BALL, Beverly Ann, 1928-
THE PRIMARY SCHOOL CHILD'S SELF-CONCEPT:
THE INFLUENCE OF THE CHILD-CENTERED PROGRAM
OF PHYSICAL EDUCATION.

The Ohio State University, Ph.D., 1967
Education, physical

University Microfilms, Inc., Ann Arbor, Michigan
THE PRIMARY SCHOOL CHILD'S SELF-CONCEPT: THE INFLUENCE OF THE CHILD-CENTERED PROGRAM OF PHYSICAL EDUCATION

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

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* * * * * *

The Ohio State University
1967

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ACKNOWLEDGMENTS

The development of the study design and document text was possible with the helpful counsel of Professors Margaret A. Mordy, dissertation adviser, Naomi Allenbaugh, and G. G. Thompson. The writer is also grateful to Professors Lewis A. Hess and Bruce L. Bennett who served on the dissertation committee. Gratitude is expressed to Edward L. Fox who gave much time to advise the investigator in statistical details and to Professor John E. Horrocks for his permission for the inclusion of lecture content.

Many of the mechanics involved in this study were possible through the contributions of David Tanzi for statistical computations, the assistance of Susan Antle and Charlene Scott in motor skill measurement, and the art illustrations of Mona Jones.

The study would have been impossible without the cooperation of the following teaching personnel and second grade children of the South-Western Public School System. James Duff, principal of Prairie Lincoln School, the experimental building, deserves much credit for his acceptance of this study and for his cooperation in order that this four month project could be included in the child’s curriculum. The writer is especially indebted to Alice Springs, building secretary,
and to the experimental teaching staff, Edna McCowan, Ruth Furman, Marilyn Jende, and Maxine Waltman. Their genuine interest and support was shown by their encouragement in the research phases, their flexibility in curriculum revision and in making necessary changes in classroom schedules.

Eugene Wenger, principal of the J. C. Sommer School, the control building, is credited with his clearance for research testing made possible by his necessary schedule provisions. Gratitude is expressed to his secretary, Marie White, and the control school teaching personnel, Julia Greenwood, Ann Llewellyn, Linda Crawford, and Donna Green.
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Second Field: Child Growth and Development. Professor George G. Thompson
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CHAPTER I
INTRODUCTION

Physical education is important in the life of the young child. Not only the experience itself but the setting in which the motor learning takes place has significant influence on the child's development. The young child's motor activities are his occupation. The manner in which his motor attempts are approached and received by others is of paramount importance to him. Jersild,¹ as a result of his studies, believes that the amount of success people have in physical education activities and play has an important part in the formation of the positive self-evaluation.

Motor learnings are the infant's and young child's first learnings. His first environmental perceptions are through motor activities. Kephart² has stated that this primacy of motor learning is vital so that the child can develop generalizations from such motor experience.


A physical education climate allowing emphasis of the basic elements of a subject, and consequently the better understanding of movement fundamentals may enhance not only his mode of movement but his primary mental habits as well. The perception of movement elements is facilitated through exploratory type activities. The motor learning environment may contribute to the development of the necessary cognitive thought processes.

Mosston supports the above ideas and summarizes the aim of this study and the type of methodology under focus:

Teaching physical education is a road toward creative physical responses, toward enhancement of self-concept in a changing environment, and toward clearer use of the thinking abilities.3

Need for this Study

The Schneider survey4 reveals that developmental programs of physical education for the elementary school child are inadequate or non-existent in many school systems in the United States. These insufficient conditions are prevalent in grades four through six but even more pronounced in the primary grade levels.


It is the primary school child who needs competent guidance in an adequate daily physical education program. He is moving and growing, and the climate should facilitate his development to its fullest. "... Children are eager to play better, but they need help and practice, just as they do in other segments of the curriculum..."5 Success in movement skills, his occupation, can influence his self-concept or self adjustment.

Should this setting for important motor skill learning and its adjacent developmental phases (social, emotional, and mental) be left to chance or left unplanned in a recess-type setting? Or should the otherwise spontaneous movement experience take place in a daily organized program under adult guidance? In the latter situation the individual's level of positive self image, an index of self adjustment, can be heightened by successful movement experiences. In this movement climate, it is possible that a condition which fosters success and the feeling of self worth may be more fully developed in these crucial and early years of childhood. Research frequently leaves this projection to supposition thus, it has become the focus of this study.

There is a search for a better and more clearly defined discipline in physical education. Much of the literature endorses the use of exploration in movement and the innovative process. Are such curriculum

projections justified in this reach for a discipline? The movement exploration experience for children could be a means of enhancing the self-concept. If minor studies such as this provide definitive results, might not our professional projections in these relatively unexplored possibilities have a more secure basis?

Statement of the Problem

Few attempts have been made to assess personality change as a result of a well planned physical education program. The purpose of this study is to attempt to produce definitive information concerning claims that a program of physical education facilitates an adequate social adjustment of the participant. The study will involve the following.

1. To investigate the relationship between second grade children's self adjustment test mean scores to the child-centered program of physical education and to the self adjustment test mean scores of children receiving physical education in the setting which is predominantly recess. This investigation will be done by means of standardized personality tests.

2. To ascertain, should there be rise or decline in test mean scores, which score direction is more closely related to the daily child-centered program of physical education or to the limited guidance in a setting which is predominately recess.

3. To investigate the relationship between self adjustment scores and measured level of performance in selected objective motor skill tests.
4. To study the effect of the daily physical education program in the child's play behavior in the recess setting by means of a five-point scale subjective-type teacher rating.

5. To ascertain the child's reaction to play activities in the specified condition to which they have been exposed by means of a three-point rating scale questionnaire.

6. To evaluate the evidence of the cognitive thought process of the experimental subjects in relation to selected basic elements of movement (spacial relationships and force).

**Procedure**

Two experimental and two control groups of subjects will be selected at random. The experimental group subjects will experience the intervening variable of daily physical education instruction. The previous condition, physical education instruction given one day each week, will be held constant at the control school. Subjects in all groups will be pre-and post-tested on self adjustment components by means of a standardized personality test. (See Chapter III for detailed procedure.)

**Hypotheses**

1. There will be no significant difference between the mean scores for the control group and the experimental group on the post-test for personality.
2. There will be no significant difference between the mean scores for the pre-and post-tests for personality for the control group.

3. There will be no significant difference between the mean scores for the pre- and post-tests for personality for the experimental group.

4. There will be no significant difference between teacher rating scores of play behavior for the control and experimental groups.

**Assumptions**

1. Daily physical education should be considered as an important segment of the school curriculum.

2. The less formal program of physical education serves the greater number of young children more effectively than the dogmatic type of instruction.

3. In young childhood, greater emphasis should be placed on individual type of learning pursuits.

4. The status of the child's self-concept or personal adjustment affects his level of social interaction with others.

5. The perception of basic elements of movement can be enhanced through exploratory type of activities.
Operational Definitions

Child-centered program

The program utilizes the process of exploration in order to allow the expression of self. This setting complements the concept of "I," which is in keeping with young childhood. The child-centered approach is based on the premise of the self worth of the individual. Because of the teacher's recognition of individuality, the child assumes a unique position and should be allowed the opportunity to develop to his fullest capacity, commensurate with his age and individual ability. In this respect, the child-centered approach finds its foundation in the principles of child growth and development. The approach accepts and enlarges upon the diversified response of the individual child. This diversified response, the natural fluctuation of behavior, is a basic characteristic in the child's developmental motif throughout his years of growth, whatever the additive developmental dimensions may be.

Self adjustment

The term, self adjustment, used in this study may be defined, in part, by the way in which the individual feels about himself. It is reflected in his feelings of personal security. The following definitions are utilized as assumptions in this research focus on the child's self adjustment.

Thorpe, Clark, and Tiegls believe the following terms comprise the self adjustment level of the individual.
The following components are not names for so called general traits. They are, rather, names for groupings of more or less specific tendencies to feel, think, and act...

1A. Self Reliance—when his overt actions indicate that he can do things independently of others, depend upon himself in various situations, and direct his own activities...

1B. Sense of Personal Worth—when he feels he is well regarded by others, and when he believes that he has average or better than average ability...

1C. Sense of Personal Freedom—when he is permitted to have a reasonable share in the determination of his conduct...

1D. Feeling of Belonging—An individual feels that he belongs when he enjoys, the well-wishes of good friends, and a cordial relationship with people in general...

1E. Withdrawing Tendencies—one who substitutes the joys of a fantasy world for actual successes in real life. Sensitive, lonely, and given to self-concern. Normal adjustment is characterized by reasonable freedom from these tendencies.

1F. Nervous Symptoms—such as loss of appetite, frequent eye strain, inability to sleep, or a tendency to be chronically tired.

Recess

The "recess setting" was the predominant physical education situation for the control group subjects. This setting was characterized by daily free time on the playground, weather conditions permitting. Limited equipment was available for the children to use. The adult supervision was conducted, by and large, with a passive adult role,

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due to the large number of children engaging in recess-type activities simultaneously. The pupil-teacher ratio was nearly one to one hundred.

**Traditional instruction**

Traditional instruction used in conducting this study took place one day each week. Teaching was characterized by the technique of explanation, demonstration, and practice or activity in teacher-directed activities. The program was dominated by traditional type games involving the entire group with little individual activity. At a given time, only one or two children were involved in the game function or objective. The children also engaged in many structured type stunts. Conformity was encouraged by the teacher's imposed restraints on the students by the limitations inherent in the traditional game rules and structured exercises.
CHAPTER II

REVIEW OF THE LITERATURE

The Status of Elementary Physical Education

Physical education, when properly conceived, is a significant force in the education of the young. Physical education is not separate from the education process; it is one vital phase of it, as one tool in the educative process. However, research is needed to substantiate the inclusion of adequate physical education programs in the elementary school curriculum.

It is doubtful if inadequate conditions in physical education programs have been improved since the Schneider National survey\(^1\) of ten years past. The results of that study revealed that of the seventy-seven school systems (twelve thousand school sites) responding to the questionnaires only 23 per cent of grades one through three had the recommended daily instruction period in physical education. Fifty-two per cent of the classroom teachers in all six grades had no assistance from a physical education consultant or specialist.

Although the following research is confined to one state, its conclusions are similar to the previous national study reported. The

Koss survey made in New Jersey has also clearly indicated the need of improved instruction in programs of elementary school physical education. Actual teaching did not always occur and recess was sometimes confused with needed instruction. "... The weakest link of the program was in grades one, two and three."²

The need for improved physical education programs is viewed in more specific terms. Halsey³ indicates that physical education research in exploratory type of activities has barely begun. Of the limited research attempts that have contributed in this relatively un-researched area in elementary physical education, only selected studies are reported by the investigator.

Joan Tillotson,⁴ in her film series on movement education, illustrated how exploratory type activities could be used by children. She applied two components of movement, time and space, in tag games. Tillotson demonstrated teaching techniques that could be used in guiding children in movement exploration with balls, ropes, and other objects. She also utilized problem solving steps in a dance lesson with fifth grade students.

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The following two studies have influenced the investigator to undertake this study direction. The primary purpose was to determine whether personality test mean scores would change more as a result of the daily physical education program than mean score change as a result of the weekly lesson augmented by the free play of the supervised recess period. The content of the daily program was centered in individual exploratory motor acts, in small group activities and was taught by the problem solving method (see Appendix for program).

Norman Cochran used a similar direction in his study with fourth grade students. His experimental variable was the daily program of physical education compared to the control factor involving no instruction in this area. He studied the relationship between daily experience in physical education and intellectual achievement, as well as personal adjustment change. The results of his study indicated only the boys in the experimental group showed significant gain in personal adjustment scores. There was, however, a consistent trend for improved mean scores in personal adjustment for the girls of the same group.

Shirley Howard concentrated on teaching method by comparing the developmental teaching or movement exploration approach to the traditional method of presentation in view of progress made in selected


6Shirley Howard, "A Comparison of Two Methods of Teaching Ball Handling Skills to Third Grade Students" (unpublished Ph.D. dissertation, Department of Physical Education, State University of Iowa, 1960), 111 pp.
ball handling skills. Her study results were not conclusively in favor of either the traditional or developmental method, when skill performance was the only measuring tool for third grade students.

Philosophical Synthesis

This project involves the collaboration or extraction from two major educational areas. The writer's reduction realm or philosophical composite is drawn from these fields.

1. Physical education: the program and methodology are influenced by literature developed by Mosston and the English on the approach of movement exploration.

2. Child growth, development and educational foundations are, for the most part, derived from written work of Arnold Gesell, George G. Thompson, Arthur Jersild, Celia Burns Stendler, and Paul Torrance. These literary contributions have reinforced the writer's interest in the child-centered approach.

The present day events in our society indicate the need of greater and more direct emphasis on individuality. There is need for us to "move from peer evaluation to self-evaluation." The writer's concern may be but an echo of Mosston's comment on the needed type of physical education program. He makes it quite clear that this desirable evolution of the self actualizing student has come through the individual-type process.

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Who is the person manifesting these admirable qualities? He is a free man. It is the free man whose unique individuality is sought and developed. It is the free man whom a free society wishes to produce through its education--education for a society of independent people. Independence implies the ability to make choices among convictions; it connotes the strength to act and pursue the chosen convictions. It requires the courage to be different and to accept the different. Independence requires the ability to interact with others so that they, too, remain independent. Independence means that one can learn to be free--free of physical limitations, oppressive social forces, emotional prisons, and intellectual dogmatism.8

As conceived by the writer, the child-centered approach is based on individuality. With a learning climate facilitating the actualization of these needed conditions as brought forth by Mosston, might not physical education contribute to the desirable development of the young? If education is for real, it will provide for the appropriate environment and will aid in the development of this status: the child who is healthy, who possesses an inquiring mind, the fraternal tended and the self-directed child.

Paul Torrance has stated:

Democracies collapse only when they fail to use intelligent, imaginative methods for solving their problems . . . , we must ask what kind of children they are becoming. What kind of thinking do they do? How resourceful are they? Are they becoming more responsible? Are they learning to give thoughtful explanations of the things they do and see? Do they believe their own ideas to be of value? Can they share ideas and opinions with others? Do they relate similar experiences together in order to draw conclusions? Do they do some thinking for themselves?9

8Ibid., pp. 15-17.

The projections of Mosston and Torrance have served as philosophical guidelines for this study. The subjects' responses to program evaluation questions 21, 22, 25, and 26 illustrate, in part, how this philosophy has been utilized in the child-centered daily program (see Chapter IV). When given the opportunity, the child can profit by behaving as a citizen in a democratic society. When guided by this philosophy, it is probable that physical education would be accepted in its rightful position; that as one of the significant forces in the educative process of our young. Consequently, the substantiation of an adequate daily program of physical education, the efforts to place it in its rightful educative position, is one purpose of this study.

The Child-centered Construct

The child-centered approach is an extraction of the principles of child growth and development. Its foundation stems from the construct of Arnold Gesell. This approach bespeaks the needed individuality on the part of the young child. The diversified response of the child is accepted and encouraged. Response differs in two ways. One child will move in a different way from another child. Also in a short given time and situation, the same child will vary his response or movement if given the opportunity and challenge so to do. This natural fluctuation of behavior is in keeping in the human and especially in the young child.

Arnold Gesell's vivid description serves as theoretical foundation for the concept of diversified response in movement. Response is diversified in that it is subject to spurts and regressions.
The organism of the growing child has comparable ups and downs. It cannot remain in stable balance indefinitely; it may come to relative rest, but then it must again forge ahead. More or less rhythmically it comes into relative equilibrium, passes through disequilibrium, and then returns again to relative equilibrium. This is a dynamic method of development which is of great value in interpreting the child's behavior. We may call it the mechanism of recurrent equilibrium.

This form of disequilibrium is a transitional phase, during which the organism is creating a new ability or achieving a reorientation of some kind. It is a phase of innovation. The child withdraws from his former self as though to gather strength for a forward thrust. But even during the thrust new patterns are being incorporated into the old. A working balance is achieved between the new and the old and presently the organism settles down into a period of relative equilibrium, of assimilation, and consolidation. This period again is temporary, but it is also recurrent for time and again and again, the child forges forward by the three step method of innovation-integration-equilibrium.

Might not the central motif in the British work, Moving and Growing, have been the influence of our own American, Arnold Gesell? This book appears to be the "seed" of the British concept, movement exploration, the essential content of the experimental program used in this study.

The investigator's belief in the philosophy of totality has been influential in making movement exploration the basic content of this experimental program. The philosophy is reinforced by Martin and Stendler in these words. They view the child as a living organism, not

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not a mere collection of parts, but a system of parts that is "organized in structure and coordinated in function." "Whenever we lose sight of the child as a whole, we violate that integrity." 12

Further interpretation of the child has been described by George G. Thompson using six growth trends of motor development. He believes that these directions are helpful in understanding the changing motor patterns especially in the child's first two years of life. The investigator has included three of these growth trends.

1. The trend from large to small muscles--According to this developmental trend the large muscles are the first muscular groups over which the growing child gains coordinated control . . .

2. Bilateral to unilateral trend-- . . . the newborn infant is essentially a symmetrical organism--anatomically, physiologically, and functionally. This functional symmetry is reflected in the essential bilaterality of early motor development. With increasing maturation and infant-cultural interactions, bilaterality in terms of speed, strength, coordination, and personal preference gradually gives way to unilateral preferences and skills.

3. Maximum toward minimum muscular involvement trend . . . overlaps . . . the mass to specific trend, and the trend from large to small muscles. The present trend merely implies that the more immature the child, or the more difficult the task, the greater the muscular involvement on the part of the child, the greater the muscular expenditure of energy, and the greater the amount of cross-purpose muscular involvement . . . 13


Observation indicates these selected trends continue to be manifested in the movement of primary school children of five to eight years of age. The "trace" of these directions is evident in many of their movement sequences. Furthermore, the evidence of this "trace" is stronger in one child than another. This is due to the varying levels and the intensity per se of that level in his development.

Both these principles stated by Thompson and the following ones are helpful in the interpretation of the essence of the child-centered approach. The principles help to substantiate the importance of recognizing individuality, the allowance of diversity among children and the never ending diversity within each child's being. Dr. John E. Horrocks has lectured on these principles to illustrate morphogenesis and the mark of lawful sequences in human behavior. Some of his comments are selected and paraphrased.

The principle of unfolding organization, the individuating fore-reference (the ontogeny or the development of the individual from the embryological view and the phylogenical view--the recapitulation and/or the evolution of the species.

The principle of spiral reincorporation--the direction of the trend that tends to repeat itself--each cycle appears higher and higher, but yet, this directionality is subject to exceptions...

The reciprocal interweaving in the developmental process is illustrated by a periodical dominance, the counter-balanced period. There is vying for dominance of the flexors versus the extensors, of the right and left extremities, etc.

The principle of functional asymmetry--the world is not seen as a direct plane but rather at an angle--there
are monolateral attitudes as well as the choice of right or left hand. In basic neurological terms, the tonic neck reflex illustrates this principle.\textsuperscript{14}

Not all children will respond in the same way to a given direction or command. The previous principles imply that the child's reaction is due to differences in his biological structure, mental capacities, and attitudes. His individuality is also the reflection of contrasting environmental conditions. Exploration in movement allows for the natural differences in young children. Exploratory activities allow for periods of less stable movement patterns due to this reciprocal interweaving. Because this approach is not excessively adult structured, it also permits children to retrace earlier and more infantile movement patterns of less mature level than of the expected norm behavior related to their chronological age. Thus, the needed opportunities for recapitulation tendencies in movement are nurtured.

The principle of optimal tendency . . . the thrust actually for disequalibrium . . .

This principle of self regulatory fluctuation . . . those periods of stability and instability--now the thrust --now the calm, the rest, the homeostasis . . .\textsuperscript{15}

Celia Burns Stendler\textsuperscript{16} gives reason for this stage of "homeostasis," the term originated by Cannon. She believes that the child,

\textsuperscript{14}John E. Horrocks, Lecture context of Psychology 840, second and third lecture sessions, October 1 and 4, 1966 (The Ohio State University, Columbus), by permission of lecturer.

\textsuperscript{15}John E. Horrocks, \textit{ibid.}

while in this temporal state, is striving to achieve some degree of internal consistency. His adjustment to variations of external stimuli is always an attempt to maintain a balanced and steady internal state. In both her written context and lectures, she tends to elaborate on and emphasize "homeostasis" as the predominate stage with the most intensity of all states of the developmental sequence.

Due to Stendler's influence and pointed reference to homeostasis, the investigator favors the less formal type of program of physical education. The child is often pushed in his development by others in his environment. John Anderson has indicated that the adult in our American society tends to project his expectations on the child, in terms of his development. This can happen not only in the home but in the school environment as well, especially when the learning activities are completely teacher directed. In the individual type of learning climate, both the teacher's structuring and peer group pressures are decreased.

