and catching ability.
 - a. To improve skill in throwing the ball in a variety of ways.
 - b. To improve accuracy in throwing.
 - c. To improve skill of staying in one place to throw and catch the ball.
 - d. To improve skill in catching the ball at different levels.
2. To improve hand-eye coordination.

Control Group

A. Circle Dodgeball (1:157)

1. Use two large balls.
2. Emphasize staying in place to catch and throw ball; throwing the ball at a particular person; good catching and accurate throwing.
3. Players who are hit change places with the person who hits them.
4. Stress hitting the person below the waist.

Experimental Group

- A. Working in pairs with one large ball to each couple.
 1. How can you throw the ball to your partner? Can you bounce the ball to your partner? Can you throw the ball to your partner without letting it touch the floor? How many ways can you throw the ball with one hand? Two hands?
 2. What helps you catch the ball? How do they help?

LESSON NINE

OBJECTIVES:

1. To improve skill in jumping in different directions and at different levels.
2. To increase an understanding of the function of various parts of the body when jumping in different directions.

Control Group

A. Zoo Keeper (1:101)

1. Use animals which hop or jump.
2. Encourage quick decisions as to which animal to call and calling more than one animal.
3. Emphasize good jumping and hopping.

B. Monkey See Monkey Does (1:94)

1. Emphasize doing antics which require jumping or hopping.
2. Emphasize good jumping and hopping.

Experimental Group

A. Exploration of jumping.

1. Find a line and see how far away from it you can jump. Turn around and see if you can jump beyond your line.
2. What helps you jump? How do they help you?
3. How many different directions can you jump? Can you combine these directions? What do you do when you jump in different directions?

B. Throw Words. (36, 39)

1. Bunny Rabbit. Ball. Cricket. Bull frog.

LESSON TEN

OBJECTIVES:

1. To increase an awareness of space, an awareness of others, and an awareness of boundaries.
2. To improve running skills.
 - a. To increase an understanding of how to use the arms, legs, and body effectively.
 - b. To improve skills in using arms, legs, and body effectively.
3. To improve ability to make fast stops.

Control Group

A. Crows and Cranes (A-167)

1. Emphasize stopping on whistle.
2. Encourage tagging more than one person.
3. Stress quick starts, fast running, good dodging, and changes of direction.
4. Stress correct use of various parts of the body while running.

Experimental Group

A. Exploration of Running (6:179)

1. Find a space. Point to another space and walk to it without touching anyone. Can you point to another space and run to it without touching anyone? Stop when you reach your space.
2. What helps you run? How do they help? What does your body do to help?

B. Exploration of running and stopping.

1. Run as fast as you can and stop when the whistle blows.

LESSON PLAN

2. What did your feet do to make you stop? Where was your weight?
3. Can you think of another way to stop? Do you stop faster this way? How fast can you stop?

Class Group

Working in pairs with one 'bat' and small ball to each couple.

1. Explanation, demonstration, and practice bouncing the ball and hitting it with one hand holding the 'bat' and with two hands holding the 'bat'.
2. Explanation, demonstration, and practice throwing the ball up and hitting it with one hand holding the 'bat' and with two hands holding the 'bat'.
3. Stress keeping hands together on 'bat' and using a full swing.
4. Encourage good catching and throwing by partners who is retrieving the ball.
5. Frequent change in roles to bat.

Experimental Group

Working in pairs with one 'bat' and ball to each couple.

1. How many ways can you hit the ball with the 'bat'? Can you bounce the ball and hit it? Where do you bounce the ball? How high do you bounce the ball? Can you throw the ball and hit it with your 'bat'? Where do you throw the ball?

LESSON ELEVEN

OBJECTIVES:

1. To improve hand-eye coordination.
2. To improve striking skills.
 - a. To increase an understanding of where to bounce or throw the ball and hit it with a stick.
 - b. To increase skill in hitting the ball with a stick.

