# A STUDY OF THE EFFECT OF IMPROVED MOTOR ABILITY ON ACADEMIC ACHIEVEMENT OF THIRD GRADE UNDERACHIEVERS

by

Marilyn Ruth Henson

A THESIS

n ٩ Approved: Dean of the Graduate School

Approved:

# A STUDY OF THE EFFECT OF IMPROVED MOTOR ABILITY ON ACADEMIC ACHIEVEMENT OF THIRD GRADE UNDERACHIEVERS

A THESIS

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Marilyn Ruth Henson Huntsville, Texas August, 1965

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#### ABSTRACT

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#### Purpose

The purpose of this study was to determine the effect of improved motor ability on academic achievement of third grade underachievers. Through the development of the study, the following subproblems were to be effected:

1. To determine the initial status of academic achievement of sixteen third grade underachievers.

2. To determine the initial status of motor ability of the sixteen selected third grade underachieving girls.

3. To select and administer the instructional program of selected motor activities.

4. To compare the status of each participant on a pre- and post-experimental basis.

#### Methods

The procedures employed to obtain data for the study were as follows: (1) use of teacher evaluation sheets; (2) interviews with third grade teachers at Huntsville Elementary School, Huntsville, Texas; (3) administration of the Stanford Achievement Test on a pre- and post-experimental basis; (4) administration of the Brace Scale of Motor Ability Tests on a pre- and post-experimental basis; (5) development of case studies for the experimental group; (6) administration of the instructional program to the experimental group; and (7) analyses of the case studies on a pre- and postexperimental basis.

The obtained data were coded, computed and analyzed for interpretation and treatment of the findings.

#### Findings

The data obtained from the study of sixteen third grade underachievers yielded the following conclusions:

1. The samples were homogeneous according to intelligence quotients.

2. The improvement of general motor ability tends to have an insignificant effect on academic achievement.

3. There is a significant improvement in general motor ability as a result of participation in intensified motor experience.

4. There is no significant relationship between motor ability and academic achievement of third grade underachievers.

5. The participation in physical activity classes tends to produce favorable behavioral changes in participants.

### ACKNOWLEDGMENT

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### CHAPTER I

### STATEMENT OF PROBLEM

The present study purports to compare and present A Study of the Effect of Improved Motor Ability on Academic Achievement of Third Grade Underachievers.

### Subproblems

The development of the present study necessitated the following procedural steps to secure statistical and subjective data essential for its interpretation.

To determine the initial status of academic achievement of sixteen third grade underachievers.

To determine the initial status of motor ability of the sixteen selected third grade underachievers.

To select and administer the instructional program of selected motor activities.

To compare the status of each participant on a pre- and post-experimental basis.

#### Hypothesis

There tends to be a relationship between motor ability and academic achievement.

The improvement of motor ability tends to improve academic achievement.

There is significant improvement in academic achievement of the third grade underachiever as a result

of improved motor ability.

## Justification of the Problem

The present investigator taught for three years in a high school where the AAHPER Youth Fitness Battery was administered twice a year to all girls enrolled in physical education classes for the purposes of student evaluation and classification. The interest of the investigator was aroused concerning the relationship between mental ability, academic achievement, and motor ability of the subjects tested as a result of scores on the Youth Fitness Battery. Generally, observation seemed to indicate that the student who ranked high academically also ranked high on the physical fitness test. Students ranking low on the physical fitness test tended to rank low academically. However, the student ranking low both academically and physically was not necessarily below average in intelligence, as measured by group tests. Therefore, the question arose: Is the underachiever lacking in motor ability, and if so, if motor ability should improve, will the academic achievement also improve?

The interest of the investigator was further stimulated after conversing with several school psychologists concerning children who could not achieve. Many times the referred child did not possess the motor skills necessary for reading and writing due to a lack of gross or fine coordination. If the motor efficiency of the underachiever can be improved through physical education, physical

educators will perhaps come one step closer to realizing the goals established for their profession.

Several studies have been published concerning the relationship between physical fitness, motor ability and academic achievement.