Peer pressures are quite possible at this age. Competition with increased critical judgment has been observed with six and seven-year old children under experimental conditions. With the movement exploration climate, the teacher's expectancy of the child's reaction is

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not dogmatic. Thus, in the same class, another child during a period of developmental thrust is given freedom to exercise this optimal tendency in his behavior.

The Physical Education Program

The child-centered program is characterized by movement exploration through individual activity pursuits. The program involves exploration in nonmanipulative skills as forms of locomotion, running, skipping, jumping, etc., manipulative tasks with balls, ropes, bean bags and other objects, free form individual type rhythmic activities and self testing type challenges including simple apparatus feats (see Appendix). Through this exploratory approach, the program nurtures innovative student reactions both in thought and movement. This approach, the invention in learning, is centuries old; it stems from Rousseau's theory which favored self direction on the part of the child rather than teacher domination. Children should think for themselves and draw their own conclusions. In his book, Emile, he brought attention to the needs of the child in physical education activities.

The program used in this study is a pattern of the two British books, Planning the Programme, and a later publication by Bilbrough


and Jones. This program is also described by three American sources, Halsey and Porter, Andrews et al., and the Barrett study. (See Appendix for outline of the lessons included in this study.)

Individuality is encouraged through the teaching approach. This more self directed learning pursuit is child-centered. "... Freedom to express, to explore, to experiment give children opportunities that they can enjoy regardless of size or maturity, and even those with limiting handicaps can discover new ways to move ..."25

Margaret H'Doubler substantiates the need for innovative pursuits in public school education:

... as every child has a right to a box of crayons and some instruction to fundamental principles of drawing ..., whether or not there is any chance of his becoming a professional artist, so every child has a right to know how to achieve control of his body in order that he may use it to the limit of his ability for the expression of his own reaction to life ... 26


"... Almost every child has, to some degree, the imagination that leads to invention. Almost every child has the curiosity that leads to inquiry and discovery."

The program may be described by a statement from Bilbrough and Jones:

The scheme of physical education is based on the child as an individual and upon the needs, the developing physique, the physical ability and the personality of each child. Movement is as individual as the individual child and attempts to force all children to exactly to a common pattern all the time are educationally unsound . . . This emphasis on the individual shows itself in a variety of ways. There is greater readiness to allow scope for personal variations and interpretations of the same activity . . . each child will in time discover that he is capable of performing that movement in many different ways.

The investigator has attempted to teach in a less structured approach thereby allowing individual reactions in gross motor activities. Lessons experienced by the experimental group of subjects have less emphasis on group games and pattern movement through structured exercises than the lesson content for the subjects of the control group (see Appendix).

The writer is in agreement with both Kephart and the British in their belief that the element of game skills should be of secondary

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emphasis. Kephart asserts that more attention should be given to motor pattern development. This is the basis for motor skills and consequently the former should precede the latter. He believes that the allowance for experimentation rather than imitation should result in the awareness of body parts in space and time. The child's awareness of movement patterns can accrue if appropriate challenges are given which will stimulate variety in movement as a means of solving the problems. The British have stated that technique used in games should "develop as an outcome of play, rather than precede it." They believe that games for primary age children are "too heavily influenced by type and manner of adult games . . .

Conformity in adult behavior and skill is increasingly prized in our society. The problem of individuality increases in magnitude with cultural expectations placed upon the child. With this social tendency in mind, the writer favors not only movement exploration but periods of free play itself within the organized program. In this situation with adequate supervision, the child may choose from a variety of activities available at the same time. The writer's opinion finds reinforcement by several authors.

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The adult in our American society tends to project adult values upon the child. The child needs to be left alone and he will structure his own play; he can and will create his own miniature situation in play. 32

Cameron and Pleasance have influenced the writer to include free play in the experimental group program.

We must recognize the need for an element of choice, and it has been found that a policy of self selection in physical activity gives greater satisfaction to the pupil because he can choose the level of work suited to his capacity . . . the child . . . gains in confidence as his knowledge increases . . . 33

The allotment of free play within the organized program is further reinforced by two additional British authors:

Perhaps even more revolutionary is the frequent opportunity provided for the children to choose their own activity and to build on what they are doing by experiment and invention. By these modifications of traditional work it has become possible for individual children to make progress at their own rate. As this principle is generally accepted, no child need feel self-conscious or awkward because of lack of ability or coordination. 34

Free play in the recess setting and free play allotted within the organized program are quite different. The former is less effective than guided free play if the child is to achieve needed growth in the


numerous developmental dimensions. It is possible that play peer pressure begins at this early age. This phenomenon can be intensified when play groups are inadequately supervised, often the situation in the typical recess setting. According to Greenberg, competition with increased critical judgments was manifested with six and seven-year old children under experimental conditions. The child's social status becomes increasingly dependent upon proficiency in gross motor skills. This situation could hinder the development of the adequate self-concept, especially in the poorly coordinated child. The child's need for adult guidance in this area is unfulfilled in most recess type settings.

Movement Exploration and the Self-concept

The writer believes that through individual activities, the child concentrates more on himself. He spends less effort in the adjustment to others than in group-type physical activities. With success in this important realm—the physical—the child develops confidence. He has more opportunities to develop autonomy; he meets with success; consequently he can develop self confidence, a needed quality that may affect his self-concept. Although peer influence is always present, this


phenomenon is de-emphasized. In the movement exploration climate, he can "move from peer evaluation to self evaluation."\textsuperscript{37} The teacher's acceptance of his efforts, in turn, encourages improved peer evaluation or acceptance.

Jersild has stated:

The self is acquired. It is not ready-made. It develops as a person . . . meets with the experience of life . . . the development . . . is influenced strongly . . . by his relationships with other people . . . by the child's growing powers of perception and, in time, by his ability to imagine, to form large and comprehensive concepts, to appreciate values and commitments, and to take a stand for or against.

. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

. . . if accepted, welcomed, allowed to be himself, and if given the opportunity to learn and a degree of freedom suited to his maturity level, the child will launch on a career of self discovery.\textsuperscript{38}

The Evaluative Instruments

Skill tests

The throw for distance, the standing broad jump, and the run obstacle tests were selected for this project. It is believed that the child's observance of his play peer's execution of these three skills greatly influences the young observer's assessment of the peer's skill status as well as his own. In terms of the child, whoever runs and/or jumps the farthest and runs the fastest is judged as all important in


the play realm. The importance of this was voiced by numerous children in the skill test phase of this study. Evelyn Schurr\(^3\) selected tests similar to these as the basis of skill assessment in relation to play peer sociometric evaluation for children in grades one through six. The child's judgment of peer achievement in throwing and jumping was significantly accurate as early as second grade level.

Established motor skill norms for seven-year old children are practically nonexistent. There is little done in research in physical education for primary age children.\(^4\) The age group from three to ten years is neglected in research in the area of motor development.\(^5\)

LeRoy Seils,\(^6\) in a pilot study involving primary age students, used several fundamental motor skills including running, jumping, throwing, striking and catching. He experimented with various test

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conditions for several skill tests. The distance was shortened for the run. He varied the size of the ball to ascertain the circumference best suited for small hands of children. His choice of the tennis ball for distance was influential in the selection of this object for this study. In throwing distance, he found there to be definite increase of performance at each age level with both sexes.

Seils used the standing broad jump for these primary age groups. The mean performance of the boys showed increase in successive levels. The mean performance of the girls remained almost the same in the first and second grades but increased in the third year. Seils found that the mean score of performance in running of both sexes becomes higher at each successive grade level. Espenshade has reported that running, jumping, and throwing for distance "are all related to size and strength . . . they appear to be more closely related to maturity than to chronological age."\(^43\) The skills are also dependent upon sensorimotor coordination.

The testing procedures of two of the skill items used in this research study were the same and similar to the AAHPER tests: the standing broad jump and the softball throw for distance.\(^44\) The investigator attempted to abide by most of these test procedures due to their standardization. The standing broad jump remained the same. The


softball throw for distance test was modified for this age of the subject. The tennis ball was used rather than the softball.

The twenty-five feet "run and over" obstacle test devised by Aileen Carpenter constituted one of the three skill tests. This item appears to measure not only speed, agility, and coordination through efficient use of force, but also balance. The last component was thought to be of importance because the child surmounted the wooden frame and immediately had to regain himself to return to the starting line. Carpenter's "run and over" test served not only as an assessment in these components to test motor capacity and ability, but also constituted an item by which the young child would be impressed and consequently interested.

The three tests selected for this study involved procedures that appeared to meet Seil's criteria for the selection of test items for primary age children. Simple tests were used so that they could be easily comprehended by young subjects. Test items were rejected that might provide test administration difficulties and consequently influence the subject's performance. Simple equipment was used. Lengthy test items were avoided and skill tasks rejected if they required the


amount of effort on the part of the child that could be conducive to fatigue. This would interfere with reliability of performance.

**Personality test**

The California Test of Personality was chosen as the major research instrument in this project. Percival Symonds has approved of this personality inventory in his review.

The California Test of Personality appears to be a carefully worked out set of questions designed to reveal the quality of the individual's adjustments.

... one of the most carefully prepared questionnaires of this type.47

The California Test of Personality is a standardized test. The norms provided in the test manual48 are given in terms of percentile ranks and were derived from test data secured from four thousand five hundred pupils in kindergarten to grade three inclusive in schools in South Carolina, Ohio, Colorado, and California. The extensiveness of the standardization of this series is apparent because similar data to provide norms were secured from comparable large groups for pupils of grades four through six, seven through ten, as well as for adults.

The manual for this test includes statistical data for all age groups indicating the coefficients of reliability, the number of cases


and standard errors of measurement for both the subsections and the total test. Item analysis by the use of Phi coefficients are included. Validity is indicated in terms of "Weight of Various Techniques in the Light of a Composite Yielding Maximum-between or Minimum-within Variance on Traits Defined by the California Test of Personality."]

Verner Sims has stated, "... this test is as valid as most such instruments."\(^{50}\) He rates the test with a fair degree of reliability due to tests of internal consistency. Vernon assesses the lower forms of the test by the determined reliabilities of self adjustment scores; the number of cases from which the norms were derived "seem quite adequate."\(^{51}\)

George Schlesser,\(^{52}\) in his concern of accurate responses on personality tests has stated that the construction of subtle test items is important. Further inquiry by this research investigator found that P. E. Vernon has stated, in his assessment of the lower forms of the California test, "... a good attempt has been made to disguise many of

\(^{49}\)Louis Thorpe, Willis Clark, and Ernest Tieg's, Manual California Test of Personality (Monterey, Calif.: California Test Bureau, 1953 Rev.), p. 8.


the items, so as to reduce their unattractiveness. Scoring is lengthy . . . and will require careful checking.53 IBM score sheets for primary age subjects are nonexistent in this extensive test series. Consequently, all results had to be hand scored.

Although precautionary measures in test administration procedures were utilized due to this age of subjects, the investigator believed that the seven year old child is relatively naïve1 and consequently would be more forthright in response than the older age testee would be. The test authors54 believe that the problem is nonexistent with young children.

**Teacher and child rating scales**

Decided effort was given to make a qualitative study into a quantitative summary. L. L. Thurstone, in his encouragement of the development of psychology as a quantitative rational science, states that "attitudes can be measured."55 Two of the four phases of this research project utilized teacher and child subjective type rating scales which were centered on the child's attitudes in relation to physical activities.

53 P. E. Vernon, p. 1214.


There are two types or techniques for establishing an attitude scale. The Thurstone technique of scaled values has been developed to quantify opinion or attitudes. A similar and more simple method is the Lickert Method of Summated Ratings. The investigator chose the Lickert technique because of needed simplicity of rating construction and the method for the person responding.

Edwards and Kenny have examined and compared the Lickert and the Thurstone methods and have found there are advantages and disadvantages of both.

... there is no longer any reason to doubt that scales constructed by the method of summated ratings and containing fewer items will yield reliability coefficients as high or higher than those obtained with scales by the Thurstone method.\(^5\)

CHAPTER III
PROCEDURES

Procedure for Data Collection

This project, a study to measure effects of change in a stipulated period of time, involved 203 children of second grade level enrolled in the Southwestern public school system, Franklin County, Ohio. Four groups of subjects were formed by means of random sampling. This procedure was employed within the control group of 102 subjects who experienced physical education in the setting which was predominantly recess. Random sampling was also utilized in the experimental group of 101 subjects who experienced daily instruction in physical education characterized by the child-centered method of presentation.

Random sampling was based on classroom enrollment. Utilizing the advice of the statistician, this manner of grouping was judged as being adequate due to the number of subjects involved. The investigator drew at random name tags of subjects within each classroom section. These tags, blank side exposed, were sorted into four new sections to form composite groups drawn from the original four classrooms in each school. This procedure was utilized to minimize the effect of the classroom teacher's personality on subjects assigned to new heterogeneous sampled groups.
Once each week, the classroom teacher instructed the control subjects of her respective classroom section. The physical education teaching method was characterized by the traditional approach. At the experimental school, the investigator taught these subjects the child-centered type of physical education each day. With the exception of the classroom teacher ratings, the investigator administered all tests in both the experimental and control schools so that greater consistency in test administration occurred. When available, adult assistance in the administration of skill tests was under close supervision of the investigator for consistent procedures.

The data were collected by this method:

<table>
<thead>
<tr>
<th>Experimental Group (N = 101)</th>
<th>Control Group (N = 102)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Group 1)</td>
<td>(Group 3)</td>
</tr>
<tr>
<td>(Group 2)</td>
<td>(Group 4)</td>
</tr>
</tbody>
</table>

- Pre-test personality test
- Post-test personality test
- Pre-test motor skills
- Teacher ratings--play behavior
- Child's subjective evaluation
Limitations of the Study

Geographical

This study evolved in two elementary schools of the Southwestern public school system in Franklin County, Ohio. Prairie Lincoln, the experimental school, is located in Lincoln Village. The John C. Sommers school, the site for the control group, is situated in Grove City. The school administration assessed these residential areas as upper middle social economic class level.

Numerical

1. The study was initially limited to 203 second grade Caucasian children.

2. The study was confined to primary age children of second grade level with the approximate mean age of seven years and six months at the initial phase of the experimental project.

3. During the sequence of research events, ten subjects were excluded from the study, due to the following circumstances:
   a) Three subjects moved from the involved building sites.
   b) One child was absent for two consecutive weeks.
   c) Two children were removed from physical education due to disabling accidents with resultant medical restrictions or prolonged hospitalization.
   d) The scores of the standardized personality tests of four subjects were withheld either on the first test or post-test.
Traumatic family conditions resulting in possible emotional dis-
turbances were identified by the subject's classroom teachers and
building counselor.

**Study duration**

The entire project took place in a four month period. The actual
student exposure to experimental or control factors occurred within a
three month duration of fifty lessons in daily sequence. Thirty min-
utes was allocated for each lesson.

**The evaluative instruments**

The study was limited to these measures which in turn were re-
garded for their inherent limitations per se. The subjects were eval-
uated by the following instruments: three objective skill tests,
standardized personality test, subjective type classroom teacher's
rating of overt behavior of children and program evaluations written
by the subjects.

**Personality test.**—The primary form (kindergarten-grade three) of
the standardized California Test of Personality\(^1\) was selected as the
major instrument. Only the personal or self adjustment section was
used in this study. This test, despite favorable reviews, possesses
the inherent limitations of most paper and pencil type tests.

\(^1\)Louis Thorpe, Willis Clark, and Ernest Tieg, *California Test of
Personality* (Monterey, Calif.: California Test Bureau, 1953).
Objective skill tests.—Three simple skill tests were utilized in an attempt to assess, in part, the child's motor ability. Focus was on these elements: time (speed in space), force (power), and flow (agility and general coordination). The tests selected were the Carpenter "Run and Over"^2 obstacle test, the AAHPER standing broad jump and a modification of the AAHPER Throw for Distance^3 test. The tennis ball was used for the distance throw due to the age group involved (see Appendix).

Teacher ratings.—A five-point subjective type rating scale was devised to include classroom teacher assessment. This rating was focused on the individual child's play behavior in the recess setting. An attempt was made to ascertain, in part, if there was transfer from the instruction in physical education to the quality of play in the recess setting. The teacher rating was restricted to the lower 50 percent skill status in each cooperating school.

Child ratings.—A subjective type three-point scale evaluation was constructed to ascertain the subject's reaction on play activities and attitudes. The "short form" was used with all involved subjects (see Appendix).


An "extended form" of child evaluation was restricted to the experimental subjects (see Appendix). Items were focused on:

1. Reactions of specified class climate conditions in the experimental setting.

2. The child's perception of space. The questions included selected basic elements of movement (spacial relationships and force) and simple body mechanics.

Research Schedule--Program of Events

December

1. Preliminary briefings with all cooperating teachers and administrators were held.

2. Classroom visits were made to all groups to become acquainted with the involved subjects.

3. The investigator administered three skill tests to all subjects. These tests were: the twenty-five feet "run and over" obstacle test, the standing broad jump, and the tennis ball throw for distance.

January

1. The investigator administered the standardized California Test of Personality to all subjects. The primary section BB of self adjustment section was used.

2. Random sampling method was employed.
January, February, and March

Experimental Group
Application of experimental teaching and the child's exposure to daily child-centered program of physical education. Teaching was done by the investigator. The program was characterized by guided innovative pursuits and individual type activities. There were fifty consecutive days (lesson duration of thirty minutes each).

Control Group
The control factor—the previous condition remained constant. One day each week was allotted for traditional type instruction. Teaching was done by the respective classroom teacher. Physical education took place in the recess setting four days of the week. There were fifty consecutive days of comparable daily duration to that of the opposite group.

March
1. Teachers administered ratings on child's play behavior in the recess setting in both schools. This rating was done in a four-week period.

2. The investigator administered the three-point subjective type evaluation of children to ascertain, in part, their reaction of play activities and teaching methods. This "short form" of evaluation was administered to all subjects.

3. The investigator administered the three-point "extended form" of the child evaluation to the experimental subjects. This form allowed greater penetration of their reactions to experimental conditions to which they were exposed. It also served as an index to ascertain their understanding of elements of space perception.

4. The investigator administered the retest of the California Test of Personality to measure pupil gain or loss if such existed.
Rationale for Sequence of Events

The chosen age group

Seven-year old children were chosen as the age group for this study in which much of the teaching involved the process of movement exploration. This decision was reinforced by findings of Torrance. He indicates that there is an acute decline in innovative thinking abilities in children of the fourth grade. He explains this in view of physiological changes and increasing peer pressures for conformity.

... Being different doesn't bother young children, but year by year they become more afraid of being individual, of being themselves. The awesomeness of being considered different or divergent is well understood by children in the fourth, fifth, and sixth grades ...

Second, this same age group was of study focus in past research. The writer in the initial planning of past research believed that seven years is the "golden age" for such experimental pursuits. The response elicited by subjects of this age in the previous study, prompted the use of the same age group. Jersild has stated:

... there is a kind of quieting down at seven ... the seven-year old goes into lengthening periods of calmness and of self-absorption, during which he works his

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5 Paul Torrance, *ibid.*, p. 44.
impressions over and over . . . It is an assimulative age, a time for salting down accumulated experience and for relating new experiences to the old.⁶

Third, the stage of "homestasis" implied by Jersild is nurtured, in part, by the typical school curriculum. Children have "hurled" the first year, and many curriculum changes will unfold for them in the third grade level. The investigator judged that this relatively settled period in the curriculum would help constitute a needed constant variable.

Fourth, second grade subjects were chosen because they appear to be the least resistant to change due to their lack of cultural and environmental inhibitions. They are more pliable in attitudes and in movement. This resiliency in their nature and the resultant more swift response in change, could be reflected on personality tests within this stipulated three-month period. It was also believed that the young at this age is less "test-wise" and consequently would be more forthright in his personality test and child evaluation responses.

Preliminary briefings

All involved cooperating staff members were informed thoroughly of the nature of this study, the schedule of events and upon their consent, their responsibilities in teacher rating. Discussion included the necessity for continuing the regular school routine so that this

research project would take place in as natural a setting as possible. However, the information concerning the nature of this study was withheld to all subjects both by the investigator and the teaching personnel in the two schools.

It was believed that if this information were withheld from the children they would remain more natural and consequently the "halo" effect might be kept to a minimum. The control group children accepted the fact that the investigator would visit them frequently for "games" (tests). Their teachers were most cooperative in reinforcing the investigator's efforts for rapport. Acceptance of these tests was shown by their reaction as the research events occurred. The same spirit of acceptance prevailed at the experimental school. These subjects accepted at "face value" that the investigator would teach them in physical education each day. A similar approach resulted in the experimental subjects conceiving the various skill tests and ratings as fun "games."