Control Group

- A. Working in pairs with one 'bat' and small ball to each couple.
 1. Explanation, demonstration, and practice bouncing the ball and hitting it with one hand holding the 'bat' and with two hands holding the 'bat'.
 2. Explanation, demonstration, and practice throwing the ball up and hitting it with one hand holding the 'bat' and with two hands holding the 'bat'.
 3. Stress keeping hands together on 'bat' and using a full swing.
 4. Encourage good catching and throwing by partner who is retrieving the ball.
 5. Frequent changes in turns to bat.

Experimental Group

- A. Working in pairs with one 'bat' and ball to each couple.
 1. How many ways can you hit the ball with the 'bat'? Can you bounce the ball and hit it? Where do you bounce the ball? How high do you bounce the ball? Can you throw the ball and hit it with your 'bat'? Where do you throw the ball.

2. Can you hold the 'bat' with one hand and hit the ball? With two hands? Where do you place your hands on the 'bat'? Can you change your hands and still hit the ball?

OBJECTIVES:

1. To increase an awareness of space, an awareness of others, and an awareness of boundaries.
2. To improve running skills.
 - a. To increase an understanding of how to change directions.
 - b. To improve skills of changing directions.

Control Group

A. Run, Rabbit, Run (6:302)

1. Stress good dodging, quick changes of direction, and fast running.
2. Encourage tagging more than one person.
3. Emphasize running back to hut quickly to avoid being tagged.
4. Encourage foxes to 'hide' and encourage the 'head rabbit' to lead the other rabbits away from the hut.
5. Frequent change of rabbits and foxes.

Experimental Group

A. Exploration of running and changing directions.

1. Can you walk and change directions when the whistle blows? Can you run and change directions when the whistle blows? How do you change directions? What do your feet do? Your arms? Your legs? Your body?
2. How quickly can you change directions?

B. Exploration of running and stopping.

1. How quickly can you stop when the whistle blows?
Can you stop another way?

C. Exploration of running, dodging, and changing directions.

1. Try to tag as many people as you can, but do not let anyone tag you. How did you avoid being tagged? How many people did you tag? How many people were not tagged? Repeat.

Control Group

- A. Partners facing each other with one large ball to each couple.
 1. Emphasize correct form in using the overhand pass, underhand pass, chest pass, and one hand pass.
 2. Stress good coaching and accuracy in throwing.
 3. Vary distance between partners.

Experimental Group

- A. Working in pairs with one large ball to each couple.
 1. How many ways can you throw the ball to your partner? Can you throw the ball to your partner without letting it touch the floor? Can you throw the ball with one hand? Two hands?
 2. Can you get farther away from your partner and still throw the ball to him? How many ways can you throw the ball when you are this far apart? Can your feet help you throw the ball? What do they do?

LESSON THIRTEEN

OBJECTIVES:

1. To improve throwing and catching skills at varying distances.
 - a. To improve accuracy in throwing.
 - b. To improve skill in throwing the ball in various ways and at greater distances.
 - c. To improve skill in catching the ball at different levels and at varying distances.
2. To improve hand-eye coordination.

Control Group

- A. Partners facing each other with one large ball to each couple.
 1. Emphasize correct form in using the overhead pass, underhand pass, chest pass, and one hand pass.
 2. Stress good catching and accuracy in throwing.
 3. Vary distance between partners.

Experimental Group

- A. Working in pairs with one large ball to each couple.
 1. How many ways can you throw the ball to your partner? Can you throw the ball to your partner without letting it touch the floor? Can you throw the ball with one hand? Two hands?
 2. Can you get farther away from your partner and still throw the ball to him? How many ways can you throw the ball when you are this far apart? Can your feet help you throw the ball? What do they do?

LESSON FOURTEEN

OBJECTIVES:

1. To improve hand-eye coordination.
2. To improve striking ability.
 - a. To improve ability to hit a moving ball with one hand.
 - b. To improve ability to hit a moving ball with a stick.
 - c. To improve form in hitting the ball with one hand and with a stick.