Jarman,<sup>1</sup> in 1959, conducted a study to determine the relationship between academic achievement and physical performance of boys nine, twelve, and fifteen years of age who had low and high scores on the Strength Index and the Physical Fitness Index. For each age and each test, the groups were equated by Intelligence Quotients. The conclusion indicated that generally, the boys with high scores on the physical fitness test tended to have superior gradepoint averages and higher means on standardized scholastic achievement tests.

Coefield and McCollum,<sup>2</sup> in 1954, conducted a case study of seventy-eight freshman men with low physical fitness indices and found that these students were definitely low in scholastic accomplishment, as compared with all the enrolled freshmen at the University. These low fitness students were average or above in intelligence.

<sup>1</sup>Boyd Jarman, "Academic Achievement of Boys Nine, Twelve, and Fifteen Years of Age as Related to Physical Performances," Master's Thesis, University of Oregon, 1959.

<sup>2</sup>John R. Coefield and Robert H. McCollum, "A Case Study Report of Seventy-eight University Freshmen Men with Low Physical Fitness Indices," Microcarded Master's Thesis, University of Oregon, 1955.

Rarick and McKee<sup>3</sup> conducted a study of twenty third-grade children who scored high on tests of motor efficiency. They reported that the students ranking superior in motor performance demonstrated better scholastic adjustment, as evidenced by the larger number with high intelligence and excellent or good rating in reading, writing, and comprehension.

The studies previously cited tend to establish a positive relationship between the mental and physical achievement of the subjects tested. However, these researches have considered either the low fitness level or have compared high and low groups equated according to the intelligence quotient of the subjects.

To the knowledge of the present investigator, there has not been a study in which there was an attempt to improve the motor ability of the underachiever and investigate the effect on academic achievement as a result of improved motor efficiency.

## Limitations of the Study

This study was limited to sixteen third grade girls attending the Huntsville Elementary School during the academic year of 1964-1965. Other impeding factors in the develop-

Lawrence G. Rarick and Robert McKee, "A Study of Twenty Third Grade Children Exhibiting Extreme Levels of Achievement on Test of Motor Efficiency," <u>Research Quarterly</u> of the American Association of Health, Physical Education, and Recreation, 20:142, May, 1949.

ment of the study are as follows: the study was limited to a three months period of time, thirty minutes a day, three days per week. There is doubt as to whether this is sufficient time in which to improve the motor abilities of the subjects. The study was further limited to the measurement of the motor ability of the subjects by the means of the Brace Scale of Motor Ability Tests;<sup>4</sup> the measurement of the achievement of the subjects by the means of the Stanford Achievement Test;<sup>5</sup> and the measurement of the intelligence of the subjects by the means of the Scoring Mental Ability Test.<sup>6</sup> It was also limited by a lack of a means for obtaining a psychological evaluation and an intensified case history background on each of the selected subjects.

### Definition of Terms

The following definitions of terms are set forth to insure proper understanding of their connotations in relation to the present study.

<sup>4</sup>David Kingsley Brace, <u>Measuring Motor Ability</u>, New York: A. S. Barnes and Company, 1927.

<sup>5</sup>Truman L. Kelley and others, <u>Stanford Achieve</u>ment Test, New York and Tarrytown: Harcourt, Brace and World, Inc., 1953.

<sup>6</sup>Arthur S. Otis, <u>Otis Quick-Scoring Mental Ability</u> <u>Test</u>, Alpha Test Form As, New York: Harcourt, Brace and World, Inc., 1952.

<u>Stanford Achievement Test</u>: "...the designation of a series of comprehensive tests designed to measure the important knowledges, skills, and understandings commonly accepted as desirable outcomes of the major branches of the elementary curriculum."<sup>7</sup>

<u>Otis Quick-Scoring Mental Ability Test</u>: A widely accepted group administered intelligence test devised to measure the ability to learn academic materials.

Basal Reader Tests: Standardized comprehensive tests authored by the publishers of the textbooks used in the elementary school curriculum. These tests measure interpretation skills and word perception skills. Interpretation skills measure the ability of the pupil in dealing with sentence meaning, sensory imagery, relationships, and emotional reactions. Word perception skills measure the ability of the pupil in dealing with visual scrutiny meaning, phonetic analysis meaning, and structural analysis meaning.