Both room visits and administration of skill tests preceded the administration of the first personality tests to develop rapport between the investigator and the 203 subjects. This seemed essential in view of the nature of the personality test. All skill and personality tests and the children's ratings were administered personally by the research investigator. Effort was made to minimize classroom teacher's involvement due to their existing regular teaching responsibilities. Second, decided concentration was given to consistency of procedures used in the test periods. The classroom teacher ratings were conducted
for a period of four weeks in order that sufficient time would be allowed; consequently more true evaluations would accrue.

A post period or retest of these three skill tests was not given for several reasons. The major focus of the study was on change of mean scores to standardized personality tests. Second, the amount of time needed for the test-retest pattern was not judged feasible due to the demands placed on the schedule in both schools. Third, the Seils' pilot study indicated improvement in these skills was a result of age and maturity.

**Evalutative Instruments**

**Skill tests**

Three tests were administered by the investigator to all 203 subjects. The three tests selected were: the "run and over" obstacle timed test, the standing broad jump, and the tennis ball throw for distance (see Chapter II for discussion). Only with the last test was assistance used in the administration of these evaluative items.

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10 Ibid., p. 10.
The tennis ball throw for distance\textsuperscript{11}

(See Appendix for Figure 3.) This AAHPER test item was modified in several ways. The tennis ball rather than the twelve-inch softball was used due to small hands of seven-year old children. A second major modification was that the throw was not limited to the overhand pattern. The subjects were told to throw the ball as far as possible on each try. It was judged that many seven-year old children would be unable to perform this pattern if so stipulated by the examiner. This inadequacy seemed even more possible due to the previous limited instruction of physical education in both schools. Minor modifications entailed different markers because the test was administered in the gymnasium. The adult assistant "marked" the point of landing of each throw. It was judged that seven-year old children should not be given this responsibility for purposes of objectivity. Several highly skilled children in the control school had to have a repeated test on the playground. The space in this indoor facility was inadequate for their capabilities. Caution was taken that this outdoor test was given on days with warmer temperatures so that the possible adverse effect of dulling performance might be avoided.

Well-defined lines were established parallel to the restraining line with the distance of five yards. The subject threw the ball with both feet remaining inside a six feet restraining area. The adult assistant "marked" the point of landing on each throw if the succeeding

\textsuperscript{11}\textit{Ibid.}, p. 10.
one exceeded the distance of the previous attempt. The rules and score
are:

. . . three throws are allowed. The distance recorded
is the distance from the point of landing to the nearest
point on the restraining line . . . Record the best of
the three trials to the nearest foot.\footnote{12}

**Standing broad jump**\footnote{13}

(See Appendix Figure 2.)

**Equipment:** heavy weight mats, marking tape, chalk, and
measuring tape.

**Description:** Pupil stands as indicated . . . with the
feet several inches apart and the toes just behind the
take-off line. Preparatory to jumping, the pupil swings
the arms backward and bends the knees.

The jump is accomplished by simultaneously extending
the knees and swinging forward the arms. Allow three
trials. Measure from the take-off line . . . When the
test is given indoors, it is convenient to tape the tape
measure to the floor at right angles to the take-off
line and have the pupils jump along the tape. The scorer
stands to the side and observes the mark to the nearest
inch.

**Scoring:** Record the best of three trials in feet and
inches to the nearest inch.\footnote{14}

**The "run and over" obstacle test**\footnote{15}

**Equipment:** Wooden obstacle frame, with dimensions of two feet
two inches in height, three feet in length, and seven inches in

\footnotesize{\begin{itemize}
\item \footnote{12} AAHPER, ibid., p. 10.
\item \footnote{13} Ibid., p. 9.
\item \footnote{14} AAHPER, ibid., p. 9.
\item \footnote{15} Aileen Carpenter, "Tests of Motor Educability for the First
Three Grades," *Child Development*, II (December, 1940), pp. 293-294.
\end{itemize}}
breadth of the top of the vaulting surface. Equipment also included a heavy weight landing mat, masking tape, and one stop watch (see Appendix Figure 1).

Procedure: The child, on the signal "go," ran twenty-five feet to the obstacle. He then either climbed or vaulted over this frame and immediately regained himself to return by running to the returning line. The score was recorded in seconds and tenths thereof from the moment the child crossed the taped line both on the start and the return.

Personality test

Rationale for selection

The standardized California Test of Personality\textsuperscript{16} was selected as the major evaluative instrument in this study. Only the self or personal adjustment section of the primary form BB (kindergarten to third grade) was used (see Chapter II for discussion).

Much thought, research, and consultation took place previous to the decision to utilize this test. Numerous limitations in the public school setting influenced the choice of this group-type self inventory test. The number of subjects involved necessitated a group-type test. An individual-type test would have made exhaustive demands in the time schedule of the two building sites involved. Consequently, projective-type tests involving stimulus materials as the Rorschach ink blots,

\textsuperscript{16}L. Thorpe, W. Clark, and E. Tieg, \textit{California Test of Personality} (Monterey, Calif.: California Test Bureau, 1953).
Bach doll-play behavior, Ford C F (color-form), or Murray's Children's Apperception test were rejected.

Second, the projective inventory was not used; the investigator judged herself as unqualified to administer and interpret these types of tests.

The social adjustment or the second half of this test was not administered for several reasons. The focus of this study was the self-concept; the test items of the self or personal adjustment section were judged more appropriate to shed light on the primary focus of the project. On the assumption that many of the 200 subjects of this age were immature, it was thought that the child's responses of items of the first section of the test would be more valid than those of the second or social adjustment section.

The fundamental principle of the proximal-distal line of motor growth was applied to the young child's social dimension of development. The belief that social growth comes from within and is projected outward is also noted by Jersild.\textsuperscript{17} The young, in his egocentric stage, may have a clearer understanding of the items concerning himself than those items concerning others.

\textbf{Description of the test}

The test items of the six sub-tests of the self adjustment section passed global assessment in terms of the essence of this project; is

there change of intangibles or attitudes that comprise self adjustment resulting from the influence of the child-centered program of physical education? The content of this test section appeared feasible in view of this study focus. The six sub-sections of the self or personal adjustment section are: self-reliance, sense of personal worth, sense of personal freedom, feeling of belonging, withdrawing tendencies, and nervous symptoms (see Chapter I for definitions). Eight questions comprised each sub-section; the total score possible was eight points. The length of this section (forty-eight questions) appeared to be acceptable for this young age.

Procedure in administration

The entire Primary Form BB of the test entails ninety-six test items. The duration of the test, if administered in a single session, would have been too demanding for the seven-year old child. Scheduling of two test sessions for eight classroom sections would have placed too great a demand on the existing routine in both the control and the experimental schools. Administration of the personal or self adjustment section alone averaged forty-five minutes for each of the eight sections. The children were given a five-minute rest after the first three sections (twenty-four items) had been completed. Shorter rest durations were allowed between the second and third and the fifth and sixth test sections. Caution was taken to avoid fatigue which would affect response reliability.
The investigator, previous to this test phase, had worked with all involved subjects with the individual skill tests. Rapport seemed apparent. With the exception of absentees, the test was administered in their respective classrooms. Attempt was made that the child would be seated at his own desk during this test session. The investigator requested that the classroom teacher be absent from the room. It was believed that their attention to the examiner should be undivided.

On the assumption that many of the 200 subjects were immature, all test items were read aloud by the examiner. It was judged by all cooperating staff personnel and the investigator that the reading of these items would lessen the possibility of inadequate reading skills and item comprehension. The test was intended to measure their reactions to these self-concept items and not on reading comprehension ability. Reading test items to all subjects was in compliance with the caution regarding reading ability projected by Sims. 18

Each child used a "paper marker" to ensure that corresponding answers "yes" or "no" would be encircled for the question read at that given time. In all test sessions, the investigator emphasized for the subjects to respond "exactly how they believed or felt most of the time about these questions."

The procedure, included in the manual, was adhered to in all test sessions. It is as follows:

Directions for Administration when Questions are Read to Pupils, but they Mark on Test Booklets

Note: First read the General Instructions to the Examiner on page 21.

Suggested time allotment:

California Test of Personality
(Form AA or BB)

about 45 minutes
(all pupils should finish)

Materials required:

For each pupil--
1 test booklet--California Test of Personality (Form AA or BB)
1 ordinary lead pencil with eraser attached
1 eraser (if not attached to pencil)
1 blank sheet of paper--for use as a marker, if desired

In addition, for the examiner--
extra pencils
extra erasers
extra copy of test booklet--
for demonstration purposes, if necessary.

After checking to see that all pupils have pencils, erasers, and markers, distribute the test booklets, face-up.

From this point on, certain parts of these directions are printed in THIS DIFFERENT TYPE FACE. These parts are to be read to pupils.

SAY: NOW LOOK AT THE BOTTOM OF THE PAGE WHERE IT SAYS: TO BOYS AND GIRLS: THIS BOOKLET HAS SOME QUESTIONS WHICH CAN BE ANSWERED YES OR NO. YOUR ANSWERS WILL SHOW WHAT YOU USUALLY THINK, HOW YOU USUALLY FEEL, OR WHAT YOU USUALLY DO ABOUT THINGS. WORK AS FAST AS YOU CAN WITHOUT MAKING MISTAKES. DO NOT TURN THIS PAGE UNTIL TOLD TO DO SO.

NOW OPEN THE TEST BOOKLET TO PAGE 2 AND FOLD IT BACK SO THAT ONLY PAGE 2 SHOWS. NOW LOOK AT THE PRACTICE QUESTIONS.

Demonstrate, if necessary, so pupils will understand.

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SAY: NOW LOOK AT QUESTION A AS I READ IT: DO YOU HAVE A DOG AT HOME? IF YOU DO, DRAW A CIRCLE AROUND THE WORD, YES; IF YOU DO NOT HAVE A DOG AT HOME, DRAW A CIRCLE AROUND THE WORD, NO. ARE THERE ANY QUESTIONS?

After questions, if any, have been answered,

SAY: NOW I WILL READ QUESTION B. DID YOU WALK ALL THE WAY TO SCHOOL TODAY? IF YOU DID, DRAW A CIRCLE AROUND THE WORD, YES; IF YOU DIDN'T, DRAW A CIRCLE AROUND THE WORD, NO. ARE THERE ANY QUESTIONS?

After questions, if any, have been answered,

SAY: THIS BOOKLET CONTAINS MORE QUESTIONS LIKE THESE YOU HAVE ANSWERED AND WE WILL DO THEM THE SAME WAY. I WILL READ EACH TEST NUMBER AND QUESTION. YOU WILL DRAW A CIRCLE AROUND THE YES OR THE NO.

Continue until the test is finished, with or without rest periods.

After pupils have attempted to mark the last question,

SAY: STOP. PUT YOUR PENCIL DOWN.

Collect test booklets. Count them to be sure that you receive the same number you distributed.

Directions for Scoring Hand Scoring the Test Booklets

The examiner may use the key or mark an unused test booklet with the correct answers as an aid in scoring. It is advisable for the examiner to take the test without reference to the key since this procedure will acquaint him with the diagnostic values of the test items. Instructions for scoring are:

1. Each item is considered right or wrong. No partial credits are given for partial answers.

2. Mark each correct item with a C.

3. The score for each section is the number right.

4. Credit any clear method of indicating the correct answer. Consider the intention of the examinee, if it can be determined. If in doubt, consider the answer wrong.
5. If two answers are given, count the item wrong, unless the examinee has attempted to erase or cross out the incorrect answer.

6. Enter the scores for the eight components in the boxes provided at the bottom of each column of the test.20

Teacher rating

An attempt was made to obtain teacher assessment of the child's behavior in play. The subjective type five-point scale rating was designed to ascertain, in part, the influence of the physical education program on the child's play behavior in the recess play setting (see Appendix for teacher rating).

Limitations of the rating

This assessment was limited to those subjects of the lower 50 percent skill level. This status was determined by a composite score of the three skill tests. Consequently, each teacher rated less than half of her classroom group. The reasons for this limitation were twofold. The investigator questioned if the lower skilled child could not possibly benefit more from the daily physical education experience than the highly skilled subject. Should this projection be correct, the difference in rating scores of the two schools might be greater. Second, some limitation in the number of students appeared feasible. Attempts were made to avert excessive imposition on classroom teacher's time and responsibility.

Procedure of teacher rating

All cooperating teachers had given consent for their cooperative efforts in this teacher assessment in the initial pre-stages of the project (December). Pre-rating briefings were held in both schools. The forms were distributed with the child's name entered on the form. Thorough briefing involved the nature of the rating, the test items, the meaning of the score scale, and the rating procedure per se.

One month was given to this assessment phase. Both teaching staffs agreed that four weeks would permit the rating of one to two children in each recess period. Sufficient time was needed so that the teacher would not be hurried in the rating procedure. In the rating of one or two children during a given period, a more definitive evaluation could take place. The teacher-pupil ratio, one to one hundred in the recess setting, was equal in both schools. The allotment of a months duration was needed considering possible inclement weather and probable interruptions caused by supervisory duties. When the latter occurred, the teacher would have to complete the rating on the child during her next supervisory period.

The control teachers were encouraged to refrain from rating their children during their one scheduled physical education period each week. Caution was exercised that the rating be done in similar situations, the recess time, in both schools. Teachers in the experimental school did this rating in the afternoon recess period and at the noon hour. Only second grade children were on the playground in both periods.
The use of the noon hour was necessary at the experimental school. The investigator taught the subjects in their previous scheduled morning recess period.

Again, in this briefing, as in previous meetings, caution was projected to avoid informing the children of this rating. (There was consistent effort in all research events to avoid the "halo" effect.) During the duration of this research phase, the investigator was informed of the adult anticipation: children in play were unaware of this rating being done.

A base line comparison was not used due to a major revision made in the teacher rating phase. Original study design included pre- and post-teacher ratings of the child's behavior in the classroom as influenced by the daily program of physical education. Due to the time factor when necessary revisions were made, the test, retest pattern, as used in the personality tests, was impossible. Consequently, the desirable base line comparison was not feasible.

Second, a repeated playground rating would have placed increased demands upon the cooperating teacher's time and effort. Consequently, the statistical comparison of this revised teacher assessment was confined to one rating period and for random sampled groups within school against school. Third, possible adverse weather conditions in December, the original first test period, would decrease the number of playground rating opportunities which would not have affected the original teacher ratings done in the classroom.
Construction of the teacher rating

The five-point numerical continuum was designed after the Lickert-type scale. Attempt was made to construct items that would indicate social traits in play behavior of subjects. (See Appendix for form.) Several of the components of self adjustment were the focus of these rating items (see Chapter I - Definitions).

Self reliance was the criteria for items 2, 3, 5, and 9. Evidence of sense of belonging was the basis in test items 1, 6, and 7. Withdrawing tendencies were focused in items 1, 4, and 8. Question 9 was also an attempt to ascertain, in part, if simple innovation pursuits were attempted in a free play situation.

Due to the imposition of this responsibility of the teacher, repeated administration of this rating on each child was not feasible. Consequently, the quality of reliability\(^1\) was not determined.

An effort was made to reach some level of validity.\(^2\) A committee of three professional people evaluated this teacher form in view of its worth for this project. All three jurors were selected due to their apparent interest in this study. Their evaluation was done in an independent manner in terms of the other two assessors.

One juror, a professor in Physical Education at The Ohio State University, teaches theory in the elementary level of the profession. This assessor represented the "theoretical" person.


\(^2\)Ibid., p. 242.
A second juror had shown interest in a well-rounded program of elementary physical education. This judge, a classroom teacher, teaches her students physical education.

A third assessor was selected due to the teaching position held, that of an elementary physical education specialist. The latter two jurors represented "practical" people in the profession.

The basis of their evaluation was focused on three considerations: the feasibility of the specific item for inclusion in the rating form, the wording of the item in terms of the teacher's understanding, and the scoring device utilized. Rejection of an item was based on two out of the possible three questions or doubts of the same item. One item was evaluated as a "reject" and the result of this question was not included in the study summary.

The original rating form included a tenth item. Group activity, in which the child is a participant, frequently disintegrates as a consequence of unsolved problems in play.

It was intended to make a global assessment of the general atmosphere on the playground at the given school. With focus on the one child, the teacher responding to this item might assess the play habits of other children as well. This included those subjects who engaged in activity with the child being rated. It was intended that this score be isolated from the composite of the other nine scores. The jurors questioned this item as to its practicality, the length of the question as well as the wording itself.

Objectivity was attempted, in part, by means of the teachers' using the five-point scale device. In view of the subjective nature of this evaluative instrument, the criterion of objectivity was not acquired. However, it appeared that they would be more objective in

this rating of play behavior in the recess setting than they could had
the original rating been done on behavior in the classroom. The
teacher could possibly be less objective in classroom behavior due to
these rating results being a reflection of her efforts. It was judged
that objectivity would increase in the rating of play behavior, an area
where there is less directed teaching efforts.

Child subjective evaluations

Rationale for child ratings

It appeared advisable to include the child's assessment of the
physical education experience to which he was exposed. The child as­
essment was composed of two forms. The "short form" was used for both
the experimental and control group of subjects. This form served as a
comparative basis by random sampled groups within one school being com­
pared with the other. The "extended form" was administered to the ex­
perim ental subjects only.

The purpose of the "extended form" was twofold. It was to serve
as an index of their reaction to specified conditions of the experi­
mental program to which they were exposed. It will be noted that
there was an attempt to penetrate for their reaction to "showing"
times (see Appendix, "Extended Form."). Second, the "extended form"
was a test to indicate evidence of the child's cognitive thought pro­
cess. The investigator attempted to construct twelve items that would
indicate this mental process at this young age. These questions dealt
with spacial perception (laterality), force and fundamental body me­
chanics such as body base and balance.
It was found in previous research that many seven-year old children applied and spoke of these spacial terms, "levels," "planes," "balance," "range," and others. In the ensuing weeks of this present research project, many of the experimental subjects, following the teacher's simplified definition of these terms, used them as they observed others execute their individual ideas in "showing times." Due to their verbalization, these items were included in the "extended form."

Construction of child evaluations

In order that some quantitative summary of results could be acquired, the numerical scale value was utilized. The scale was determined in terms of the objectives of the experimental program.

The rating scales are referred to as a three-point scale because twelve of the sixteen items of the "short form" were constructed on the three-point continuum. However, four items comprised from a four- to six-point range which were intended to indicate their choice of program phases (see Appendix for "short form"). Those items of the four- to six-point continuum were not included in the child's total rating score. The control subjects had four choices on items 1, 2, 3, and 8. On the same questions, with the exception of 8, the experimental subjects had a five-point range. On the eighth question they could select from six choices. The more broad continuum or the wider range of possible scores was of necessity; the experimental program offered greater diversity both in program activities as well as methods.
There was also point variation in the "extended form". Items 27 through 31 had a point value of one. Item 32 had a point value of two. The nature of these five questions, which were used by seven-year old children, explains why this point variation was necessary. The remaining 16 items were constructed on the three-point scale as the label infers.

Both the "short" and "extended forms" were evaluated by a committee of three jurors. Their evaluation was done in an independent manner in terms of other assessors. The items on the forms were judged on the merit or worth of the item itself, the wording of the item in terms of the young child's understanding, and the scoring. If there were questions or doubt from two of the three judges on the same test item, the question was counted as invalid. The score results of this rejected question were not included in the final statistical summary.

All three people are experienced classroom teachers and teach their own physical education. These three jurors were thoroughly orientated with the design and sequence of events in this study. Because of this knowledge, it was believed that they were capable of judging the merit and worth of the test items on both the "short" and the "extended" forms, especially in the case of the latter.

These involved jurors had frequent opportunity to observe these experimental sections and consequently were thoroughly aware of the reason for the inclusion of some of these advanced type questions on the "extended form" (i.e., items regarding comprehension and application of space perceptual components).

All items were passed by this evaluating committee except one. The original form included the question, "Is it difficult for you to think of your own ideas?". Two of the three jurors questioned the word "difficult" in terms of the child's understanding. Consequently, the item was viewed as a "reject" and not included in the total score.
Other than the evaluation of experienced classroom teachers, no attempt was made to reach the criteria of validity. Although 25 of the 37 items are subjective in nature, the fact that the subject responded to the numerical scale would improve the objectivity of their responses. No effort was made to acquire reliability.

**Rating form construction**

**Short form--item description.**--The first three items and the eighth question of the test were designed to ascertain in part their choice of favorite curriculum areas offered.

Items 4, 10, and 11 were constructed to ascertain their reaction to typical group type activities which may involve the competitive elements. The investigator had been informed of competitive type activities used by this age children on the playground of these schools, thus, it was judged that this question had meaning for seven-year old children.