Control Group

A. Practice wool badminton balls attached to fishing line.

1. Working with a partner with one ball hanging between each couple.
2. Practice hitting the ball back and forth to one another.
3. Stress using a full arm swing and hitting the ball with the palm of the hand.

B. 'Bats'

1. One 'bat' and ball to each couple.
2. Practice hitting the ball with the 'bat'.
3. Emphasize using a full swing, keeping the hands together, having the correct hand on top, and hitting the ball.

Experimental Group (Balls same as for Control Group)

A. Working in pairs with one wool badminton ball to each couple.

1. Can you and your partner hit the ball back and forth to each other? Can you hit the ball if your partner throws it to you? Can you hit the ball with one hand? The other hand? The back of your hand? Your fist? The palm of your hand?

B. One 'bat' and ball to each couple.

1. Can you hit the ball with the 'bat'? Where do you place your hands on the 'bat'? How many different ways can you swing the 'bat'? Can you swing it with one hand? With two?
2. Do your feet help you swing the 'bat'? How do they help?
3. How hard can you hit the ball? How lightly? Can you hit the ball instead of the string? How did you do this?

Second Group

A. Two Deep (8:05)

1. Have a small group of children walk through the game.
2. Stress 'ducking in' right or left of a person.
3. Constantly call 'reversal' and emphasize quick change of direction.
4. Stress quick change of direction when person is tagged.

B. Bird Catcher (8:25)

1. Birds become Bird Catcher when tagged.
2. Emphasize good ducking, fast changing, and tagging more than one person.

Experimental Group

A. Experimentation of running and changing directions

1. How fast can you run and change directions when the whistle blows? Can you turn and run in the opposite direction? What did you do? How can you make a smaller circle when you turn?

LESSON FIFTEEN

OBJECTIVES:

1. To increase an awareness of space, an awareness of others, and an awareness of boundaries.
2. To improve running skills.
 - a. To increase an understanding of how to change directions.
 - b. To improve skills of changing directions quickly.

Control Group

A. Two Deep (1:106)

1. Have a small group of children walk through the game.
2. Stress 'ducking in' right in front of a person.
3. Constantly call 'reverse' and emphasize quick change of direction.
4. Stress quick change of direction when person is tagged.

B. Bird Catcher (6:284)

1. Birds become Bird Catchers when tagged.
2. Emphasize good dodging, fast running, and tagging more than one person.

Experimental Group

A. Exploration of running and changing directions

1. How fast can you run and change directions when the whistle blows? Can you turn and run in the opposite direction? What did you do? How can you make a smaller circle when you turn?

B. Exploration of running, dodging, and changing directions.

1. How many people can you tag without letting anyone tag you? How many people were not tagged? What did you do to avoid being tagged?
2. See if you can tag more people this time, but do not let anyone tag you.

C. Exploration of running with a partner.

1. How fast can you run while holding your partner's hand? Can you hold both hands and run? Can you run faster by yourself or with a partner?
2. In how many different directions can you and your partner run? What did you do when you changed directions?

1. Stress using different kinds of jumps.

2. Encourage jumping across the circle in as few jumps as possible.

3. Jump the Brook (1:17)

1. Standing and jumping - taking off and landing on two feet.

2. Stress bending knees, using arms, and jumping out rather than up.

3. Emphasize falling forward.

4. Encourage jumping at wider places each time.

Experimental Group

A. Two strips of construction paper to each child.

1. How can you jump over these pieces of paper? Can you hold them in your hand and jump them?

2. How can you put them on the floor and jump them? How far apart can you place them?

2. Two more strips - LESSON SIXTEEN to each child.

OBJECTIVES:

1. To increase skill of jumping in various ways.
2. To increase skill in using the arms, legs, and body correctly
3. To increase skill in landing with the weight forward.
4. To increase length of jumps.