Brace <u>Scale of Motor Ability Tests</u>: A test designed to measure native or inherent ability in the manipulation of the body in basic motor skills.<sup>8</sup>

Motor Ability: According to Brock, it is composed of strength, endurance, speed, and the coordination or

> <sup>7</sup>Kelley and others, <u>op</u>. <u>cit</u>., p. l. <sup>8</sup>Brace, op. cit.

б

control of these elements for accuracy.<sup>9</sup> Bovard,<sup>10</sup> refers to motor ability as "the level to which one has developed his innate capacity to learn motor skills."

Within the context of this study, the term motor ability is used to mean native or inherent ability.

<u>Underachiever</u>: That pupil with average or above average intelligence who is, at the third grade level, achieving below her expected level of achievement as indicated by intelligence quotients, teacher evaluation, and achievement scores.

Motor <u>Activities</u>: Activities for the development and practice of the basic skills of movement of the child at the third grade level.

#### Survey of Literature

A careful investigation of literature disclosed that the proposed study, "The Effect of Improved Motor Ability on the Academic Achievement of Third Grade Underachievers," is not identical to any previous study.

There have been several studies published concerning the relationship between scholastic achievement and

John D. Brock, Walter A. Cox, and Erastus W. Pennock, "Motor Fitness," <u>Supplement to the Research Quarterly</u> of the American Association of Health, Physical Education, and <u>Recreation</u>, 17:407, May, 1941.

<sup>10</sup>John F. Bovard, Frederick W. Cozens, and E. Patricia Hagman, <u>Tests and Measurements in Physical Educa-</u> <u>tion</u>, Philadelphia: W. B. Saunders Company, 1949, p. 144.

physical fitness.

Clarke and Jarman,<sup>11</sup> in 1961, stated that some investigators hold the belief that a physically vigorous and enduring body improves the effectiveness of the individual's mental capabilities.

Rogers<sup>12</sup> further elaborates this conclusion by stating that the physically unfit boy or girl at any level of intelligence has greater difficulty in continuing mental effort and remaining mentally alert.

It may be surmised by these statements that a person's learning potential at a given level of intelligence may be increased or decreased in accordance with the level of physical fitness.

However, in contrast to the findings previously cited there has been research disproving the positive conclusions.

Hoefer and Hardy<sup>13</sup> conducted a study over a three

<sup>12</sup>F. R. Rogers, "Rogers' Law of Learning Capacity," <u>Physical Fitness News Letter</u>, University of Oregon, Jan. 31, 1955.

<sup>13</sup>C. Hoefer and M. C. Hardy, "The Influence of Improvement in Physical Condition on Intelligence and Educational Achievement," <u>Yearbook of the National Society for</u> <u>the Study of Education</u>, 27(I):371-387, 1928.

<sup>&</sup>lt;sup>11</sup>Harrison H. Clarke and Boyd O. Jarman, "Scholastic Achievement of Boys 9, 12, and 15 Years of Age as Related to Various Strength and Growth Measures," <u>Research</u> <u>Quarterly of the American Association of Health, Physical</u> <u>Education, and Recreation, 32:155-162, May, 1961.</u>

year period to find that there were no observable effects upon mental development resulting from improvement in the physical condition of the subjects.

Hardy,<sup>14</sup> in 1936, concluded in another study that there was greater improvement in the school work of the subjects participating in a health education program than in non-participants. The improvement, however, could have been due to such psychological factors as improved motivation or special attention rather than to physical factors. Nevertheless, Hardy's conclusions may be significant in promoting physical education programs at the elementary school level.

Page,<sup>15</sup> in 1940, found that 83 percent of the freshman male students who were dismissed from Syracuse University due to low grades had Physical Fitness Indices below 100 and 39 percent had Physical Fitness Indices below 85. These students had above average scores in scholastic aptitude.

The majority of investigators reviewed in literature uphold the belief that there is a positive relation-

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<sup>&</sup>lt;sup>14</sup>M. C. Hardy, "Improvement in Educational Achievement Accompanying a Health Education Program," <u>Journal of</u> <u>Educational Research</u>, 30:110-23, 1936.