Items 7 and 16 were included to indicate if there was a difference in attitude due to exposure to the innovative pursuits versus limited or no exposure to the same.

Items 5 and 9, the latter designed as a simple projective-type question, were designed to indicate the effect of large group-type activities as opposed to the predominating individual-type activities. It will be noted that the ninth item requested the subject to respond "where you are when this game is being played." There is less opportunity for actual activity in traditional group-type games than the activity level of individual, free-form type activities. The three-point scale for this item was determined in this manner. A value of
three was given if the X bisected inside the ring, two points if the X bisected either inside one of the minute circles or between them and a value of one point given if the X bisected outside the ring. This last response might indicate the isolate or feeling of withdrawal in the game situation.

Item 6 was an effort to ascertain their reaction of what the experience of physical education within the stipulated condition does for the child in terms of self-concept.

Items 13 and 14 were included to see if the fear factor was evident in peer approval orientated situations in the typical recess setting as opposed to the child-centered atmosphere where the absolute standard of skill performance is minimized. Ball activities were questioned due to various maturity levels of ocular pursuit (hand-eye coordination). The fear factor was also the focus in the question on the element of height or possible momentary inversion of the body with stunt and apparatus type activities.

Extended form—item description.—A brief analysis of items of the "extended form" is given. With items 17, 19, 20, 24, and 25, an attempt was made to measure the child's reaction to "showing" times. This phase of the lesson allowed positive reinforcement of their original ideas. Effort was made to ascertain if this lesson phase would improve their personal awareness.

Items 17, 18, 20, 21, and 23 were intended to give a partial index of how the child evaluated himself in play.
Items 19, 22, and 24 were included to indicate the effect on their acceptance of others in the stipulated class climate, an atmosphere manipulated to and for the diversity in children.

Items 26 through 29, 34, 36, and 37 were entirely experimental in nature. Attempt was made to measure their application of spacial components (range, planes, and levels), one of the four elements of movement.

Items 26 and 33 served to measure their understanding of force, a second element of movement.

Items 31 and 35 dealt with their understanding of fundamental mechanical laws, balance, and body base.

Items 30 and 32 were included to indicate their awareness in terms of laterality (the Kephart theory).24

Procedure-child ratings

The same procedure was followed for these simple rating forms as was used with personality test administration. The questions were read aloud to each classroom section in their respective room. Children were seated at their own desks.

A rest period was given to all groups following the first eight questions before continuing with the last half of the "game." A five-minute rest period was allowed for the experimental groups upon the completion of the "short form" (16 questions) before responding on the

24Newell Kephart, Defining the Content of Physical Education (Midwest Association Physical Education College Women, 1964), pp. 5-7.
"extended form" (21 additional questions). A third short rest interlude was given to the experimental subjects following item 26 before completing the final items on the test. The control subjects responded to 16 items (the "short form"). The experimental subjects responded to 37 total questions (including the "short" and the "extended forms").

Children used "paper markers" on these forms as was done with the personality tests. Pre-test instructions included directions that the examiner would read aloud the question and the possible answers to them. At this time, they were only to look at the question and word answers by following the reading with the "paper markers." On the second reading of the questions, they were to place an "X" to indicate their answer selection. It was believed seeing the word while it was heard would enable them to be discriminative with the possible answers in the second and final reading. It will be noted that many of the answers were "yes," "no," or "sometimes." The last word was defined in simple terms before the test.

It was judged that "paper markers" were of even greater necessity on these three-point ratings than on the personality test involving two choices. The use of the marker helped them avoid confusion in responding with the "X" that corresponded with the item to which they decided to respond.

A brief explanation will be made about the physical education class procedure pertaining to test items 26 through 37 involving advanced terms on the "extended form." Four to five days before this test was given, the encouragement for the use and application of these terms was discontinued. If the usual discussion began to take place,
the teacher interceded and directed their attention on other ideas. This factor held constant was an attempt to avert the effects of a drill-type test and consequently a superficial question and response.

All classroom teachers in the experimental school returned to the room for the "extended form" test items 17 through 37. Two of these items (questions 31 and 32) entailed the child's use of phonics. The subjects were informed if they were unable to "sound out" the word with which they wanted to respond, they should indicate by hand their need for assistance. Only at this time would the adult go to the child's desk and spell the word he desired to use. This assistance was given in a manner that no child seated nearby would hear and therefore make his response invalid. Spelling the word for the child made it possible for him to respond; thus, with adequate knowledge, the lack of phonic skill did not influence his response performance on these two items.

Physical Education--The Experimental Program

The four experimental class sections were taught by the investigator. With the cooperation and permission of the Prairie Lincoln school staff, the use of a total of 100 clock hours was possible in actual stipulated class conditions. Each section averaged 25 clock hours. This exposure took place within a three-month period (50 consecutive school days).

The enrollment of each of the four second grade sections ranged from 24 to 26 subjects. Each group was scheduled for the gymnasium for a daily 30-minute period. Most of the 50 lessons were characterized by
individual and innovative activities. The child-centered program utilized the process of exploration in movement in order that the expression of self was allowed. It was characterized in part by "... free, indirect, less structured teaching, problem-solving, guided and directed discovery ... with self discovery remaining the key unifying concept in all." This approach appeared to compliment the "I" which is in keeping with young childhood.

The typical lesson is described in part by these phases (see Appendix for outline of lessons).

The first part of the lesson

This was characterized by exploration of movement with decided emphasis on individual type of activities. This innovative work in the lesson involved either non-manipulative activities or challenges involving equipment. Children were scattered informally about the gymnasium in their chosen "work space." There was spacial openness with this free-type formation as opposed to "spacial closure" in many traditional game formations.

1. The teacher's verbal challenge was posed to stimulate the children to move in their individual ways. Individuality was encouraged to the utmost. Diversified movement response was elicited in two ways. In movement one child differed from another child in this free climate.

Second, as he progressed in his exploration, he often changed his own idea therefore, individuality was nurtured through the movement exploration process. There was definite reinforcement given to originality in thought and movement.

2. The teacher limited the same above problem. Often her suggestions were taken from ideas children were using. She made additional comment on the above idea to challenge and guide the class to experience the elements of movement (time, force, space, and flow). One or more elements were explored by the children at this time. This decreased somewhat the amount of freedom but the subjects were challenged to do original work in this continuing exploratory atmosphere. At this time children were encouraged to think of and use movement variations of these elements. The teacher often drew attention to two ways to do a given skill and allowed them to feel the difference (i.e., the size of the body base and the effect of this factor with vigorous arm swings or throwing).

3. Children were encouraged to enlarge on the above idea by making patterns or combinations. During this process it was suggested that they make slight changes or enlarge their pattern.

4. "Showing" time was used. This phase of the lesson served as definite reinforcement for their innovative work. "Successful efforts should be displayed."26 Torrance asserts that the problem of

exploration is not only the allowance of inventive pursuits, but reinforcement of these efforts is lacking. The investigator made decided effort to manipulate the class climate so that originality on the part of the child was encouraged. Children also learned by their observation of others. In the "showing" phase of the lesson one-half of the class demonstrated their individual ideas to the observing group. At times an individual child or two or three subjects were selected by the teacher on the basis of originality in the simple movement sequence. The teacher's direct acceptance, in turn, could have influenced the childrens' attitude on each other's individuality.

5. Individualized pursuits progressed into couple work in which children worked on combinations or patterns. The greater proportion of time was spent in individual and couple work.

6. At times and of secondary emphasis, couple work was extended to work in larger groups. This activity would involve sub-groups of three or four children, i.e., making up a simple game using the thematic idea initiated in the previous lesson phases.

**Second part of the lesson**

If time allowed, the class engaged in an organized group game assigned by the teacher. The subsequent game used in most lessons allowed for continuity of the theme of the lesson. Small sub-group organization was favored and used whenever feasible or possible. The game was selected in view of the age level and of their developmental dimensions. Only occasionally was a large group game involving definite rules participated in by the entire class. Attention was given to
the direct association of basic elements of movement (space, time, force, and flow) to the motor skills used in the game situation.

The major part of the lesson was devoted to individual and couple work. Under such conditions, there was less emphasis on the absolute and uniform response of the young child. The focus was on the individual response rather than that of the group response, or in more specific terms, one child's work was not compared to group standards. In this climate, child-centered teaching applied in methodology selected principles of child growth and development.

Physical Education--The Control Program

In the control school, physical education was taught by the respective classroom teacher. One 30-minute period each week was allocated to each of the four second grade room sections. The teaching was characterized by the traditional approach (see Appendix for Outline of Lessons). Her method involved explanation and demonstration of how the activity was to be done. Thus, student conformity was encouraged by the teacher's imposed restraints and limitations on the individuals through structured group and individual-type exercises and stunts. Although the entire class was in the game formation or sub-group formation, there was less opportunity for actual individual activity. In many of these play situations, only one or two children were actively involved in the game activity or objective at one time. Insufficient equipment also made for a low rate of activity in sub-group pursuits.

Physical activity for the remaining four days took place in the typical recess setting. Because of limitations in this setting, the
teacher-pupil communication was almost non-existent. Actual teaching was impossible because all four second grade sections were scheduled for the same recess period. The teacher-pupil ratio was one to one hundred. Recess was characterized by free time on the playground. Limited equipment was available for the children to use. Subjects were allowed free choice within the limits of available equipment, space and safety factors deemed important by the supervising teacher. In this choice of play activities, they were allowed to move from one activity area to another.

**Statistical Treatment of Data**

The following statistical methods were used in an effort to make this qualitative experience into a quantitative summary.

1. Group I and Group II (experimental school) and Groups III and IV (control school) were formed by random sampling. Comparison was made of pre-experimental and post-experimental standardized personality test mean scores of 101 experimental subjects and 102 control group subjects. The total personality test score included results of the six sub-sections on the self adjustment components. The statistical critical t test was used to ascertain if there was a level of significance in the difference of the change (decrease or increase) of the test mean scores. Personality test mean scores of Experimental Group I were compared with Control Group III and the test mean scores of Experimental Group II were compared with Control Group IV to study the relationship.
2. Comparison was made of skill test results to the score results of the standardized personality test to investigate if a relationship existed between these two variables. This comparison was directed to those subjects of the lower 50 per cent skill rank of motor skills within the four experimental and control groups. This relationship involved eighty-seven subjects.

The Hull Scale ("scale score") was utilized so that various skill scores could be formed into one composite skill score to be used in this relationship. The statistical critical t test was used to ascertain if a relationship existed between the skill level and the mean score change of the personality tests (self adjustment section).

3. Comparison was made of subjective type teacher ratings (5-point scale) on student play behavior patterns to investigate if there was transfer of play behavior from the stipulated physical education situation to that of free play behavior at recess time.

This comparison was directed on the same sub-population, the subjects in the lower 50 per cent skill status of all four large sampled groups. These rating differences were in terms of differentiating unit values. The statistical critical t test was used to indicate if there was a level of significance in the difference of the mean scores of the teacher ratings.

4. The Correlation Coefficient (r) was used to see if there was a relationship between mean scores of:

   a) Personality tests

   b) Three gross motor skill tests
c) Teacher subjective ratings (5-point scale) on student play behavior.

This relationship was focused on these subjects whose skill level was below the 50 per cent line of demarcation in each of the two schools.

5. An analysis was made of the child's subjective rating forms (3-point scale) to indicate their likes and dislikes for various play activities and their opinion regarding teaching methods used in physical education class. The group mean scores were compared on the "short" form for the four sampled groups. Percentages were also used to summarize the results of selected items on both the "short" and "extended" forms.
CHAPTER IV

ANALYSIS AND INTERPRETATION OF DATA

Statement of the Problem

This study was an investigation of the relationship between second grade children's self adjustment scores of personality tests both to the amount and the type of physical education which they experienced. Several sub-experiments were included. The relationship between skill test performance and self adjustment scores was investigated. Classroom teacher assessment was made of play behavior of children in the recess setting to study the influence of the stipulated physical education setting. Subjects' reactions to play activities in their specified program conditions were obtained with simple rating forms. The experimental subjects were also tested to ascertain their understanding of selected concepts of space perception.

An attempt has been made to evaluate qualitative data in a quantitative way. The data include responses to standardized personality tests, indicating the attitude of the self, attitudes reflected in both overt play behavior and recorded covert responses on child evaluation forms. Originally the project involved 203 subjects. Study design stipulations dictated the withdrawal of ten students (see limitations in Chapter III, Procedures).
The scores on the personality tests represent a composite for the following sub-tests: self-reliance, sense of personal worth, sense of personal freedom, sense of belonging, freedom from withdrawing tendencies, and freedom from nervous symptoms. Comparative groups were formed on the basis of classroom enrollment only. No attempt was made to match groups on pre-test personality scores in the initial phases of this study.

Four groups of subjects were studied, two experimental groups and two control groups. Selection of subjects for the groups was accomplished by randomizing. (Names were drawn from enrollments in four classrooms of second grade children.) The experimental groups were then submitted to the independent variable, namely a carefully conceived daily program of physical education, the content centered in individual exploratory motor acts and in small group activities and taught by a problem solving method (see Appendix).

The control group experienced a daily recess period and one weekly session of instruction focused primarily on group games and taught by the method of teacher direction (see Appendix). This latter pattern is the predominant one in the elementary schools of this school district. It was the primary purpose of the study to determine whether personality test scores would change more as a result of the daily physical education program than as a result of the weekly lesson augmented by the free play of the supervised recess period.
It was necessary to compare the groups on the initial administration of the personality test to determine the comparability of the groups. Table I gives these figures.

**TABLE I**

**COMPARISON OF INITIAL MEAN SCORES ON PERSONALITY TEST**

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
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<tr>
<td>Experimental Group I</td>
<td>32.66</td>
<td>7.5</td>
<td>0.58</td>
<td>95</td>
<td>1.06</td>
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<td>Control III</td>
<td>32.08</td>
<td>7.0</td>
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<td>Experimental Group II</td>
<td>35.21</td>
<td>5.4</td>
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<td>95</td>
<td>4.85</td>
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<tr>
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<td>32.76</td>
<td>7.0</td>
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*NS - Not significant at .05 level.

It may be seen that there was no significant difference between the means of scores on the personality test for Experimental Group I and Control Group III. These groups were initially comparable. A difference did exist, however, between the mean scores for groups II and IV (P=.001). Since there was an initial difference, groups II and IV could not be compared on the post test.
Statistical computation of the four random sampled groups indicate the tendency for 94 experimental subjects to gain in mean scores of personality tests and for 99 subjects to show loss. This same tendency was repeated in the mean scores of the 87 subjects comprising the lower 50 per cent skill status.

There was little difference in the gain of mean scores of the personality test when the sexes were compared in each school. The girls showed the higher gain of .4 in mean scores in the experimental group. However, a greater difference did exist between the sexes in the control school. The boys had a higher gain of .9 in mean scores than the girls.

Sampled groups, Experimental I compared with Control III, showed a difference of gain in the post-test mean scores at the .001 level of confidence. This increase was obtained by the experimental group; therefore, the null hypothesis was rejected on the post-test mean scores. Table II summarizes these findings. Although the initial difference of test mean scores for groups II and IV did not permit the post-test comparison for significant difference, data is included in Table II to show the change in post-test mean scores.
TABLE XI

COMPARISON OF POST-TEST MEAN SCORES ON PERSONALITY TEST

<table>
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<tr>
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<td>Group I</td>
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<td>.001</td>
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<td></td>
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<tr>
<td>Experimental</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group II</td>
<td>36.64</td>
<td>7.3</td>
<td>4.40</td>
<td>95</td>
<td>8.01</td>
<td>.001</td>
</tr>
<tr>
<td>Control IV</td>
<td>32.24</td>
<td>7.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Due to the lack of initial comparability of Experimental Groups II and Control Group IV, the between total group method was employed. Both Experimental Groups I and II were compared to the combined Control Groups III and IV to ascertain the significant difference of pre-test and post-test mean scores of personality. By so doing, the increase of the number of subjects resulted in a blend of pre-test mean scores.
Table III shows that there was no significant difference of the pre-test mean scores, therefore, the null hypothesis was verified. On the post-test comparison, the null hypothesis was rejected due to the statistical difference at the .005 level of confidence.

**TABLE III**

**COMPARISON OF PERSONALITY TEST INITIAL MEAN SCORES AND POST-TEST MEAN SCORES BETWEEN COMBINED SUB-GROUPS**

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>df</th>
<th>Differences</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test of Personality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental Groups</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I, II</td>
<td>34.06</td>
<td>93</td>
<td>1.54</td>
<td>1.30</td>
<td>NS*</td>
</tr>
<tr>
<td>Control Groups</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>III, IV</td>
<td>32.52</td>
<td>98</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-test of Personality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental Groups</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I, II</td>
<td>35.83</td>
<td>93</td>
<td></td>
<td>3.74</td>
<td>.005</td>
</tr>
<tr>
<td>Control Groups</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>III, IV</td>
<td>32.09</td>
<td>98</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*NS - Not significant at the .05 level.
The null hypothesis in the pre-and post-test within each group was investigated. Only the mean gain of Experimental Group I was significant at the .025 level of confidence; therefore, the null hypothesis was rejected in this comparison but verified in the other three within-group comparisons. Table IV shows these figures.

### TABLE IV

**PERSONALITY TEST INITIAL MEAN SCORES AND POST-TEST MEAN SCORES WITHIN GROUPS**

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-test</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Experimental</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group I</td>
<td>32.66</td>
<td>35.02</td>
</tr>
<tr>
<td>Pre-test</td>
<td>7.5</td>
<td>7.8</td>
</tr>
<tr>
<td>Post-test</td>
<td>2.36</td>
<td>46 2.54</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.025</td>
</tr>
<tr>
<td><strong>Control III</strong></td>
<td>32.08</td>
<td>31.94</td>
</tr>
<tr>
<td>Pre-test</td>
<td>6.96</td>
<td>7.4</td>
</tr>
<tr>
<td>Post-test</td>
<td>0.14</td>
<td>49 0.17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NS*</td>
</tr>
<tr>
<td><strong>Experimental</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group II</td>
<td>35.21</td>
<td>36.64</td>
</tr>
<tr>
<td>Pre-test</td>
<td>5.4</td>
<td>7.3</td>
</tr>
<tr>
<td>Post-test</td>
<td>1.425</td>
<td>46 1.617</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NS*</td>
</tr>
<tr>
<td><strong>Control IV</strong></td>
<td>32.76</td>
<td>32.24</td>
</tr>
<tr>
<td>Pre-test</td>
<td>6.96</td>
<td>7.23</td>
</tr>
<tr>
<td>Post-test</td>
<td>0.520</td>
<td>48 .636</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NS*</td>
</tr>
</tbody>
</table>

*NS - Not significant at .05 level.
Due to the decided increase in mean scores of the Experimental Group II subjects, this hypothesis investigation was extended beyond the single group method. When both Experimental Groups I and II were combined for the within group comparison, the mean difference was 1.72 with 93 for the degree of freedom. The t value was 2.69 which resulted at the .01 level of confidence in the difference of the pre-and post-personality test mean scores. Therefore, the null hypothesis was rejected.

The self adjustment section of the standardized California Test of Personality included these components of the social dimension. They were self reliance, sense of personal worth, sense of personal freedom, feeling of belonging, withdrawing tendencies, and nervous symptoms.