Control Group

A. Trip

B. ING Game (1:149)

1. Stress using different kinds of jumps.
2. Encourage jumping across the circle in as few jumps as possible.

C. Jump the Brook (1:139)

1. Standing and jumping - taking off and landing on two feet.
2. Stress bending knees, using arms, and jumping out rather than up.
3. Emphasize falling forward.
4. Encourage jumping at wider place each time.

Experimental Group

A. Two strips of construction paper to each child.

1. How can you jump over these pieces of paper? Can you hold them in your hand and jump them?
2. How can you put them on the floor and jump them? How far apart can you place them?

- B. Two more strips of construction paper to each child.
1. How many patterns can you make with these strips?
Can you jump over your teepee? Your ladder?
Your line?
 2. How many ways can you jump over these patterns?

APPENDIX B

DIRECTIONS AND SCORING OF TESTS

AGILETY RUN (47, 48)

Directions:

The administrator leads each group of children around the chairs while giving the following directions. Stand behind the starting line. On the command Go, run to either side of the first chair,

to the other side of the second chair, touch the 'X' on the wall and run back around the chairs and across the finish line. Try to run as fast as you can.

Scoring:

The watch is not started until the child crosses the starting line and it is stopped when he recrosses this line. Each child has three trials which are recorded to the nearest tenth of a second. His score is the best time. If a child fails to follow instructions on any part of the test, it is not counted as one of his trials.

THROWING AND CATCHING TEST (47)

Directions:

Stand in your square and try to hit the 'X' on the wall. Try to stay in your square and catch the ball before it touches the floor.

APPENDIX B

DIRECTIONS AND SCORING OF TESTS

AGILITY RUN (47, 24)

Directions:

The administrator leads each group of children around the chairs while giving the following directions. Stand behind the starting line. On the command Go, run to either side of the first chair, to the other side of the second chair, etc. Touch the 'X' on the wall and run back around the chairs and across the finish line. Try to run as fast as you can.

Scoring:

The watch is not started until the child crosses the second line and it is stopped when he recrosses this line. Each child has three trials which are recorded to the nearest tenth of a second. His score is the best time. If a child fails to follow instructions on any part of the test, it is not counted as one of his trials.

THROWING AND CATCHING TEST (47)

Directions:

Stand in your square and try to hit the 'X' on the wall. Try to stay in your square and catch the ball before it touches the floor.

You may leave your square to catch the ball if you have to do so. It will be easier if you throw the ball underhanded.

Scoring:

Each child has two practice trials and three trials which are recorded at each of the three squares. Two points are recorded if he throws the ball in or on the smaller square. One point is scored if he throws the ball in or on the larger square. Two points are recorded if he remains in the square and catches the ball before it touches the floor. One point is recorded if he steps on or outside his square and catches the ball before it touches the floor.

BATTING TEST (47)

Directions:

The administrator places each child in position and gives the following instructions. Try to hit the ball each time it goes past you. We just want to see if you can hit the ball, not how hard you can hit it.

Scoring:

Each child has ten trials. One point is scored each time he hits the ball. A zero is recorded each time he misses the ball or hits the string.

STANDING BROAD JUMP (30)

Directions:

Place your toes on the edge of the board and jump as far as

you can. If you feel you are going to fall, try to fall forward. Try to jump farther each time.

Scoring:

Each child has twelve trials. Each jump is recorded to the nearest inch. His score is the best jump. If a child steps too far over the beat board or if he fails to take-off on both feet, it is not counted as one of his trials.