<sup>&</sup>lt;sup>15</sup>C. Getty Page, "Case Studies of College Men with Low Physical Fitness Indices," Master's Thesis, Syracuse University, 1940.

ship between scholastic achievement and physical fitness.

Ray<sup>16</sup> concluded in his study that within the limits of an Intelligence Quotient group physical ability was a more reliable predicator of academic standing than Intelligence Quotient, per se. However, his correlations, being below .50, were negligible and fall short of any significance.

Several psychological studies dealing with the mentally defective and motor proficiency have concluded that there is a relationship between motor proficiency and intelligence.

Sloan's<sup>17</sup> study was made to determine the relationship between the intelligence and motor proficiency of the mentally defective. He concluded that mentally defective children are significantly inferior to children of average intelligence in the area of motor proficiency.

Tredgold<sup>18</sup> states that one of the most common abnormalities of the mentally defective is a defect of muscular coordination.

<sup>16</sup>Howard C. Ray, "Inter-relationships of Physical and Mental Abilities and Achievements of High School Boys," <u>Research Quarterly of the American Association of Health,</u> <u>Physical Education, and Recreation</u>, 11:129-49, March, 1940.

<sup>17</sup>William Sloan, "Motor Proficiency and Intelligence," American Journal of Mental Deficiency, 55:394-406, 1950-51.

<sup>18</sup> A. F. Tredgold, <u>A Textbook of Mental Deficiency</u>, (6th ed.) Baltimore: William Wood, 1937. Berkowitz<sup>19</sup> studied the relationship between certain psychophysical functions and mental illness in children. He found that the psychotic group performance, as compared to that of the non-psychotic group, revealed an overall retardation in each of the four areas examined, motor and perception being two of the four areas investigated. It was suggested by the investigator that the psychophysical function most sensitive to psychological disorder was related to the psychomotor area.

Freeman<sup>20</sup> states that motor adjustments and muscular reactions are directly involved in perceptual integration. Gibson<sup>21</sup> further states that the complex process of learning resulting in mature perception is affected by hand and eye movements which makes motor activity implicit in perceptual integration. Therefore, the theory of perception, ". . . the ability to form correct meanings about near space. . ."<sup>22</sup>, is not possible without considering the motor dimension.

<sup>20</sup>G. L. Freeman, <u>Energetics of Human Behavior</u>, Iowa City: University of Iowa Press, 1948.

<sup>21</sup>J. Gibson, <u>Perception of the Visual World</u>, Boston: Houghton Mifflin, 1950.

<sup>22</sup>Bryant J. Cratty, <u>Movement Behavior and Motor</u> <u>Learning</u>, Philadelphia: Lea and Febiger, 1964, p. 135.

<sup>&</sup>lt;sup>19</sup>Pearl H. Berkowitz, "Some Psychophysical Aspects of Mental Illness in Children," <u>Genetic Psychology Monographs</u>, 63:103-148, 1961.

The child's first contacts and interactions with his environment are motor and his first learnings are motor learnings. Kephart<sup>23</sup> alleges that consistent, efficient motor patterns are indicative of the perceptual-motor orientation of the child. They help the child attack and manipulate the symbolic and conceptual material in academic situations.

McCloy<sup>24</sup> lists definite factors in motor educability which would allow the child to develop the ability to adapt to his environment in such a way as to accumulate an education. According to him the factors include the following: 1) ability to visualize spatial relationships, 2) sensory-motor coordinations, 3) judgements of the relationship of the subject of external objects, 4) accuracy of direction and small angle of error, 5) general kinesthetic sensitivity and control, 6) ability to coordinate to complex unitary movement, 7) arm control, 8) sensory rhythm, and 9) esthetic feelings.

Newell C. Kephart, "Perceptual-Motor Aspects of Learning Disabilities," <u>Exceptional</u> <u>Children</u>, 31:201-206, Dec., 1964.

<sup>24</sup>C. H. McCloy, "A Preliminary Study of Factors in Motor Educability," <u>Research Quarterly of the American</u> <u>Association of Health</u>, <u>Physical Education</u>, and <u>Recreation</u>, 11:28-39, May, 1940.