The comparative mean scores of pre-and post-sub-tests made by Experimental Group I and Control Group III indicated the advantage of the experimental subjects over the control group in all but two test comparisons. The experimental group mean gain in each of the following sub-tests were: .849 in self reliance, .040 in personal freedom, .527 in withdrawing tendencies, and .680 in nervous symptoms (the higher score of the last two components indicating freedom from these adverse patterns). In two tests, the Control Group III indicated mean score advantage over the experimental subjects. The mean gains were .372 in scores of personal worth and .225 in sense of belonging. Table V illustrates this summary.
<table>
<thead>
<tr>
<th></th>
<th>Experimental Group I</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test Mean Score</td>
<td>Post-test Mean Score</td>
<td>Difference Gain (+)</td>
<td>Pre-test Mean Score</td>
<td>Post-test Mean Score</td>
<td>Difference Gain (+)</td>
<td>Exp. Advantage I</td>
<td>Cont. Advantage III</td>
<td></td>
</tr>
<tr>
<td>1A. Self reliance</td>
<td>5.702</td>
<td>6.191</td>
<td>+.489</td>
<td>6.160</td>
<td>5.800</td>
<td>-.360</td>
<td>.849</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1B. Sense of personal</td>
<td>5.446</td>
<td>5.978</td>
<td>+.532</td>
<td>5.440</td>
<td>5.600</td>
<td>+.160</td>
<td>.372</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1C. Sense of personal</td>
<td>5.680</td>
<td>6.000</td>
<td>+.320</td>
<td>5.360</td>
<td>5.640</td>
<td>+.280</td>
<td>.040</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1D. Feeling of</td>
<td>5.702</td>
<td>5.617</td>
<td>-.085</td>
<td>5.400</td>
<td>5.540</td>
<td>+.140</td>
<td>.225</td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1E. Freedom from</td>
<td>5.893</td>
<td>6.32</td>
<td>+.427</td>
<td>5.540</td>
<td>5.440</td>
<td>-.100</td>
<td>.527</td>
<td></td>
<td></td>
</tr>
<tr>
<td>withdrawing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>tendencies</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1F. Freedom from</td>
<td>4.553</td>
<td>4.893</td>
<td>+.340</td>
<td>4.400</td>
<td>4.060</td>
<td>-.340</td>
<td>.680</td>
<td></td>
<td></td>
</tr>
<tr>
<td>nervous symptoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TABLE V
MEAN SCORES OF PRE-AND POST-SUB-TESTS OF SELF ADJUSTMENT COMPONENTS
The same computations were applied to Experimental Group II and Control Group IV in terms of the six sub-tests results. Experimental II tended to show score advantage over Control Group IV in all sub-test but one. The summarized mean gain in scores follows: .186 in self reliance, .289 in personal worth, .372 in feeling of belonging, .263 in withdrawing tendencies, and .872 in nervous symptoms. The only mean gain made by the control group was .146 in personal freedom as shown in Table VI.

**Personality Scores-Skill Status Comparison**

The investigator gave secondary focus on the mean scores of personality tests of selected subjects. Of the total 193 children, attention was given to a sub-population of 87 subjects who represented the lower 50 per cent skill status of both the experimental and control school groups. The investigator hypothesized that the child less gifted in selected motor skills would indicate the greater gain in personality test mean scores when exposed to the daily child-centered program of physical education.

Subjects of the lower skill level status were determined by the results of three objective skill tests, the "run and over" obstacle, the standing broad jump, and the throw for distance. Each child's raw score was transformed into the Hull score scale so that the resultant measures involving time and distance might be put on a comparable scale. The three "scale scores" of each subject were then averaged into one scale score to represent the composite result of these three skill tests.
TABLE VI

MEAN SCORES OF PRE-AND POST-SUB-TESTS OF SELF ADJUSTMENT COMPONENTS

<table>
<thead>
<tr>
<th></th>
<th>Pre-test Mean Score</th>
<th>Post-test Mean Score</th>
<th>Difference</th>
<th>Gain (+)</th>
<th>Loss (-)</th>
<th>Pre-test Mean Score</th>
<th>Post-test Mean Score</th>
<th>Difference</th>
<th>Gain (+)</th>
<th>Loss (-)</th>
<th>Advantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Group II</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Control Group IV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1A. Self reliance</td>
<td>6.361</td>
<td>6.425</td>
<td>+0.064</td>
<td></td>
<td></td>
<td>5.897</td>
<td>5.775</td>
<td>-.122</td>
<td></td>
<td></td>
<td>.186</td>
</tr>
<tr>
<td>1B. Sense of personal worth</td>
<td>6.085</td>
<td>5.893</td>
<td>-.192</td>
<td></td>
<td></td>
<td>5.775</td>
<td>5.285</td>
<td>-.490</td>
<td></td>
<td></td>
<td>.289</td>
</tr>
<tr>
<td>1C. Sense of personal freedom</td>
<td>6.444</td>
<td>6.574</td>
<td>+0.130</td>
<td></td>
<td></td>
<td>5.851</td>
<td>6.127</td>
<td>+.276</td>
<td></td>
<td></td>
<td>.146</td>
</tr>
<tr>
<td>1D. Feeling of belonging</td>
<td>6.000</td>
<td>6.127</td>
<td>+0.127</td>
<td></td>
<td></td>
<td>5.877</td>
<td>5.632</td>
<td>-.245</td>
<td></td>
<td></td>
<td>.372</td>
</tr>
<tr>
<td>1E. Freedom from withdrawing tendencies</td>
<td>5.744</td>
<td>6.191</td>
<td>+0.447</td>
<td></td>
<td></td>
<td>5.346</td>
<td>5.530</td>
<td>+.184</td>
<td></td>
<td></td>
<td>.263</td>
</tr>
<tr>
<td>1F. Freedom from nervous symptoms</td>
<td>4.553</td>
<td>5.404</td>
<td>+0.851</td>
<td></td>
<td></td>
<td>4.204</td>
<td>4.183</td>
<td>-.021</td>
<td></td>
<td></td>
<td>.872</td>
</tr>
</tbody>
</table>
Several exceptions were made in the assignment of these subjects to this skill rank. Although five children of the 87 subjects had slightly more than 50 per cent, they were assigned to this group. Two of their three Hull scale scores were less than 50 per cent.

One of their scale scores was above this point of demarcation and therefore their average was somewhat "skewed." The investigator believed that as many subjects as possible needed to be included in this relationship; consequently, these five subjects were assigned to the lower skill range.

A brief summary will be included for the results of 600 skill tests administered in this project. The computed mean scores for the following skill tests were: The mean score for the "run and over" obstacle timed test was 7.5 seconds with a standard deviation of 8.52 for the experimental school subjects and a mean score of 6.5 seconds with the standard deviation of 9.60 for the control school subjects.

The results of the standing broad jump test were 3 feet 6.8 inches with a standard deviation of 7.74 for the experimental school subjects and 3 feet 7 inches with a standard deviation of 6.84 for the opposing groups.

The computed results of the throw for distance test for the experimental school groups were 43 feet 4 inches with a standard deviation of 17.9 and 44 feet 5 inches with a standard deviation of 17.0 for the control school subjects. The larger deviations of this last test were expected due to the great variation of ability and consequently the wide range of raw scores obtained in this skill item.
The reported mean scores constituted the line of demarcation, the 50 per cent level, for the assignment of subjects to the lower skill status. Table VII shows the skill test results.

**TABLE VII**

**MEAN SCORES OF GROSS MOTOR SKILL TESTS OF THE FOUR GROUPS OF SUBJECTS**

<table>
<thead>
<tr>
<th>Test</th>
<th>Mean Score</th>
<th>Standard Deviation</th>
<th>Mean Score Advantage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Obstacle test</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental Groups I, II</td>
<td>7.5 sec.</td>
<td>8.52</td>
<td>1 sec.</td>
</tr>
<tr>
<td>Control Groups III, IV</td>
<td>6.5 sec.</td>
<td>9.60</td>
<td></td>
</tr>
<tr>
<td><strong>Standing broad jump test</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental Groups I, II</td>
<td>3'6.8&quot;</td>
<td>7.74</td>
<td>.2&quot;</td>
</tr>
<tr>
<td>Control Groups III, IV</td>
<td>3'7&quot;</td>
<td>6.84</td>
<td></td>
</tr>
<tr>
<td><strong>Distance throw test</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental Groups I, II</td>
<td>43'4&quot;</td>
<td>17.9</td>
<td></td>
</tr>
<tr>
<td>Control Groups III, IV</td>
<td>44'5&quot;</td>
<td>17.0</td>
<td>1'1&quot;</td>
</tr>
</tbody>
</table>
With focus on the lower skilled subjects, there was increase in personality post-test mean scores of Experimental Group I compared to Control Group II at the .01 level of confidence. Therefore, the hypothesis of no significant difference in post-test mean scores was rejected. Random sampled Experimental Group II compared to Control Group IV showed an increase in post-test mean scores with the significant difference at the .05 level of confidence. The null hypothesis was rejected on these post-test mean scores despite the fact that there was also significant difference at the .05 level of confidence in pre-test mean scores. The difference of the post-test mean scores withstood the initial rejection of the null hypothesis, the significance of difference in the pre-test scores. Table VIII summarizes these findings.

Teacher Rating of Child's Play Behavior

The study included the teacher assessment of the child's overt behavior in play. Under similar rating conditions at both involved schools, results indicate that there is influence of daily physical education in the improvement of overt patterns of play behavior. Both Experimental Groups I and II showed higher mean scores, a significant difference at the .001 level of confidence, in this five-point scale rating than did Control Groups III and IV. In both comparisons, the null hypothesis was rejected. Table IX includes the mean scores of all four random sampled groups.
TABLE VIII
PERSONALITY TEST INITIAL MEAN SCORES AND CHANGES IN MEAN SCORES
OF SUBJECTS OF THE LOWER MOTOR SKILL STATUS

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Mean Differences</th>
<th>df</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test of Personality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental Group I</td>
<td>31.65</td>
<td>7.80</td>
<td>0.93</td>
<td>45</td>
<td>1.19</td>
<td>NS*</td>
</tr>
<tr>
<td>Control III</td>
<td>30.72</td>
<td>6.36</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-test of Personality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental Group I</td>
<td>33.00</td>
<td>8.24</td>
<td>2.28</td>
<td>45</td>
<td>2.77</td>
<td>.01</td>
</tr>
<tr>
<td>Control III</td>
<td>30.72</td>
<td>7.55</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-test of Personality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental Group II</td>
<td>33.99</td>
<td>5.82</td>
<td>1.99</td>
<td>38</td>
<td>2.50</td>
<td>.05</td>
</tr>
<tr>
<td>Control IV</td>
<td>32.00</td>
<td>6.78</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-test of Personality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental Group II</td>
<td>34.00</td>
<td>7.87</td>
<td>3.04</td>
<td>38</td>
<td>3.45</td>
<td>.05</td>
</tr>
<tr>
<td>Control IV</td>
<td>30.96</td>
<td>7.47</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*NS - Not significant at the .05 level.
TABLE IX
MEAN SCORE DIFFERENCES ON TEACHER RATINGS OBTAINED
BY THE LOWER MOTOR SKILLED SUBJECTS

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Mean Differences</th>
<th>df</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Group I</td>
<td>25.72</td>
<td>4.48</td>
<td>5.72</td>
<td>45</td>
<td>9.14</td>
<td>.001</td>
</tr>
<tr>
<td>Control III</td>
<td>20.00</td>
<td>4.69</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental Group II</td>
<td>27.12</td>
<td>4.80</td>
<td>7.22</td>
<td>38</td>
<td>10.35</td>
<td>.001</td>
</tr>
<tr>
<td>Control IV</td>
<td>19.90</td>
<td>4.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

With this same selected sub-population, an attempt was made to compute a correlation to ascertain if there were a relationship between this low skill status and pre-test mean scores of personality tests and a relationship between the mean composite score of teacher ratings on student play behavior and post-personality test mean scores. The relationships constituted in this manner were of necessity. Valid research procedure dictated the comparison of two variables in the "before" period; skill tests were only administered one time (see rationale in Chapter III, Procedure). This same requirement made for the relationship between two variables in the "after" period; the teacher rating was given only one time (see rationale in Chapter III, Procedure).
Statistical computations indicated all correlations were not significant except for the Control Group IV with the post-personality test mean score and the teacher rating mean score. The Pearson r calculation was 0.552 or at the .005 level of confidence.

**Child Subjective Evaluation of Physical Education**

The study included the child's assessment of the physical education experience and play situations in the recess setting. The point value to questions on these forms was ascertained in view of the objectives of the experimental program of physical education. This numerical value assigned to possible responses was the investigator's attempt to "weight" these simple test responses.

This evaluation comprised of two forms. The "short" form administered to 193 subjects was intended to indicate their reaction to various play activities and their opinion regarding teaching methods used in physical education classes. The "extended" form was administered to only the 94 experimental subjects. The purpose of this form was twofold. It was to serve as an index of their reaction to specified conditions of the experimental program to which they were exposed. Second, this form was a test to indicate, in part, evidence of their cognitive (thought) ability. These items dealt with spacial perception (laterality), spacial components, force and selected fundamental body mechanics such as body base and balance. (See Chapter III for rationale of items using advanced terminology.)
Although the mean score differences were small of the "short" form of the child rating, both experimental groups exceeded the control groups. The mean score of Experimental Group I was 18.44 with a standard deviation of 2.30 compared to the mean score of 17.24 with a standard deviation of 3.02 of Control Group III. Experimental Group II had a mean score of 18.75 with a standard deviation of 2.96 and Control Group IV had a mean score of 17.67 with a standard deviation of 2.28.

A brief summary is included of child evaluation results. Only those items obtaining the greatest difference between groups will be given in this chapter. These results indicate that as the teacher places value on conditions and activities, so does the student. (See Appendix for results of questions not included in this chapter.)

Question 5. How many children would you rather play with?

<table>
<thead>
<tr>
<th></th>
<th>Control Exp. I</th>
<th>Control Exp. II</th>
<th>Control III</th>
</tr>
</thead>
<tbody>
<tr>
<td>By myself</td>
<td>4.2%</td>
<td>8%</td>
<td>10.6%</td>
</tr>
<tr>
<td>With 2-3 others</td>
<td>49.0%</td>
<td>31%</td>
<td>53.2%</td>
</tr>
<tr>
<td>With the whole class</td>
<td>46.8%</td>
<td>61%</td>
<td>36.2%</td>
</tr>
</tbody>
</table>

It is noted that many of the subjects in all groups preferred small sub-group work. Individual autonomy can be more readily promoted in individual and small sub-groups than in total group activity. Many educators assume that all children prefer large group activities; consequently, opportunity for individualism is lessened.
Question 7. Do you like to make up your own ideas about play things and play activities?


<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Exp. II</th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>76%</td>
<td>48%</td>
<td>61.8%</td>
<td>39.8%</td>
</tr>
<tr>
<td>No</td>
<td>3%</td>
<td>10%</td>
<td>6.4%</td>
<td>10.2%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>21%</td>
<td>42%</td>
<td>31.8%</td>
<td>50.0%</td>
</tr>
</tbody>
</table>

The majority of experimental subjects indicated preference for this type of activity while the control subjects were somewhat less definitive in their responses. This item was included in the evaluation; it was believed that the question was related to the influence of innovative type activities.

Question 8. What is the most important thing that we did in play periods?


<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Exp. III</th>
<th>Exp. II</th>
<th>Exp. IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>With balls</td>
<td>0.0%</td>
<td>15%</td>
<td>2.1%</td>
<td>12.6%</td>
</tr>
<tr>
<td>Climbing and stunts</td>
<td>4.8%</td>
<td>20%</td>
<td>27.7%</td>
<td>31.2%</td>
</tr>
<tr>
<td>Dancing</td>
<td>11.4%</td>
<td>20%</td>
<td>4.2%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Running games</td>
<td>18.8%</td>
<td>45%</td>
<td>19.2%</td>
<td>56.2%</td>
</tr>
<tr>
<td>&quot;Showing times&quot;</td>
<td>44.0%</td>
<td>-</td>
<td>34.1%</td>
<td>-</td>
</tr>
<tr>
<td>Free play (&quot;Party Day&quot;)</td>
<td>21.0%</td>
<td>-</td>
<td>12.7%</td>
<td>-</td>
</tr>
</tbody>
</table>

Noted is the influence of experimental conditions in that more experimental subjects indicated "showing time" as the most important. More control subjects responded with running games indicating whole group and structured type activities.
Question 14. Are you afraid when we do stunts and climbing on the bars?

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Exp. I</th>
<th>III</th>
<th>Exp. II</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>6.3%</td>
<td>10%</td>
<td>2.1%</td>
<td>6.0%</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>78.7%</td>
<td>67%</td>
<td>74.5%</td>
<td>69.5%</td>
<td></td>
</tr>
<tr>
<td>Sometimes</td>
<td>15.0%</td>
<td>23%</td>
<td>23.4%</td>
<td>24.5%</td>
<td></td>
</tr>
</tbody>
</table>

More control group subjects responded yes and sometimes than the opposing groups. This difference may be interpreted in several ways. In the control situation, there may be peer or teacher value placed on the more rigid standards of performance than in the experimental situation. In the latter, freedom was given in suspensory activity on the climbing frame and stunts were presented in a more casual manner through the movement exploration approach. Sixteen per cent of the control group subjects indicated that they were afraid. It is this group who engages in the type of physical education which is known as "recess."

Question 16. When do you think you do the best in gym?

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Exp. I</th>
<th>III</th>
<th>Exp. II</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>When the teacher tells you exactly what to do</td>
<td>21.2%</td>
<td>57%</td>
<td>23.4%</td>
<td>65.4%</td>
<td></td>
</tr>
<tr>
<td>When you make up your own ideas in play</td>
<td>57.6%</td>
<td>10%</td>
<td>61.7%</td>
<td>6.1%</td>
<td></td>
</tr>
<tr>
<td>I do not know</td>
<td>21.2%</td>
<td>33%</td>
<td>14.9%</td>
<td>28.5%</td>
<td></td>
</tr>
</tbody>
</table>

The greatest number of experimental subjects indicated the preference of making up their own ideas. This is interpreted as an effect of the predominant innovative climate. The control subjects, on the other hand, responded more to teacher structured activities than any other choice.
The "Extended Form"

This form was administered to only the experimental subjects.

The investigator believes that these following test items have many implications, too numerous to include all in the brief discussion. (See Appendix for results of questions not included in this chapter.)

Question 17. Do you think that you do a good job in the "showing" times?

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>43%</td>
<td>45%</td>
</tr>
<tr>
<td>No</td>
<td>14%</td>
<td>8%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>43%</td>
<td>47%</td>
</tr>
</tbody>
</table>

Question 21. Do you think that you have more good ideas about things since you have had gym every day?

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>66%</td>
<td>61%</td>
</tr>
<tr>
<td>No</td>
<td>11%</td>
<td>17%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>23%</td>
<td>22%</td>
</tr>
</tbody>
</table>

The fact that a child believes his ideas have merit should enhance his feeling of self confidence. This quality appears to be most important in adequate self adjustment. Success in school situations promote a positive attitude toward the educative process. The more individualized the approach, the better the chance for the child to achieve in school activities.
Question 22. Do you see players argue as much in party days as they do at recess time?

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>21%</td>
<td>19%</td>
</tr>
<tr>
<td>No</td>
<td>64%</td>
<td>62%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>15%</td>
<td>19%</td>
</tr>
</tbody>
</table>

The reader may recall that "Party Day" was a free play period included in the experimental program. It is interpreted that the typical recess setting with less adult attention is not an adequate substitute for an organized program of physical education, especially in the development of social dimensions.

Question 25. Do you feel afraid when asked to make up your own ideas after "showing" times?

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>2.2%</td>
<td>6.5%</td>
</tr>
<tr>
<td>No</td>
<td>80.8%</td>
<td>85.0%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>17.0%</td>
<td>8.5%</td>
</tr>
</tbody>
</table>

It appears that adult reinforcement in this phase of the child's work habits will promote independent thinking. The teacher's acceptance of diversity of response in a class of children should facilitate the child's development of self confidence.

The following items were included to ascertain, in part, their reasoning power of space perception, elements of space, force and simple body mechanics (see Chapter III, Procedure). No discussion was encouraged or allowed five days before this test was administered (see Appendix for lessons of weeks IX and X).
Question 26. With most big range movements a second grader uses

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>A tiny bit of force</td>
<td>10%</td>
<td>10.5%</td>
</tr>
<tr>
<td>No force at all</td>
<td>9%</td>
<td>8.5%</td>
</tr>
<tr>
<td>Lots and lots of force</td>
<td>81%</td>
<td>81.0%</td>
</tr>
</tbody>
</table>

Most children could associate range (a spatial component) and force in this item posed in the child's terms.

Question 27. Which top line in these three line pictures is in a vertical plane?

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>32.0%</td>
<td>38.3%</td>
</tr>
<tr>
<td></td>
<td>38.2%</td>
<td>21.3%</td>
</tr>
<tr>
<td></td>
<td>29.8%</td>
<td>40.4%</td>
</tr>
</tbody>
</table>
Question 28. Which top line in these three line pictures is in a transverse plane?

<table>
<thead>
<tr>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>27.7%</td>
<td>21.3%</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>25.5%</td>
<td>25.5%</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>46.8%</td>
<td>53.2%</td>
</tr>
</tbody>
</table>

Question 29. Which top line in these three line pictures is in a horizontal plane?

<table>
<thead>
<tr>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>42.6%</td>
<td>39.5%</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>38.3%</td>
<td>52.0%</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>19.1%</td>
<td>8.5%</td>
</tr>
</tbody>
</table>
Young children can, to some extent, understand these special abstractions when they are defined in simple terms and this knowledge is applied in the physical education lesson. It was interesting to discover their best response of the three previous items was on the transverse plane question.

Question 30. How many sides does your body have when you are playing on the balance beam?