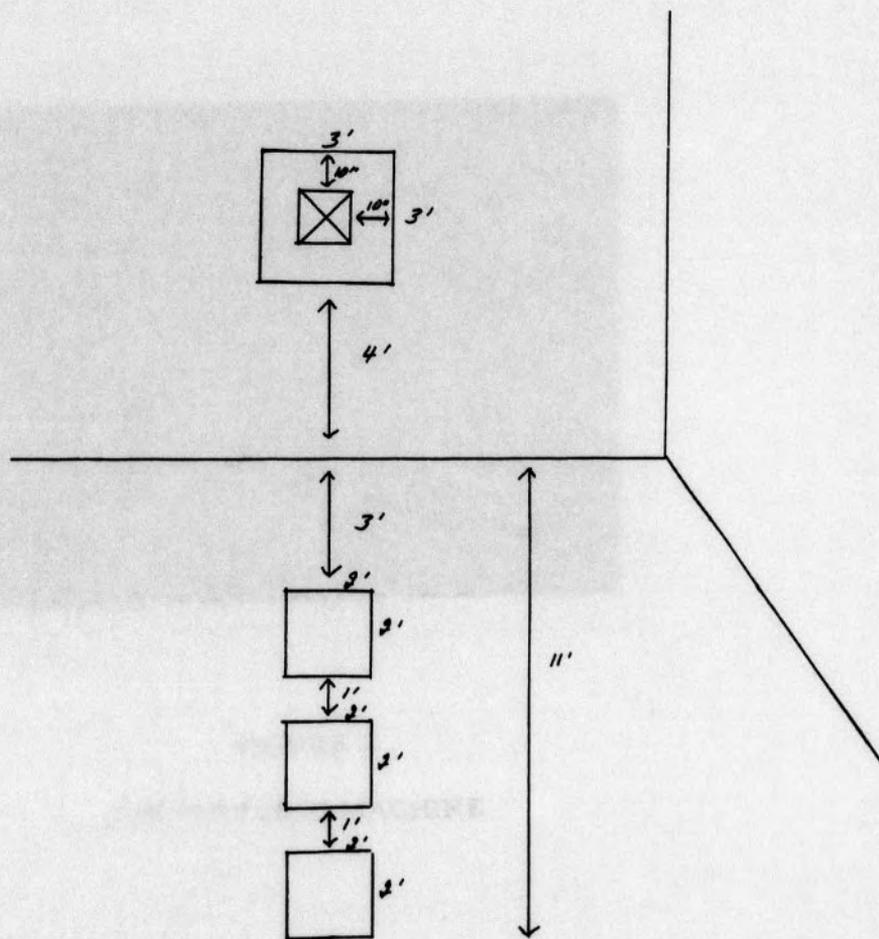


FIGURE I

THE THROWING AND CATCHING TEST

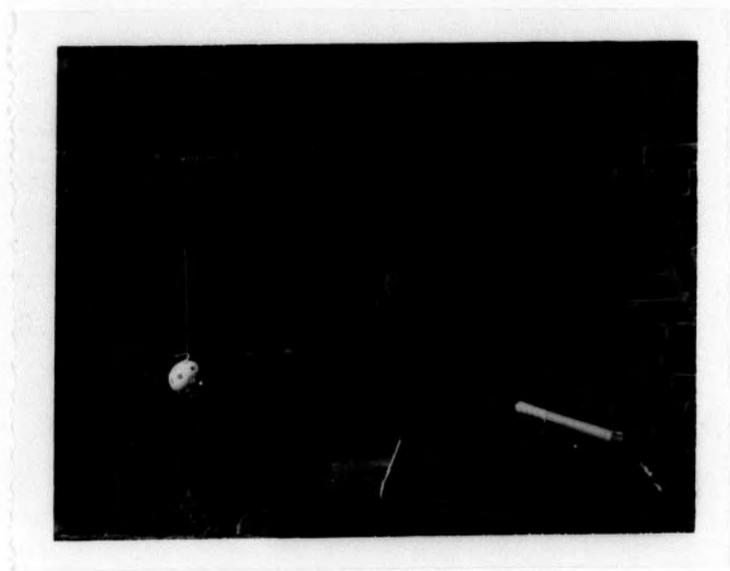


FIGURE 2

THE BATTING MACHINE