There appear to be contradictions in regard to the relationship of mental and motor ability. "While mentally normal children have been found to be superior to mentally defective children in motor control and physical achievement, little relationship has been found to exist between mental and motor ability within the normal and upper ranges of mentality."<sup>25</sup>

Concerning the reasons for underachievement in children with average or above average intelligence, the problem of motor deficiency in the area of perception and eye and hand coordination may be a reason for the underachievement. The inability of the child to coordinate the brain and the muscles may result in his inadequacy to perform academically to the level of which he is capable. "A child's ability to use his body skillfully in work and play requires coordination of brain and muscles that comes only from purposeful practice. Skills learned in a variety of rhythmic activities, dances, games and stunts will remain through life . . ."<sup>26</sup>

<sup>25</sup><u>Growth and Development of the Child</u>, Part IV., Appraisement of the Child, White House Conference on Child Health and Protection, New York: The Century Co., 1932, pp. 101-102.

<sup>26</sup>"Physical Education for Children," <u>A Report of</u> <u>the National Conference in Physical Education for School</u> <u>Children of Elementary Age</u>, Washington, D. C., 1951, p. 10.

The present investigation of the effects of improved motor ability on the academic achievement of underachievers is unlike any other study thus far published. Because the motor learnings and motor development are established early in childhood, the habits may perhaps be directed in such a way that the result will be proficiency in all areas of educational skills and instruction.

#### CHAPTER II

### PROCEDURES

The procedures employed in the development of the present study include sources to determine the initial status of academic achievement of the underachievers, sources to determine the initial status of motor ability of the underachievers, the administering of the instructional program of selected motor activities, the comparison of the status of each participant on a pre- and post-experimental basis, sources of data, methods of collecting the data, the selection of measuring devices and participants, administration of the selected tests, and treatment of the data.

Procedures for determining the initial status of academic achievement of the selected underachievers are as follows:

1. Establish criteria for the selection of the subjects.

2. Select the participants for the proposed study upon criteria established.

3. Obtain the scores of the selected underachievers on the Otis Quick-Scoring Mental Ability Test.

4. Schedule and administer the Stanford Achievement Test to the selected underachievers.

The present investigator employed several methods for the selection of subjects for the proposed study, "The Effect of Improved Motor Ability on the Academic Achievement of Third Grade Underachievers." The following procedures were used:

The investigator arranged a conference with the third grade teachers at the Huntsville Elementary School. Following the conference, the teachers referred, by the use of student evaluation sheets, twenty-two pupils who, in the opinion of the teachers, were underachievers, that is, children who were not utilizing their abilities. The students were selected and evaluated by the teachers in the following manner:

- Results of the Otis Mental Ability Test administered by Α. the school in November, 1964.
- Β. Evaluation by the teachers in the following areas:
  - 1. Academic behavior

Chief area (or areas) of underachievement a. 1) Reading 2 Arithmetic

- Handwriting
- 34 Language
- (5)Spelling

b. Academic ranking in relation to class (1)Slightly below average 2) Probably will fail (3)Failing

2. Social behavior

- Discipline problem in class? yes no a.
- Accepted by peers? yes no Ъ.
- Motivated to learn? yes с. no
- d. Participates in class activities? yes no

#### 3. Motor behavior

- a. General coordination
  - (1) Awkward or clumsy? yes no (2) Fine coordination problem? yes no

4. Health

- a. Generally healthy? yes no
  b. Hearing problem? yes no
  c. Visual problem? yes no
  d. Excessive absenteeism? yes no
  e. Enthusiastic and happy? yes no
- 5. What do you think is the major reason for the pupil's lack of achievement?
- C. After the referrals by the teachers, the investigator administered parts of the Stanford Achievement Test to sixteen of the referred pupils. Those parts of the Stanford Achievement Test used were a) paragraph meaning, b) word meaning, c) arithmetic reasoning, and d) arithmetic computation.

"The function of measurement, in its simplest terms, is to determine status."<sup>1</sup> In selecting effective measuring devices the following criteria were set forth to evaluate and select tests to be used in the present study.