<table>
<thead>
<tr>
<th>Exp. I</th>
<th>Exp. II</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>76.4%</td>
<td>53.0%</td>
<td>responded &quot;2&quot; (sides)</td>
</tr>
<tr>
<td>13.1%</td>
<td>8.5%</td>
<td>responded &quot;3&quot; (sides)</td>
</tr>
<tr>
<td>10.5%</td>
<td>23.5%</td>
<td>responded &quot;4&quot; (sides)</td>
</tr>
<tr>
<td></td>
<td>15.0%</td>
<td>responded with other answers</td>
</tr>
</tbody>
</table>

This item was included to indicate, in part, their awareness of laterality (Kephart theory).  

Question 31. What is the body base of a player when he runs?

<table>
<thead>
<tr>
<th>Exp. I</th>
<th>Exp. II</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>21%</td>
<td>49%</td>
<td>responded &quot;legs&quot;</td>
</tr>
<tr>
<td>49%</td>
<td>17%</td>
<td>responded &quot;feet&quot;</td>
</tr>
<tr>
<td>30%</td>
<td>34%</td>
<td>indicated other answers</td>
</tr>
</tbody>
</table>

Question 32. Name the sides of your body as you walk forward on the balance beam.

<table>
<thead>
<tr>
<th>Exp. I</th>
<th>Exp. II</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>34%</td>
<td>15%</td>
<td>responded &quot;right&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;left&quot;</td>
</tr>
<tr>
<td>66%</td>
<td>85%</td>
<td>indicated other responses</td>
</tr>
</tbody>
</table>

1 Newell Kephart, Defining the Content of Physical Education (Midwest Association for Physical Education College Women, 1964), pp. 5-7.
Question 33. When the brook is wide, in the "cross the brook" jump we use

<table>
<thead>
<tr>
<th>Force Level</th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>No force</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Little force</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Lots of force</td>
<td>96%</td>
<td>96%</td>
</tr>
</tbody>
</table>

Question 35. Which body base gives you the most balance?

<table>
<thead>
<tr>
<th>Body Base</th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being on one foot</td>
<td>8.5%</td>
<td>10%</td>
</tr>
<tr>
<td>Being on both feet spread out</td>
<td>87.0%</td>
<td>88%</td>
</tr>
<tr>
<td>Being upside down on your hands</td>
<td>4.5%</td>
<td>2%</td>
</tr>
</tbody>
</table>

Questions 31, 33, and 35 were an attempt to find some indication of their understanding of body mechanics, force, and balance.

Question 36. When second graders roll a ball to each other, the balls go in a

<table>
<thead>
<tr>
<th>Level</th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>High level</td>
<td>2.2%</td>
<td>0%</td>
</tr>
<tr>
<td>Low level</td>
<td>91.4%</td>
<td>90%</td>
</tr>
<tr>
<td>Medium level</td>
<td>6.4%</td>
<td>10%</td>
</tr>
</tbody>
</table>

Subjects of this same age level in the companion study, the master's research project, tended to verbalize more freely about levels than planes or range. This written response corresponds closely to the verbalization of the experimental subjects in this present research project.
Question 37. When second graders roll a ball to each other, the ball goes in a

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical plane</td>
<td>25.5%</td>
<td>36%</td>
</tr>
<tr>
<td>Horizontal plane</td>
<td>51.0%</td>
<td>28%</td>
</tr>
<tr>
<td>Diagonal or transverse plane</td>
<td>23.5%</td>
<td>36%</td>
</tr>
</tbody>
</table>

The illustration of responses on these test items indicates that the Jessie Feiring Williams' phrase has foundation: physical education can be considered as "education through the physical."\(^2\)

---

CHAPTER V

SUMMARY, CONCLUSIONS AND IMPLICATIONS

The study was undertaken to investigate this relatively unresearched and assumed premise: physical education contributes to the social adjustment of the student. This presumed contribution is due, in part, to his self improvement. The primary focus of this research was directed toward the change in self adjustment, a basic component of the social dimension.

The project, a study to measure effects of change over a given time under stipulated conditions of physical education, was achieved by several measures. There was utilization of three objective skill tests, the standardized California Test of Personality, teacher assessment with a five point rating scale of the child's play behavior and the student reaction of the physical education program on evaluation forms.

The information included in this chapter must be considered in view of the limitations of this study. The following factors are influential.

1. The study was limited in the final research population to 193 subjects.
2. The study included only those subjects of second grade level with the mean age of seven years and six months in the initial phase of the project.

3. These students represented the upper middle social economic class level as assessed by the involved school administration.

4. The period of actual experimental-control stipulations was confined to a three month period. The experimental program consisted predominantly of individual and small group activities.

5. The evaluative instruments were limited to the nonprojective, group type standardized California Test of Personality, three gross motor skill tests, a five point scale subjective teacher rating, and simple paper-pencil type evaluations made by second grade children. Each of these instruments possesses inherent limitations.

Summary of Evaluative Results

The resultant calculations of both pre-tests and post-test mean scores of the self adjustment section of the personality test indicate the tendency for the experimental subjects to gain. In this same reference, the control subjects indicated slight decrease in mean scores.

It was necessary to compare the groups on the initial administration of the personality test to determine comparability of the groups. There was no significant difference between the means of scores on the personality test for Experimental Group I and Control Group II. Thus,
these two groups were initially comparable. A significant difference did exist with the other two groups.

A further summary of the test results is based on the following study hypotheses. The first hypothesis utilized the between group treatment. Because of the outcome of the initial comparison, the first hypothesis, that of no significant difference of post-test personality scores, was rejected. This outcome was dictated by the statistical computation at the .001 level of confidence in the Experimental Group I and Control Group III contrast.

In the initial or pre-test comparison of Experimental Group II and Control Group IV a difference did exist. Due to this initial contrast at the .001 level of confidence, these two groups could not be compared in terms of the same statistical critical t test on post-test mean scores.

However, the hypothesis of no significant difference of personality post-test mean scores was rejected, when Experimental Groups I and II were combined and compared to both Control Groups III and IV. By combining the groups within each school, the increase in the number of subjects resulted in a blend of pre-test mean scores. Therefore, with this resultant initial comparability, there was a significant difference at the .005 level of confidence in post-test mean scores in favor of the experimental subjects.

The second and third hypotheses necessitated the within group comparison. The former hypothesis, dealing with the significance of pre-and post-test change was verified for within treatment of both
Control Groups III and IV comparisons. The third hypothesis was rejected for Experimental Group I due to the statistical computation at the .025 level of confidence. This same null hypothesis was verified for the Experimental Group II within group comparison. When both Experimental Groups I and II were combined for the within group comparison, the third hypothesis was rejected because of the .01 level of confidence in the difference of the pre-and post-personality test mean scores.

The fourth and last major hypothesis used the method of between group comparison. This involved children of the lower 50 per cent skill status. The investigation of this hypothesis was accomplished by teacher assessment of the overt patterns of play behavior by means of a five point rating scale. In both group comparisons, Experimental I with Control III and Experimental II with Control IV, there were significant differences of mean scores at the .001 level of confidence; consequently, the null hypothesis was rejected throughout these comparative phases in favor of the experimental subjects.

It is believed that the comparative results of the six sub-tests of the self adjustment test have implications. Experimental groups exceeded the control subjects in post-test scores of most sub-tests. In the twelve comparisons made, the experimental subjects showed gain over the opposing groups in nine out of the twelve straight line relationships.
The self reliance score difference appeared as the most dramatic
with decrease in scores of both control groups and a decided rise in
scores of those same children who had been exposed to exploratory and
individual type of activities for a three month period. According to
this quantitative index, physical education in these stipulated con-
ditions contributes to this specific component of self adjustment as
defined by the test authors (see operational definitions in Chapter I).

It is interesting to note, in terms of self reliance, that there
was a parallel direction indicated in child evaluations on questions 21
and 25. Both items dealt with subjects' ideas on independent thinking.
The majority of their responses to both these questions indicated that
they believed that their ideas had value and that they were not afraid
to do independent thinking.

In the movement exploration climate, success in gross motor ac-
tivities, a realm so highly valued in the child's mind, appeared to
help those children exhibiting shyness. Another marked score differ-
ence appeared in the sub-test section on withdrawing tendencies. The
fourteenth question of the child evaluation form tends to have impli-
cations for the shy tended child in that experimental subjects tended
to indicate not being fearful of stunts and apparatus activities while
more control subjects responded that they were afraid (or sometimes
afraid). It is the latter subjects who engage in the type of physical
education which is known as "recess."

The investigator assumed that the lower skilled child of experi-
mental groups would gain in mean scores of personality tests compared
to the same of control group subjects of similar skill status. This did not constitute a major hypothesis, although the assumption was included in the colloquium outline. Due to this sincere belief, the investigator had statistical calculation made on this comparison.

In reality, this minor assumption was proven as well founded in terms of statistical tests as some of the major hypotheses. The null hypothesis in both group comparisons involving skill level and personality mean scores was rejected. Experimental Group I obtained the .01 level of confidence in increase of post-test mean scores over the Control Group III. This high level was facilitated by the verification of the null hypothesis on the pre-test level. It is interesting to note that despite the .05 level of significant difference on pre-test mean scores, the Experimental Group II also reached the .05 level of confidence on the post-test mean score comparison. The minor hypothesis was rejected in both post-test comparisons in favor of the experimental subjects.

Interesting results were obtained in the child test "extended" forms dealing with spacial elements, force and simple body mechanics. The experimental subjects indicated somewhat definitely their understanding of abstractions of space (levels and transverse planes). Over 75 per cent of the children indicated their understanding of force when associated to range, a spacial element. Responses on many of these items indicate that sequential learning did take place due to cognitive thinking in the planned physical education setting. The process of movement exploration apparently does promote the development of understanding of selected basic elements in movement.
Conclusions

1. There will be no significant difference between the mean scores for the control group and the experimental group on the post-test for personality. The null hypothesis was rejected when a comparison was made of the initial mean scores and the post-test mean scores between combined sub-groups in each school. The rejection of the null hypothesis was possible due to the statistical difference at the .005 level of confidence in favor of the experimental subjects.

2. There will be no significant difference between the mean scores for the pre-and post-tests for personality for the control group. The null hypothesis was verified for both Control Groups III and IV.

3. There will be no significant difference between the mean scores for the pre-and post-tests for personality for the experimental group. The null hypothesis was rejected in this within-group comparison for Experimental Group I due to the statistical difference at the .025 level of confidence. The hypothesis was verified for the within-group comparison for the Experimental Group II subjects. However, this sub-group did have an increase in test mean scores. When both experimental sub-groups were combined for the within-group comparison, the statistical computation indicated the .01 level of confidence in the difference of pre-and post-test mean scores. Therefore, the null hypothesis was rejected.
4. There will be no significant difference between teacher rating scores of play behavior for the control and experimental groups. The null hypothesis was rejected in both between group comparisons due to the statistical difference at the .001 level of confidence in favor of the experimental subjects.

There was modest but steady gain in self adjustment scores on personality tests of both experimental groups. Radical gain or loss in mean scores was not anticipated in the initial stages of the study design construction. Components in personality, due to their inherent subtle nature, are slower to change than the alteration in physical growth or improvement in gross motor skills. Nevertheless, decision was made to direct attention to the child's self adjustment. It was judged that the study with this focus had much merit.

The school environment of the involved subjects was held constant except for this intervening variable brought into their curriculum. Caution was exercised that there was no other experimentation done with this age group preceding and during the experimental period of three months. Due to results of personality test score changes, it seems logical to deduce that the daily exposure to the child-centered program, with other things being equal, did contribute to many of the experimental subjects' change in self adjustment.

The investigator does not intend to project a "halo" of the effects of physical education for the young child. One must not conclude that although one large group increased in personality mean scores to a high point of significance, that all children profit equally from
physical education in general or in more specific terms, from the child-centered approach characterized by the individual and small group pursuits of motor tasks. However, in view of these study results, especially in terms of increase in mean scores, the assumption that a well-rounded daily program of physical education contributes to the social adjustment of children has merit. This relatively uninvestigated assumption included in most elementary physical education texts appears to be substantiated.

A well-rounded program of physical education contributes to the improved quality of the child's play behavior. This contribution is evident in the increase of mean scores of experimental subjects on classroom teacher ratings of children's play behavior. Positive responses of subjects were obtained on questions pertaining to spacial components and elements of movement. The results indicate that physical education can be considered as education through the physical.

**Implications**

There are numerous possibilities for further study in this type of research. Study extensions could be in both depth and breadth.

Of interest would be the effect of extended time allocated to actual exposure of the stipulated study conditions with the same age subjects. It is possible that the use of projective personality tests could bring more definitive results than the limited group nonprojective-type of test that was used.
A possible study extension could be a sub-focus on the relationship between the subject of high skill level to change of mean scores on personality tests. This study only used this relationship between skill and personality test results of the subjects who were less gifted in motor skill achievement.

Another study might compare the personality test in relation to the daily traditional physical education program and the daily child-centered program which are both characterized by the stipulations utilized in this study.

A question arises if subjects representing the low social economic class level would react in a different manner or in a similar one, but with more definitive direction than did the class of subjects involved in this project. However, a study in this direction would necessitate, in the initial stage, much larger numbers of subjects due to the mobility of this lower class.

The investigator hypothesizes that the older age subject of the fifth or sixth grade level would show more definite results in the same direction of scores as did the younger age experimental subjects in this study. Should this older age group be used, it is projected that the stipulated conditions should be extended at least twice or threefold the amount of time. The necessity of a longer period of stipulated conditions is due to less individual resiliency, and to greater peer awareness with consequential group pressures.
A possible extension of the study might include the unified efforts for innovative opportunities in art, music, and physical education. This more intensive exposure might yield definitive study results.
Fig. 3. Throw for Distance Test. AAHPER, Ibid., p. 11.
Teacher Rating on the Child's Play Behavior in Recess Period

Name of Student ____________________

Directions:
After reading the items carefully, indicate your response by encircling the number which most nearly represents your reaction to the question regarding the child's behavior in play.

Scale:
0. - Decided regression in behavior pattern in play.
1. - Spasmodic regression of behavior pattern in play.
2. - No observable change in behavior pattern in play.
3. - Spasmodic improvement in behavior pattern in play.
4. - Decided improvement in behavior pattern in play.

1. Is an isolate in play period (is usually unoccupied and engages in little observable activity). 0 1 2 3 4
2. Displays evidence of self directed play (requires little adult guidance in play activities). 0 1 2 3 4
3. Is attentive to playground safety rules. 0 1 2 3 4
4. Engages in solitary play during play periods (plays alone). 0 1 2 3 4
5. Cries easily and pities himself when he receives minor injury in play activities. 0 1 2 3 4
6. Exhibits aggressive tendencies in play activities (fighting, quarreling, or grabbing play materials from other play peers). 0 1 2 3 4
7. Group acceptance of the child in play periods. 0 1 2 3 4
8. Reacts to failure or loss in simple competitive type activities without undue sulking or pouting. 0 1 2 3 4
9. Shows evidence of innovative play activity (i.e., tries new activities or combination of play activities). 0 1 2 3 4
Child's Subjective Evaluation of Experiences in Physical Education
("Short Form")

Name____________________

Answer these questions to show what you usually think or feel most of the time about play periods. Decide as fast as you can. Try not to erase or change your first answer. Put an X on the line that shows how you feel or think about these questions.

1. What do you like to play the most?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Exp.I</th>
<th>Cont.III</th>
<th>Exp.II</th>
<th>Cont.IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>With balls</td>
<td>10.5%</td>
<td>14%</td>
<td>9%</td>
<td>24.5%</td>
</tr>
<tr>
<td>Climbing or doing stunts</td>
<td>10.5%</td>
<td>22%</td>
<td>19%</td>
<td>16.3%</td>
</tr>
<tr>
<td>Running games</td>
<td>10.5%</td>
<td>34%</td>
<td>8%</td>
<td>38.8%</td>
</tr>
<tr>
<td>Dances</td>
<td>19.5%</td>
<td>30%</td>
<td>11%</td>
<td>20.4%</td>
</tr>
<tr>
<td>*Free play or &quot;party day&quot;</td>
<td>49.0%</td>
<td>-</td>
<td>53%</td>
<td>-</td>
</tr>
</tbody>
</table>

2. What do you like to play the next best?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Exp.I</th>
<th>Cont.III</th>
<th>Exp.II</th>
<th>Cont.IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>With balls</td>
<td>23%</td>
<td>38%</td>
<td>26%</td>
<td>22.5%</td>
</tr>
<tr>
<td>Climbing or doing stunts</td>
<td>23%</td>
<td>20%</td>
<td>21%</td>
<td>28.5%</td>
</tr>
<tr>
<td>Running games</td>
<td>23%</td>
<td>30%</td>
<td>21%</td>
<td>38.8%</td>
</tr>
<tr>
<td>Dances</td>
<td>8%</td>
<td>12%</td>
<td>6%</td>
<td>10.2%</td>
</tr>
<tr>
<td>*Free play or &quot;party day&quot;</td>
<td>23%</td>
<td>-</td>
<td>26%</td>
<td>-</td>
</tr>
</tbody>
</table>

3. Is there any one activity you do not like as well as the others?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Exp.I</th>
<th>Cont.III</th>
<th>Exp.II</th>
<th>Cont.IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>With balls</td>
<td>15%</td>
<td>24%</td>
<td>17%</td>
<td>14.3%</td>
</tr>
<tr>
<td>Climbing or doing stunts</td>
<td>22%</td>
<td>22%</td>
<td>10%</td>
<td>24.4%</td>
</tr>
<tr>
<td>Running games</td>
<td>15%</td>
<td>16%</td>
<td>13%</td>
<td>14.3%</td>
</tr>
<tr>
<td>Dances</td>
<td>45%</td>
<td>38%</td>
<td>58%</td>
<td>47.0%</td>
</tr>
<tr>
<td>*Free play or &quot;party day&quot;</td>
<td>3%</td>
<td>-</td>
<td>2%</td>
<td>-</td>
</tr>
</tbody>
</table>

*Items included on "short form" evaluation were administered only to experimental subjects.
4. Do you think that you are as good a player when your side has lost in the game?

<table>
<thead>
<tr>
<th></th>
<th>Exp.I</th>
<th>Cont.III</th>
<th>Exp.II</th>
<th>Cont.IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>34.0%</td>
<td>34%</td>
<td>19.0%</td>
<td>30.5%</td>
</tr>
<tr>
<td>No</td>
<td>23.4%</td>
<td>26%</td>
<td>21.4%</td>
<td>24.5%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>42.6%</td>
<td>40%</td>
<td>59.6%</td>
<td>45.0%</td>
</tr>
</tbody>
</table>

5. How many would you rather play with?

<table>
<thead>
<tr>
<th></th>
<th>Exp.I</th>
<th>Cont.III</th>
<th>Exp.II</th>
<th>Cont.IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>By myself</td>
<td>4.2%</td>
<td>8%</td>
<td>10.6%</td>
<td>2%</td>
</tr>
<tr>
<td>With 2-3 other players</td>
<td>49.0%</td>
<td>31%</td>
<td>53.2%</td>
<td>47%</td>
</tr>
<tr>
<td>With everybody in the class</td>
<td>46.8%</td>
<td>61%</td>
<td>36.2%</td>
<td>51%</td>
</tr>
</tbody>
</table>

6. Do you think that you are a better player in physical education class than you are at recess time?

<table>
<thead>
<tr>
<th></th>
<th>Exp.I</th>
<th>Cont.III</th>
<th>Exp.II</th>
<th>Cont.IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>34%</td>
<td>36.8%</td>
<td>42.5%</td>
<td>51.0%</td>
</tr>
<tr>
<td>No</td>
<td>19%</td>
<td>16.3%</td>
<td>15.0%</td>
<td>8.2%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>47%</td>
<td>46.9%</td>
<td>42.5%</td>
<td>40.8%</td>
</tr>
</tbody>
</table>

7. Do you like to make up your own ideas about play things and play activities?

<table>
<thead>
<tr>
<th></th>
<th>Exp.I</th>
<th>Cont.III</th>
<th>Exp.II</th>
<th>Cont.IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>76%</td>
<td>48%</td>
<td>61.8%</td>
<td>39.8%</td>
</tr>
<tr>
<td>No</td>
<td>3%</td>
<td>10%</td>
<td>6.4%</td>
<td>10.2%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>21%</td>
<td>42%</td>
<td>31.8%</td>
<td>50.0%</td>
</tr>
</tbody>
</table>
8. What is the most important thing that we did in play periods?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Exp.I</th>
<th>Cont.III</th>
<th>Exp.II</th>
<th>Cont.IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>With balls</td>
<td>0.0%</td>
<td>15%</td>
<td>2.1%</td>
<td>12.6%</td>
</tr>
<tr>
<td>Climbing and stunts</td>
<td>4.8%</td>
<td>20%</td>
<td>27.7%</td>
<td>31.2%</td>
</tr>
<tr>
<td>Dancing</td>
<td>11.4%</td>
<td>20%</td>
<td>4.2%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Running games</td>
<td>18.8%</td>
<td>45%</td>
<td>19.2%</td>
<td>56.2%</td>
</tr>
<tr>
<td>&quot;Showing&quot; times</td>
<td>44.0%</td>
<td>-</td>
<td>34.1%</td>
<td>-</td>
</tr>
<tr>
<td>*Free play or &quot;party day&quot;</td>
<td>21.0%</td>
<td>-</td>
<td>12.7%</td>
<td>-</td>
</tr>
</tbody>
</table>

9. Second graders are playing a game. Draw an X to show me where you are when this game is being played.

<table>
<thead>
<tr>
<th>Location</th>
<th>Exp.I</th>
<th>Cont.III</th>
<th>Exp.II</th>
<th>Cont.IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inside the ring</td>
<td>15.0%</td>
<td>21%</td>
<td>22%</td>
<td>16.3%</td>
</tr>
<tr>
<td>On or in between small circles</td>
<td>80.8%</td>
<td>71%</td>
<td>72%</td>
<td>73.5%</td>
</tr>
<tr>
<td>Outside the ring</td>
<td>4.2%</td>
<td>8%</td>
<td>6%</td>
<td>10.2%</td>
</tr>
</tbody>
</table>

10. When your side loses a game, is it your fault?

<table>
<thead>
<tr>
<th>Response</th>
<th>Exp.I</th>
<th>Cont.III</th>
<th>Exp.II</th>
<th>Cont.IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>4.0%</td>
<td>8%</td>
<td>14.0%</td>
<td>2.8%</td>
</tr>
<tr>
<td>No</td>
<td>45.0%</td>
<td>58%</td>
<td>52.0%</td>
<td>68.1%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>51.0%</td>
<td>34%</td>
<td>34.0%</td>
<td>29.1%</td>
</tr>
</tbody>
</table>

11. When your side loses a game, is it the other player's fault?

<table>
<thead>
<tr>
<th>Response</th>
<th>Exp.I</th>
<th>Cont.III</th>
<th>Exp.II</th>
<th>Cont.IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>12.0%</td>
<td>12%</td>
<td>15.0%</td>
<td>14.2%</td>
</tr>
<tr>
<td>No</td>
<td>38.0%</td>
<td>44%</td>
<td>44.8%</td>
<td>53.1%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>50.0%</td>
<td>44%</td>
<td>40.2%</td>
<td>32.7%</td>
</tr>
</tbody>
</table>

*Items were included on "short form" were administered to experimental subjects.
12. Is being a good thinker as important as being a fast runner?

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Cont. III</th>
<th>Exp. II</th>
<th>Cont. IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>46.8%</td>
<td>48%</td>
<td>53.3%</td>
<td>65%</td>
</tr>
<tr>
<td>No</td>
<td>34.0%</td>
<td>34%</td>
<td>19.0%</td>
<td>16%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>19.2%</td>
<td>18%</td>
<td>27.7%</td>
<td>19%</td>
</tr>
</tbody>
</table>

13. Are you afraid when we play with balls?

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Cont. III</th>
<th>Exp. II</th>
<th>Cont. IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>0.0%</td>
<td>10%</td>
<td>0.0%</td>
<td>6.1%</td>
</tr>
<tr>
<td>No</td>
<td>89.0%</td>
<td>74%</td>
<td>91.5%</td>
<td>73.5%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>11.0%</td>
<td>16%</td>
<td>8.5%</td>
<td>20.4%</td>
</tr>
</tbody>
</table>

14. Are you afraid when we do stunts and climbing on the bars?

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Cont. III</th>
<th>Exp. II</th>
<th>Cont. IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>6.3%</td>
<td>10%</td>
<td>2.1%</td>
<td>6.0%</td>
</tr>
<tr>
<td>No</td>
<td>78.7%</td>
<td>67%</td>
<td>74.5%</td>
<td>69.5%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>15.0%</td>
<td>23%</td>
<td>23.4%</td>
<td>24.5%</td>
</tr>
</tbody>
</table>

15. Do you think that you are a better player after play periods?

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Cont. III</th>
<th>Exp. II</th>
<th>Cont. IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>10%</td>
<td>23%</td>
<td>12.7%</td>
<td>18.3%</td>
</tr>
<tr>
<td>No</td>
<td>39%</td>
<td>43%</td>
<td>46.8%</td>
<td>49.0%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>51%</td>
<td>34%</td>
<td>40.5%</td>
<td>32.7%</td>
</tr>
</tbody>
</table>

16. When do you think you do the best in gym?

- When the teacher tells you exactly what to do ____________
- When you make up your own ideas in play ____________
- I do not know ____________

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Cont. III</th>
<th>Exp. II</th>
<th>Cont. IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher directed</td>
<td>21.2%</td>
<td>57%</td>
<td>23.4%</td>
<td>65.4%</td>
</tr>
<tr>
<td>Self directed</td>
<td>57.6%</td>
<td>10%</td>
<td>61.7%</td>
<td>6.1%</td>
</tr>
<tr>
<td>I do not know</td>
<td>21.2%</td>
<td>33%</td>
<td>14.9%</td>
<td>28.5%</td>
</tr>
</tbody>
</table>
17. Do you think that you do a good job in the "showing" times?

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>43%</td>
<td>45%</td>
</tr>
<tr>
<td>No</td>
<td>14%</td>
<td>8%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>43%</td>
<td>47%</td>
</tr>
</tbody>
</table>

18. Does it make you feel important when you use your own ideas in play activities?

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>38.4%</td>
<td>44.6%</td>
</tr>
<tr>
<td>No</td>
<td>31.8%</td>
<td>15.0%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>29.8%</td>
<td>40.4%</td>
</tr>
</tbody>
</table>

19. Do you think another second grader is a better player after you have seen what he did in "showing" time?

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>38.4%</td>
<td>31.8%</td>
</tr>
<tr>
<td>No</td>
<td>12.7%</td>
<td>17.1%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>48.9%</td>
<td>51.1%</td>
</tr>
</tbody>
</table>

20. Do you feel that you are a more important second grader after "showing" times?

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>17.0%</td>
<td>25.5%</td>
</tr>
<tr>
<td>No</td>
<td>53.2%</td>
<td>40.5%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>29.8%</td>
<td>34.0%</td>
</tr>
</tbody>
</table>

Note: "Extended form" was administered to experimental subjects only.
21. Do you think that you have more good ideas about things since you have had gym every day?

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>66%</td>
<td>61%</td>
</tr>
<tr>
<td>No</td>
<td>11%</td>
<td>17%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>23%</td>
<td>22%</td>
</tr>
</tbody>
</table>

22. Do you see players argue as much in "party days" as they do at recess time?

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>21%</td>
<td>19%</td>
</tr>
<tr>
<td>No</td>
<td>64%</td>
<td>62%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>15%</td>
<td>19%</td>
</tr>
</tbody>
</table>

23. Are you proud of your own ideas in play periods?

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>46%</td>
<td>35%</td>
</tr>
<tr>
<td>No</td>
<td>22%</td>
<td>9%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>32%</td>
<td>56%</td>
</tr>
</tbody>
</table>

24. Do you like another second grader better after watching him in "showing" times than before?

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>40%</td>
<td>26%</td>
</tr>
<tr>
<td>No</td>
<td>18%</td>
<td>37%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>42%</td>
<td>37%</td>
</tr>
</tbody>
</table>

Note: "Extended form" was administered to experimental subjects only.
25. Do you feel afraid when asked to make up your own ideas after "showing" times?

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>2.2%</td>
<td>6.5%</td>
</tr>
<tr>
<td>No</td>
<td>80.8%</td>
<td>85.0%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>17.0%</td>
<td>8.5%</td>
</tr>
</tbody>
</table>

26. With most big range movements, a second grader uses

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>A tiny bit of force</td>
<td>10%</td>
<td>10.5%</td>
</tr>
<tr>
<td>No force at all</td>
<td>9%</td>
<td>8.5%</td>
</tr>
<tr>
<td>Lots and lots of force</td>
<td>81%</td>
<td>81.0%</td>
</tr>
</tbody>
</table>

Draw a circle around the drawing you think is the best answer.

27. Which top line in these three line pictures is in a vertical plane?

- [ ]
- [ ]
- [ ]

<table>
<thead>
<tr>
<th></th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical plane</td>
<td>27.7%</td>
<td>21.3%</td>
</tr>
<tr>
<td>Horizontal plane</td>
<td>25.5%</td>
<td>25.5%</td>
</tr>
<tr>
<td>Transverse plane</td>
<td>46.8%</td>
<td>53.2%</td>
</tr>
</tbody>
</table>

Note: "Extended form" was administered to only experimental subjects.

No discussion on spacial problems was encouraged or allowed five days before this test was given. (See lessons for weeks IX and X in this section and Chapter III, procedure for child ratings.)
28. Which top line in these three line pictures is in a transverse plane?

\[
\begin{array}{c}
\downarrow \\
= \\
\uparrow \\
\end{array}
\]

Subjects responded:
- Vertical plane: 27.7% (Exp. I), 21.3% (Exp. II)
- Horizontal plane: 25.5% (Exp. I), 25.5% (Exp. II)
- Transverse plane: 46.8% (Exp. I), 53.2% (Exp. II)

29. Which top line in these three line pictures is in a horizontal plane?

\[
\begin{array}{c}
\downarrow \\
= \\
\uparrow \\
\end{array}
\]

Subjects responded:
- Vertical plane: 42.6% (Exp. I), 39.5% (Exp. II)
- Horizontal plane: 38.3% (Exp. I), 52.0% (Exp. II)
- Transverse plane: 19.1% (Exp. I), 8.5% (Exp. II)

Note: "Extended form" was administered to only experimental subjects.
30. How many sides does your body have when you are playing on the balance beam?

<table>
<thead>
<tr>
<th>Exp. I</th>
<th>Exp. II</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>76.4%</td>
<td>53.0%</td>
<td>responded &quot;2&quot; (sides)</td>
</tr>
<tr>
<td>13.1%</td>
<td>8.5%</td>
<td>responded &quot;3&quot; (sides)</td>
</tr>
<tr>
<td>10.5%</td>
<td>23.5%</td>
<td>responded &quot;4&quot; (sides)</td>
</tr>
<tr>
<td>-</td>
<td>15.0%</td>
<td>responded with other answers</td>
</tr>
</tbody>
</table>

Question 30 was included to indicate, in part, their awareness of laterality (Kephart theory). ¹

31. What is the body base of a player when he runs?

<table>
<thead>
<tr>
<th>Exp. I</th>
<th>Exp. II</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>21%</td>
<td>49%</td>
<td>responded &quot;legs&quot;</td>
</tr>
<tr>
<td>49%</td>
<td>17%</td>
<td>responded &quot;feet&quot;</td>
</tr>
<tr>
<td>30%</td>
<td>34%</td>
<td>indicated other answers</td>
</tr>
</tbody>
</table>

32. Name the sides of your body as you walk forward on the balance beam.

<table>
<thead>
<tr>
<th>Exp. I</th>
<th>Exp. II</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>34%</td>
<td>15%</td>
<td>responded &quot;right&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;left&quot;</td>
</tr>
<tr>
<td>66%</td>
<td>85%</td>
<td>indicated other responses</td>
</tr>
</tbody>
</table>

33. When the brook is wide, in the "cross the brook" jump we use

<table>
<thead>
<tr>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>No force</td>
<td>2%</td>
</tr>
<tr>
<td>Little force</td>
<td>2%</td>
</tr>
<tr>
<td>Lots of force</td>
<td>96%</td>
</tr>
</tbody>
</table>

Note: "Extended form" was administered to only experimental subjects.

¹Newell Kephart, Defining the Content of Physical Education (Midwest Association for Physical Education College Women, 1964), pp. 5-7.
34. In the "cross the brook" jump we use

<table>
<thead>
<tr>
<th>Plane Type</th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal plane</td>
<td>42.6%</td>
<td>26%</td>
</tr>
<tr>
<td>Vertical plane</td>
<td>40.4%</td>
<td>46%</td>
</tr>
<tr>
<td>Diagonal or transverse plane</td>
<td>17.0%</td>
<td>28%</td>
</tr>
</tbody>
</table>

35. Which body base gives you the most balance?

<table>
<thead>
<tr>
<th>Position</th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being on one foot</td>
<td>8.5%</td>
<td>10%</td>
</tr>
<tr>
<td>Being on both feet spread out</td>
<td>87.0%</td>
<td>88%</td>
</tr>
<tr>
<td>Being upside down on your hands</td>
<td>4.5%</td>
<td>2%</td>
</tr>
</tbody>
</table>

Questions 31, 33, and 35 were an attempt to find some indication of their understanding of body mechanics, force, and balance.

36. When second graders roll a ball to each other, the ball goes in a

<table>
<thead>
<tr>
<th>Level</th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>High level</td>
<td>2.2%</td>
<td>0%</td>
</tr>
<tr>
<td>Low level</td>
<td>91.4%</td>
<td>90%</td>
</tr>
<tr>
<td>Medium level</td>
<td>6.4%</td>
<td>10%</td>
</tr>
</tbody>
</table>

37. When second graders roll a ball to each other, the ball goes in a

<table>
<thead>
<tr>
<th>Plane Type</th>
<th>Exp. I</th>
<th>Exp. II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical plane</td>
<td>25.5%</td>
<td>36%</td>
</tr>
<tr>
<td>Horizontal plane</td>
<td>51.0%</td>
<td>28%</td>
</tr>
<tr>
<td>Diagonal or transverse plane</td>
<td>23.5%</td>
<td>36%</td>
</tr>
</tbody>
</table>

Note: "Extended form" was administered to only experimental subjects.
Physical Education Lessons
Control Group Center

These lessons were presented to the four second grade sections of the control school. The lessons were given one day each week. Thirty minutes was allotted for this period. Physical education took place in the recess setting the remaining four days each week. No instruction was given in recess periods.

Section I

Lesson 1. Individual and group activity
Balance beam skills
Walks--forward, backward, and sideward
Walk with bean bag on the head
Organized game--Flying Dutchman

Lesson 2. Self-testing type activities--group activity
Stunts--animal walks--elephant, camel, bear, duck
walks and donkey kick
Organized game--Duck, Duck Goose

Lesson 3. Exercises and team-type activity
Push-ups, sit-ups, touching toes, and squat thrusts
Organized game--Four Man Circle Chase

Lesson 4. Exercises and team-type activity
Review activities of Lesson 3
Relay utilizing two shoe boxes to a team

Lesson 5. Tumbling
Stunts--use of mat
Rolls--forward and backward

Lesson 6. Individual and group activities
Exercises
Review activities of Lesson 3
Organized game--Boundary Ball

Lesson 7. Couple and group activity
Exercises--partners--push-ups, sit-ups
Organized game--Butterflies and Daisies
Lesson 8. Self-testing and group activity
Review animal walks of Lesson 2
Organized game--Come With Me

Lesson 9. Self-testing and group activities
Review animal walks of Lesson 2
Dance--Peter Cottontail Circle Dance
Organized game--Egg Basket (similar to Squirrels in Trees). Form of locomotion used--forward rolls

Lesson 10. Group activities
Dance activities--walk and skip in time to music
Organized game--Dodgeball

Section II

Lesson 1. Group activity
Organized game--Black Tom

Lesson 2. Exercises and stunts
Jumping jacks, push-ups, touching toes, sit-ups

Lesson 3. Dance activities
Skipping, swaying, hopping, and giant steps done to music

Lesson 4. Group activity
Organized game--Squirrels in Trees

Lesson 5. Group activity
Organized game--Giants Cave

Lesson 6. Team-type activity
Obstacle relay

Lesson 7. Rhymical activity
Bouncing balls to music

Lesson 8. Group activity
Organized game--Twister

Lesson 9. Rhymical activities
Bunny hop, elephant walk, and walk done in time to music

Lesson 10. Group activity
Jump rope--four groups (7-8 in each group)
Section III

Lesson 1. Team-type activities
       Relays--running, skipping, leaping

Lesson 2. Group activities
       Basketball skills practiced in drill-type organization
       Throwing and catching
       Relay--basketball dribble

Lesson 3. Self-testing activities
       Balance beam skills
       Walks--forward, backward, and sideward

Lesson 4. Group activity
       Jump rope--four groups (7-8 in each group)

Lesson 5. Dance activities
       Pattern-type dances--Step in Time and Hokey Pokey, Skip to My Lou

Lesson 6. Dance activities
       Pattern-type dances--Maypole Dance, Farmer in the Dell

Lesson 7. Exercises
       Jumping Jacks, Touching Toes, Airplane, and Follow Me

Lesson 8. Apparatus activities (outdoor class)
       Hand travel on horizontal ladder

Lesson 9. Tumbling--mat and exercises
       Forward roll, cartwheels
       Exercises--review work of Lesson 7

Lesson 10. Team and group activities
       Basic skills
       Relays--hopping, skipping, galloping, etc.
       Organized game--Duck, Duck Goose
Lesson 1. Movement exploration
Measuring space, moving parts of the body in directions and different levels

Lesson 2. Group activities
Organized games--Bird Catcher, Center Base, and Follow the Leader

Lesson 3. Self-testing activities
Stunts--Coffee Grinder, Jumping Jack, Heel Click, Touching Toes, Thread the Needle, and Turk Stand Animal walks using the hop and roll

Lesson 4. Group activities
Organized games--Jungle Hunt, Strike and Chase, Fox and Rabbit

Lesson 5. Self-testing activities
Partner stunts--Back-to-Back Rise, Wheelbarrow, Wringer
Jump rope--four groups (7-8 in each group)

Lesson 6. Rhymical activities and group activity
Move to music--hop, skip, walk, etc.
Organized game--Magic Spot

Lesson 7. Self-testing--mat
Rolls--forward and backward forms
Cartwheels

Lesson 8. Self-testing--mat
Review activities of Lesson 7

Lesson 9. Group activities
Organized games--Fox and Rabbits, Team Tag, Chinese Wall

Lesson 10. Group activities
Jump rope--four groups (7-8 in each group)
Physical Education Lessons
Experimental Group

These lessons were presented to the four sections of the experimental school. The activities were experienced during eleven consecutive weeks in the period of January 9 through March 23, 1967. Each lesson was of twenty-five to thirty minutes in duration. In the exploratory phase, challenges to stimulate variations of movement were often posed in question form by the teacher.2,3

Week I (January 9-13)

Lesson 1. Movement exploration-individual activity-nonmanipulative skills

Theme: space, force, and time

Locomotor movement skills--walk and run

1. Walk variations with space (levels and direction)
   a. innovative work--"floor picture" (floor pattern)
   b. "showing" of these patterns (alternate half of class)

2. Locomotor skill--run
   a. run-variation (range and time)
   b. run-variation (various arm positions)
   c. discuss difference of skills with thematic components

Lesson 2. Movement exploration-individual and small group-
nonmanipulative skills

Theme: space, force, and balance

Locomotor skills--run, hop, and jump

1. Review run variations

2. Hop-exploration with various arm positions
   a. innovative work with hop patterns
   b. combination of run and hop-develop patterns
   c. "showing" of originated ideas (alternate half of class)

---


(Lesson 2. - contd.)

3. Exploration of jump-variation with force exerted
   a. figures of the body while in the air with jumps
   b. rest--discuss difference of hop and jump
4. Rope game (sub-groups of 6-8) "Through the Window"

Lesson 3. Individual and free form rhythms

Theme: time, flow, and space (range and levels)

1. Axial movement-arm swings-exploration (planes and levels)
   a. progress into dramatized ideas (music), clocks, canoe paddlers
2. Body swings-trunk twisting (exploration)-drum
   a. progress to machines that remain in one place
   b. progress to machines that move from one place to another
   c. "showing" (alternate sub-groups in demonstrations)
3. Locomotor skill-ice skaters (music)

Fourth day. No classes--classroom field trip previously scheduled on school calendar before clearance given for research project.