<u>Validity</u>: "A valid test is one that measures accurately what it is used to measure."<sup>2</sup>

<sup>1</sup>H. Harrison Clarke, <u>Application of Measurement</u> to <u>Health and Physical Education</u>, New Jersey: Prentice-Hall, Inc., 1959, p. 27.

<sup>2</sup>Ibid., p. 29.

<u>Reliability</u>: ". . . the degree of consistency with which a measuring device may be applied."<sup>3</sup>

<u>Objectivity</u>: ". . . the degree of uniformity with which various individuals score the same tests."<sup>4</sup>

Norms: The test "should be representative of the population for which the test is used."<sup>5</sup>

Economical: ". . .tests costing little in money and time should be used."<sup>6</sup>

The measuring devices used in the present investigation were evaluated and selected in accordance with the previously established criteria. Each test, having met the criterion, was considered by the investigator as appropriate and applicable to those aspects to be measured.

The selection of a device used in measuring the intelligence of the pupils, the Otis Quick-Scoring Mental Ability Test, was made by the administrators of the Huntsville Public School System. This test is considered by educators to be a reliable and valid measuring device and is a widely accepted and used test throughout school systems. It is quick to administer and quick to score and may be scored by the individual teachers. The Otis Test was

> <sup>3</sup><u>Ibid</u>., p. 35 <sup>4</sup><u>Ibid</u>., p. 36 <sup>5</sup><u>Ibid</u>., p. 40 <sup>6</sup><u>Ibid</u>., p. 41

administered to all third grade pupils in November, 1964, and was scored by the third grade teachers.

Educationally the Stanford Achievement Test is generally accepted as a valid and reliable test of achievement at each grade level. Also, the norms are established on a national basis. The present study required a device for measuring the achievement of the subjects on a pre- and post-experimental basis; therefore, the Stanford Achievement Test was selected for this purpose.

The tests are intended to provide to teachers, supervisors, administrators, and others concerned with the growth and development of elementary school children, dependable measures of these outcomes, comparable from subject to subject and grade to grade, for use in connection with improvement of instruction, pupil guidance, and evaluation of progress.<sup>7</sup>

The tests were planned so that they would be simple to administer, score, and interpret, and therefore could be used by persons with little or no formal training in the use of standard tests.

The Elementary Battery for Grades 3 and 4 was the level of the Stanford Achievement Test used for the present study. The Elementary Battery includes, in a 12-page booklet, the following six tests: Paragraph Meaning, Word Meaning, Spelling, Language, Arithmetic Reasoning, and Arithmetic

<sup>7</sup>Truman L. Kelley and others, <u>Stanford Achievement</u> <u>Test</u>, New York and Tarrytown: Harcourt, Brace and World, Inc., 1953, p. 1. Computation. In relation to the present study, only four of the six tests were used. An explanation of each of the four tests used is as follows:

Paragraph Meaning: This test is designed to measure the ability of the pupil to comprehend what he has read. The test is made up of a series of paragraphs, graduated in difficulty, from each of which one or more words have been omitted. The pupil's task is to demonstrate his comprehension of the paragraph by selecting the proper word for each omission from four choices that are afforded him.<sup>8</sup>

Word Meaning: This test is a multiple-choice type in which the pupil is required to select the proper word from a series of four alternatives. In addition to items measuring knowledge of synonyms, of simple definitions, and of ready associations, there are included items designed to measure high-level comprehension of the concepts represented by words, and understanding of terms.<sup>9</sup>

Arithmetic Reasoning: This test is divided into two parts. "Part I measures reasoning in problems taken from life experiences. Each problem is classified (1) in accordance with the four fundamental processes of addition, subtraction, multiplication, and division; and (2) in

> <sup>8</sup><u>Ibid</u>., p. 2 <sup>9</sup>Ibid., p. 3

accordance with the kinds of measures used; namely, space (linear, area, volume), weight, time, temperature, and value."10

Part II tests two components of ability to reason in arithmetic: the informational background of children and their understanding of the number system.<sup>11</sup>

Arithmetic Computation: This test includes fortytwo exercises covering primarily fundamental operations with whole numbers.

All of these tests are time-limit tests, the time limits being provided for administrative convenience rather than measuring speed of work. "These test, therefore, are fundamentally power tests and not speed tests."<sup>12</sup> The time required for administering the parts of the Stanford Achievement Test used totaled one hour and twenty-eight minutes; testing was accomplished in four class sessions. Instructions for administering the tests were included in the test manual which accompanied the test booklets and were followed by the administrator.

Procedures for determining the initial status of motor ability of the selected underachievers are as follows:

1. Establish criteria for the selection of the

<sup>10</sup><u>Ibid</u>., p. 4 <sup>11</sup><u>Ibid</u>., p. 4 <sup>12</sup><u>Ibid</u>., p. 2 test to be administered for determining motor ability.

2. Schedule and administer the motor ability test to the selected third grade underachievers.

3. Select eight underachievers for the experimental group.

4. Select eight underachievers for the control group.

The present investigation necessitated the measurement of the motor ability of the subjects on a pre- and post-experimental basis in order to determine if there would be significant improvement in this area at the termination of the study. Within the context of the present study, the term motor ability refers to the ability of the child to manipulate his body proficiently in fundamental motor coordinations. The components included in motor coordination are agility, balance, flexibility, and control.<sup>13</sup> The Brace Scale of Motor Ability Test is an instrument devised for the measurement of these aspects of physical ability.

Clarke<sup>14</sup> states that a test of motor ability does not measure skill in any particular sport nor does it measure such character qualities as persistence, initiative,

<sup>13</sup>Anna Espenschade, "Development of Motor Coordination in Boys and Girls," <u>Research Quarterly of the American</u> <u>Association of Health, Physical Education, and Recreation,</u> 18:30-43, March, 1947.

<sup>14</sup>Clarke, <u>op</u>. <u>cit</u>., p. 280.

courage, and interest. He further states that a test of this type does not take into consideration previous experience in specific activities.

Criteria for the selection of a motor ability test were based on the criteria for measurement established by Brace for his test of motor ability. This test was considered by the investigator to adequately measure those aspects to be measured in the present study. The criteria set forth for the Brace Scale of Motor Ability Tests are as follows:<sup>15</sup>

1. The tests primarily test motor ability.

2. The tests measure native ability rather than acquired ability.

3. The tests involve a general functioning of the body musculature.

4. The tests sample a variety of types of reactions.

5. The tests are easy to administer and simple to score.

6. The tests do not require the use of any equipment.

The Brace Scale of Motor Ability Tests includes twenty tests which are scored as either passed or failed.

David Kingsley Brace, <u>Measuring Motor Ability</u>, New York: A. S. Barnes and Company, 1927, p. 1. They are simple stunts requiring definite execution. The test was administered to two pupils at a time according to directions set forth in the test manual.

Procedures for the selection and administration of the instructional program of motor activities are as follows:

1. Establish criteria for the selection of the motor activities to be taught to the experimental group of underachievers.

2. Instruct the participants of the experimental group in selected motor activities three times per week for a period of three months.

The criteria established for the selection of motor activities are based on the social, mental, and physical needs of the child at this stage of her development.

Regarding the social needs of the child, Brogan and Fox<sup>16</sup> state that the third grade child begins to accept his peers and to see himself in relation to other children. This need for group activity may be satisfied through motor activities requiring team play and team participation. Motor activities must satisfy the third grade child's con-

Peggy Brogan and Irene K. Fox, <u>Helping Children</u> Learn, New York: World Book Company, 1955.

cern with peer relationships. Halsey and Porter<sup>17</sup> support further the "gang age" of the third grader and the importance of team games in allowing cooperation and understanding among the peer group.

According to La Salle,<sup>18</sup> the social needs and characteristics of the third grade child are as follows:

> High standards and often a perfectionist Increasingly able to cooperate Likes responsibility Adventurous Increasingly independent Clubs, gangs, groups of vital importance Follows group's standards Interest in team games high Quickly changing moods Hero worship or crushes

Fait<sup>19</sup> maintains that the child at this age is able to resolve differences with peers but is not yet ready for high competitive activities. He further states that although coordination of small muscles is evident, small muscle work is still tiring and difficult.