Lesson 4. Apparatus work, self testing activities-manipulative skills. Sub-group (6-8) rotation to three activity areas

Theme: space and balance

1. Rope climb-two rope stations-suspensory activity (grasp)
   progression of climb procedures
   *2. Balance beam skills (3-4 balance beams), individual
      activity-exploratory work-variation of walk
   *3. Tire casings and bean bags (8-10 tire casings), couple
      work-develop game using both tires and bean bags

*"Showing" of originated work. This lesson phase was used during the rotation interludes.
Week II (January 16-20)

Lesson 1. Movement exploration-individual activity-nonmanipulative skills

Theme: time and space

1. Locomotor skills--walk
   a. vary walk with intensity
   b. vary walk with tempo-progress into run
2. Run
   a. variation of run-space (levels and directions)
3. Couples--walk and run pattern
   a. "showing" of developed patterns
4. Group game "Trades" (New York), game allows for individual variation through pantomime of group idea

Lesson 2. Individual and free form rhythms

Theme: time, flow, and space

Music, sound stimulus for the following:

1. Predominant axial movement-exploratory variations
   a. progress into idea-playground activities
   b. "showing" of ideas
   c. playground swings using "range" and "levels" (define these terms and discuss them in relation to movement)
2. Locomotor movement-sustained quality-ice skaters
3. Jack Frost story-innovative patterns
4. Toys-dramatized work
   a. "showing"
5. Tin soldiers (directions and time-phrasing)

Lesson 3. Movement exploration, individual, and couple activity

Manipulative skills-balls

Theme: force and space

1. Three variations of ball manipulation with hands
   a. "showing"
   b. ball manipulation on a fixed to moving body base
2. Throw and catch to self-use of two hands
   a. vary the skill-use of one hand
   b. vary the skill-use of the opposite hand
   c. discuss difference in efficiency of skill
(Lesson 3. - contd.)

3. Dribble in straight and curved paths
4. Move ball with the feet
5. Partner game-move and stop the ball with parts of the body other than the hands

Lesson 4. Movement exploration, individual and couple, self-testing activity-nonmanipulative skills

Theme: balance and base of support--space

1. Arm swings with variation in size of body base, progress from wide to narrow base of support
   a. continue the same-use of various levels
2. Exploration-moving on one hand and two feet
   a. variations-limitation of idea-progress into straight body and moving in circles (Cane Grinder)
3. Exploration-move on two hands and two feet
   a. progress with this movement with stomach down (Seal Crawl)
   b. move with stomach up (Crab Walk)
   c. "showing"
4. Couple work-problem solving-the base partner on hands only with feet supported by partner (Wheelbarrow)

Lesson 5. Apparatus activities-individual and sub-group-manipulative skills

Theme: levels and balance

Review activities of Week I, Lesson 4

1. Rope climb
2. Balance beam skills-variation of walk-direction
3. Tire (casings) activity
   Limit equipment in this game area-use of tires only. Each couple may use one or two tires. "Showing" of selected work at balance beam and tire game areas. Observation and discussion of balance and body base to the balance beam skills.
Week III (January 23-27)

Lesson 1. Movement exploration, individual and group activity—manipulative skills—ropes

Theme: space (range and levels)

1. Axial movement (fixed base)
   a. hold rope to make taut "rope sticks"—individual exploration in the above position
   b. move under and over this rope stick

2. Axial and locomotor movement—rope ring on floor
   a. innovative work—couple organization. One stunt inside the rope ring—a different stunt outside ring
   b. combine the two stunts to develop a pattern
   c. "showing"—observation and discussion

3. Game (review) sub-groups (6-8) "Through the Window"

Lesson 2. Movement exploration, individual and couple activity, manipulative skills—balls

Theme: force and space

Individual work with balls

1. Three ways to make the ball go
   a. using one hand—opposite hand
   b. using both hands
   c. seated on the floor
   d. "showing" observe and discuss the relationship of the use of hands and the body position to the skill

2. Ball bounce exploration—on a fixed "body base"
   a. define term "body base"
   b. bounce the ball with your "body base" moving
   c. bounce the ball in straight and curved lines

3. Couple work—develop game using balls
4. "showing"—observation and discussion of thematic components to the games observed

Lesson 3. Individual and free form rhythms

Theme: time, space (transportation)

Sound stimulus—music
(Lesson 3. - contd.)

1. Axial and levels-exploration-progress into canoe paddlers
   a. move body with feet above self-progress to bicycles
   b. "showing"
2. Locomotor-progress into galloping horses (sound-sand blocks)
   a. variation with change of foot leads
3. Review playground activities-innovative variations
   a. "showing"

Lesson 4. Apparatus activities-sub-group work

Theme: level and balance

Review lesson of Week II--Lesson 5

1. Rope climb
2. Balance beam skills-encourage use of other locomotor skills
3. Game area-change objects in this area to bean bags and short length ropes
4. "Showing" observation and discussion of thematic components

Fifth day. No classes. Teachers workshop--South-Western Public Schools

Week IV (January 30-February 3)

Lesson 1. Movement exploration-individual-nonmanipulative-ropes

Theme: space, force, and balance

Rope rings on floor

1. Innovative activity-develop pattern using two different movements inside and outside of rope ring
   a. "showing" of ideas
2. Define "balance," review "base of support" and discuss the relationship used in the above movements
   a. exploration of movement to gain a kinesthetic awareness of various bases of support
   b. review the above pattern with rope ring utilizing two "bases of support"

Oblong shape rope rings on floor

3. Locomotor movement over this space--jumps
4. Enlarge the circumference-repeat the same-question students what second movement helped make the necessary jump
   a. compare the two types of jumps
5. Game-sub-groups of 4-6. Cross the Brook (using running broad jump). Emphasize proper landing technique
Lesson 2. Individual and free form rhythms

Theme: time and flow (movement qualities), Valentine Day

Locomotor and axial movements

1. Movement exploration-drum
2. Progress to exploratory ideas on Valentine theme
   a. mailman's work activities (percussive quality)
   b. post office workers (percussive quality) "showing"
   c. mail delivery-dramatized variations
   d. mail transportation
   e. "showing" of ideas--elaborate on those shown with class moving to ideas of trucks, trains, planes (sustained quality)
   f. elaborate on variations of movement in planes, i.e., "copters"
   g. "showing"

Lesson 3. Apparatus-self-testing activity-manipulative

Sub-group rotation (6-8) to three areas:

Theme: space and balance

1. Suspensory (grasp reflex), horizontal bar (section of indoor climbing frame--three levels of bars used for three sub-groups)
2. Balance beam skills (3-4), innovative work
3. Review bean bag and rope combinations
   "showing" of ideas and teacher's reinforcement of practice of safety rules at climbing frame area

Lesson 4. Movement exploration-individual-manipulative skills-tire casings

Theme: space and force

1. Exploration with tire casing moving
   a. show what can be done
   b. move around tire
   c. move over the tire
   d. move through the tire
   e. "showing" alternate half of the class
   f. spin the tire and do a stunt before it falls to floor
2. Tire lying flat on floor
   a. review of hops and jumps in relation to focal object (tire)
(Lesson 4. - contd.)

3. Couple activity--develop (movement) patterns using two tires
   a. "showing"
4. Group of four--using four tire casings--develop a game
5. "Showing" and discussion of thematic components

Lesson 5. Directed "Free Play" ("Party Day")

Theme: social skills

Teacher function: Observation of child behavior-reinforcement of acceptable play behavior-visit play groups

Equipment: All equipment used previously except climbing frame and suspension ropes

1. Brief discussion of social skills-"party manners"-encouragement of exploratory efforts in chosen area
2. Teacher observation--watching for original work attempted and evidence of acceptable social skills
3. Rest interlude--showing of originated ideas in various areas. Comments of reinforcement on play behavior, i.e., specific incidents told of sharing, helping one another, good thinking, care of equipment, etc.
4. Children's evaluation of lesson

Week V (February 6-10)

Lesson 1. Self-testing type activity-individual and small group non-manipulation

Theme: force, body base, and balance

1. Individual movement exploration--various body shapes
2. "Body base" of two feet and one hand--progress into "Cane Grinder"--do on reverse side of body
3. "Body base" of two feet and two hands
   a. review of stomach up variations-(crab walk)
   b. review of stomach down variations-(seal crawl)
   c. variations of choice of above as to directions
   d. "showing" of ideas
(Lesson 1. - contd.)

4. "Body base" on two hands and feet
   a. exploration of flexion and extension of body progressing into (inchworm)
5. Small groups of three-problem solving-two moving the third person with the latter's feet remaining still on the floor-progressing into Wooden Man
   a. "showing" and discussion of group variations

Lesson 2. Movement exploration-individual and group work-manipulative skills-balls

Theme: force and space

1. Individual activity
   a. move ball in high level in straight path
   b. stimulate them to try "opposite" (define) of the first idea
   c. observe for unique response--"showing"
2. Couple work
   a. throw and catch-with one hand
   b. repeat same skill with two hands-distance increased
   c. "showing" of two handed toss throw
   d. discuss relationship of "force" (define) and distance
3. Game (structured) Guard the Club-two game areas-four balls to each game group
4. Discuss relationship of game to thematic components

Lesson 3. Apparatus activity-self-testing type-manipulative subgroup of 6-8-rotation to three areas

1. Climbing frame-three levels of horizontal bars
2. Balance beam skills-add balls for manipulation on the balance beam-innovative individual work
3. Tire casings (8-10) "showing" and reinforcement of practice of safety rules on climbing frame

Lesson 4. Individual and free form rhythms

Theme: time and flow

1. Review innovative and dramatized ideas--Valentine theme
2. Axial-exploration with sound of large cymbal
   a. progress to weather phenomenon with same sound, i.e., ice cycles
   b. weather conditions and planes, range
(Lesson 4. - contd.)

3. Sound stimulus-sand blocks
   a. individual exploration progressing into machines
   b. "showing"
   c. progress to snow plows, shovels, etc.

Lesson 5. Directed "free play" (Party Day) (See Week IV-Lesson 5)

Week VI (February 13-17)

Lesson 1. Movement exploration, couple and small groups-
manipulative skills-ropes

   Theme: force, space (levels, planes, and range)

  1. Couple organization-"rope piece" (taut--2-3 ft. long),
exploration in space relationship to each other with
variations through level, range, and planes
   a. "showing" of couple work
  2. Move over two parallel ropes (two feet distance)
   a. increase distance of rope lines-problem solving-move
      over this space-progress to running broad jump
  3. Game-"Cross the Brook"-sub-groups of 6 (review of
     Week IV-Lesson 1)
  4. Discussion of thematic components to this game

Lesson 2. Apparatus-self-testing activity

   Review of same areas of Week V, Lesson 3

Lesson 3. Movement exploration, individual and small group
manipulative skills-balls

   Theme: space-planes and levels, force

  1. Individual exploration using space components
  2. Couple work-exploration with balls-with ball going in three
planes (define planes-three types of planes--vertical (up
and down), horizontal (crosswise), and transverse (slanting)
   a. continue in couples and make ball move in two of
      these "planes"
   b. "showing" of ideas with balls. Encourage in discussion
      the application of these three "planes"
  3. Game "Guard the Club" review of Week V, Lesson 2
  4. Discussion-thematic components to game played with
pointed association to the planes (the three types)
Lesson 4. Individual and free form rhythms

Theme: space, flow (movement quality)

1. Percussive sound-exploration-progress into weather phenomenon
   a. space exploration and weather conditions (music)-progress into rain and stimulate association to levels. Pose question if rain always falls straight down-wind.
   b. combine wind and rain in movement-stimulate association with new words learned yesterday (planes-transverse, and vertical planes)
   c. weather conditions and force with movement, i.e., wind-sleet (gong-associate with planes)

Lesson 5. Directed "free play" ("Party Day")

Note: chosen activities in this lesson:
   child variations of basketball game
   three groups-exploratory ball activities
   group-game--Guard the Club
   two groups--Cross the Brook
   couples at balance beams and bean bags

Week VII (February 20-24)

*Lesson 1. Movement exploration-individual-nonmanipulative skills
   Visual stimulus alphabet letters used: A, B, M, K

   1. Individual-original interpretation of letter stimulus with "movement words"
      a. one letter shown at a time--children in free formation in their chosen "work space"--work out "movement words" in silence
      b. time allowed for germination of idea before encouragement to make one modification of this movement word with one space idea (level or plane)
      c. "showing" of ideas (one-half of class to the other)

*Note: All classroom teachers observed their group in this series of lessons. The following are but a few of the items (responses) elicited by children) that the teachers recorded.

Stimulus letter "K" evoked from many subjects words in movement associated with the "hard K" (phonic) candy-cookie-coo coo clocks-canoes.
(Lesson 1. - contd.)

Stimulus letter "A" evoked from one child a movement sequence depicting "atonic" phenomenon

Lesson 2. Movement exploration, individual and group-manipulative skills-balls

Theme: force and range

1. Individual exploration—with balls—vary with force and range
   a. use above idea with other or opposite hand
   b. "force" defined and discussed how used in idea just used
   c. bounce ball with "force"—discuss change in level of path of ball
   d. "showing" of selected ideas that clearly illustrate force. Discuss these ideas

2. Couple organization—move ball to each other
   a. increase the distance—increase distance further
   b. define "range". Discuss relationship of distance ("range") and "force"

3. Game—Target Ball

4. Class evaluation—bring in relationship of range and force in this game

Lesson 3. Apparatus—individual and sub-group-manipulative

Review same areas of activity of Week V, Lesson 3

Lesson 4. Individual and free form rhythms

Theme: space, time and flow (movement qualities)

1. Music—movement exploration—progress to animals
   a. select an idea illustrating variation of "range" and have this shown
   b. elaborate on this in movement—all try idea

2. Explore in movement—show two kinds of "range"
   a. develop this into animals—kangaroos (babies—adults) to elephants
   b. rest and discuss these ideas in terms of "time" (fast and slow)
   c. show in movement two animals that move in different "time"

3. Review of previous rhythmic ideas—chosen from group
Lesson 5. Decision-making-concept of democracy-"Voting Day"

As the teacher entered the classroom to bring that group to gym for class, she explained the procedure of voting and the "secret ballot." Students were instructed to close their eyes and raise their hand when their favorite game was named by the teacher, thereby indicating their vote. The teacher wrote four review games on the chalk-board and at the same time named each activity. She repeated the name of each game as voting took place and recorded the voting results.

*Those games voted by majority in each section were the activities used for the review lesson.

Cross Brook - 1 Cross Brook - 1 *Cross Brook - 7 Guard Club - 6
Guard Club - 5 Guard Club - 5 Guard Club - 3 Cross Brook - 1
Target Ball - 1 Target Ball - 3 *Target Ball - 6 New York - 1

Class evaluation of lesson-included in discussion the utilization of elements of movement to one or two games used in each lesson.

Week VIII (February 27-March 3)

Lesson 1. Movement exploration-individual and couple-manipulative skills-ropes

Theme: force and space

1. Individual-review axial exploration with "rope stick" of Week VI, Lesson 1
2. Couple work with rope-spacial relationships-review
   a. "showing"-in discussion encourage observers' application of thematic components in ideas shown
3. Game-"Cross the Brook" (sub-groups 6-8) review of Week IV-1 and Week VI-1

Lesson 2. Movement exploration, individual and couple, manipulative skills-balls

Theme: force, space--balance

1. Individual exploration-with balls on a fixed or still "body base"
   a. vary the size of your "body base" with the same movement with your ball
   b. "showing" bring out from observers the effect of the size of the body base on the skill of that second grader being observed
Lesson 2. - contd. 

2. Couple work-throw and catch-increase the distance. Relate this to "force"
3. Game-two game areas with twelve in each game area. Review of Target Ball (Week VII-2)

Lesson 3. Individual and free form rhythms

1. Gong stimulus-axial movement. Vary the movement motif with levels-with range-levels and range combined
2. Sand blocks sound--review ideas on machines
3. Review previous rhythmic activities chosen at random by group

Lesson 4. Directed "free play" ("Party Day")

Lesson 5. Apparatus and self-testing, individual and couple-manipulative skills

Sub-group rotation to each of the three areas

1. Climbing frame (horizontal bars)
2. Balance beam skills with balls
3. Tire crossings and bean bags
   "showing" of originated ideas in area two and three, reinforcement of practice of safety rules

Week IX (March 6-10)

Lesson 1. Movement exploration, individual, visual stimulus Letters of alphabet D, O, E, I

Theme: space

1. Individual exploration with "movement words" associated with letter stimulus (See Week VII - Lesson 1)
   a. use variation of space when class response is the most spontaneous on certain letters. (Variation was used with letters E and O).

Note: Examples of responses elicited by children--classroom teachers observing and recording

Letter E--elevators, ells, electricity-(the sub station), and numerous animals
Letter O--oven, over (action word), octopus, ostrich
(Lesson 1.- contd.)

2. Sound stimulus gong-axial movement-levels
   a. vary the movement with "range"
   b. continue with range of axial movement from body
closure to openness and the reverse
   c. use body closure-open motif in various "levels"
   d. encourage this motif done in two "planes"

Lesson 2. Individual and free form rhythms

1. Sound stimulus-resonator bells-exploration of movement-
space variations
   a. volunteer "showing" and naming of the space component
      they are using in their idea
2. Music-animals-progress into "range" (review)
3. Wood block sound-their choice of ideas
   a. animal theme
   b. toys--vary the body base fixed and moving
   c. "showing" and discussion

Lesson 3. Directed play "Party Day"

Theme: social skills

Lesson 4. Apparatus-self testing activities

Fifth day. No classes--South-Western Public Schools Teachers Work-
shop Day

Week X (March 13-17)

Note: Control factor: no discussion of the relationship of spacial
components and body mechanics--tests of these relationships
given at the end of this current week

Lesson 1. Apparatus, self testing activities-manipulative skills-
sub-group (6-8), rotation to the three areas

1. Horizontal bars
2. Mat work introduced--exploration of ways to proceed across
   mat. When rolls used, encouragement for variation
3. Tire casings-encourage couple and small group (3-4) games
   "showing" of ideas
Lesson 2. Individual, free form rhythms

Theme: time and flow (Easter)

1. Individual exploration with Easter ideas
2. Toys—review of theme—individual innovative work
   a. "showing" of selected ideas of mechanical toys
   b. entire group try ideas shown

Lesson 3. Self testing (stunts) activities—free formation

Theme: space force and time

1. Individual exploration of locomotor movement using two changes in movement
2. Drum—run exploration
3. Introduce leaps
   a. combine runs and leaps
4. Review stunts with movement exploration preceding to the structured stunt itself. Seal crawl, crab walk, cane grinder, inchworm

Lesson 4. Decision-making—concept of democracy—Voting Day—Voting results (compare with Week VII, Lesson 5)

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<th>Cross Brook</th>
<th>Guard Club</th>
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Fifth day. No school - South-Western School System Parent-Teacher Conferences

Week XI (March 20-24)

Lesson 1. Movement exploration, individual to couple activity, visual stimulus, letters C, F, W, L, P

1. Individual response to these letters with "movement words"
   a. "showing" (volunteer) (See Week VII-Lesson 1)
      further exploration on selected responses
2. Game—Easter Tag (New York variation)
Lesson 2. Movement exploration, individual, manipulative skills—balls

Theme: force and space

1. Individual exploration with fleece balls. Throw balls against walls, increase distance every five throws
   a. "showing" of child using overhand throw
   b. practice overhand pattern with wall as aim point
2. Couple work—exploratory work, use of fleece balls
   a. "showing"

Lesson 3. Apparatus and self-testing activities
Sub-group (6-8), rotation to three areas

1. Climbing frame
2. Mat work—exploration of stunts
3. Continue innovative work with fleece balls in sub-groups of 3-4

Lesson 4. Individual and free form rhythms

Theme: time and flow

1. Review Easter ideas
2. Sound stimulus gong-axial movement variations
3. Sound-resonator bells-exploration progressing to weather conditions
4. Review of rhythmical ideas chosen by class

Fifth day. Good Friday.
BIBLIOGRAPHY

Books


LaSalle, Dorothy.  
**Guidance of Children Through Physical Education.**  

Martin, William, and Stenler, Celia Burns.  
**Child Behavior and Development.**  

Ministry of Education and The Central Office of Information.  
**Moving and Growing.**  

Mosston, Musks.  
**Teaching Physical Education.**  

Rousseau, Jean J. Emile, or Education.  
Trans. B. Foxley.  

Thompson, George C.  
**Child Psychology.**  

Thurstone, L. L.  
**The Measurement of Values.**  

Torrance, Paul E.  
**Education and the Creative Potential.**  

Williams, Jessie Feiring, and Brownell, Clifford.  
**The Administration of Health Education and Physical Education.**  

**Articles and Periodicals**

Carpenter, Aileen.  
"Measurement of General Motor Capacity and General Motor Ability in the First Three Grades,"  
*Research Quarterly.*  

_______.  
"Tests of Motor Educability for the First Three Grades,"  
*Child Development.*  
Vol. XI, No. 4 (December, 1940), pp. 293-299.


Unpublished Material


Lecture

Horrocks, John E. Lecture in Psychology 840. Second and Third Lecture sessions. Columbus: The Ohio State University, October 1 and 4, 1966.