<sup>17</sup>Elizabeth Halsey and Lorena Porter, <u>Physical</u> <u>Education for Children</u>, New York: The Dryden Press, 1958.

<sup>18</sup>Dorothy La Salle, <u>Guidance of Children Through</u> <u>Physical Education</u>, New York: The Ronald Press Company, 1957, p. 37.

<sup>19</sup>Hollis F. Fait, <u>Physical Education for the</u> <u>Elementary School Child</u>, Philadelphia: W. B. Saunders Company, 1964. Bucher and Reade<sup>20</sup> refer to the importance of group activities in developing acceptable and desirable social development, behavior patterns, and self-discipline.

Physically the eight-year-old-child is making steady gains in height and weight, according to Fait.<sup>21</sup> Evans and others<sup>22</sup> refer to the eight-year-old-child as showing good balance of strength with improved eye-hand coordination.

La Salle<sup>23</sup> lists the following physical characteristics of the eight to ten-year-old child:

> Growth steady but slow Arms longer and hands larger Rangy in appearance Eye accommodation at both near and far distances Deciduous teeth being replaced by permanent Large muscles continue developing Small muscle development improving Lungs and digestive system growing Heart not fully developed Growth uneven as pubescence approaches

Motor activities for the third grade child should provide opportunities to develop body control, strength, endurance, and an assured position in a social group.

<sup>20</sup>Charles A. Bucher and Evelyn M. Reade, <u>Physical</u> <u>Education</u> in the Modern <u>Elementary</u> <u>School</u>, New York: The MacMillan Company, 1958.

<sup>21</sup>Fait., <u>op</u>. <u>cit</u>.

<sup>22</sup>Ruth Evans and others, <u>Physical Education for</u> <u>Elementary Schools</u>, New York: McGraw-Hill Book Company, Inc., 1958.

<sup>23</sup>La Salle., <u>op</u>. <u>cit</u>., pp. 36-37.

According to Fait,<sup>24</sup> vigorous movement is of pri-

mary importance at this stage of development and instructions should be reduced to allow time for actual play. Coordination is developed to the point that interest in practicing proficiency in throwing, catching, kicking, batting, and rope climbing is evident.

La Salle<sup>25</sup> suggests the following needs for the third-grade child:

Active, vigorous outdoor play Rough-and-tumble and physical contact play Team games Play in groups Skill instruction and practice An assured position in a social group

She further maintains that "play skills provide the child with tools for happy, wholesome use of leisure, maintenance of health, gaining social status and prestige with associates, and developing friendly relationships with others." <sup>26</sup>

According to Fait,<sup>27</sup> the motor activities planned for the third grader should provide opportunities to stretch the muscles and provide a wide range of activities.

On the basis of research, the present investigator

<sup>24</sup>Fait., <u>op</u>. <u>cit</u>.

<sup>25</sup>La Salle., <u>op. cit</u>., p. 37

<sup>26</sup><u>Ibid</u>., p. 18

27 Fait., op. cit.

developed the following criteria for the selection of motor activities to be used in the experimental group:

 Physical activities of low organization involving running and chasing

2. Enjoyment through participation

3. Gross muscle activities

4. Fundamental movements of skipping, running, walking, hopping, and singing games

5. Posture exercises

Motor activities for this stage of child development should be primarily of the movement education category dealing with basic and fundamental movements.

Criteria for the selection of games and activities are as follows:

1. Activities which require some responsibility and no pressure

2. Activities in which there is no possibility of injury or undue fatigue

3. Activities which are simple in terms of comprehension

4. Activities in which little instruction is required

5. Activities which allow group participation

6. Activities which tend to improve the motor skills and motor abilities of the child

7. Activities which tend to improve the eye-hand coordination of the child
Procedures to compare the status of each participant on a pre- and post-experimental basis are as follows:

1. Retest the experimental group and the control group with the Stanford Achievement Test.

2. Compare the scores of the two groups on the Stanford Achievement Test.

3. Retest the motor ability of the experimental group and the control group.

4. Compare the scores of the two groups on the motor ability test.

5. Organize the data collected from all sources.

6. Analyze and interpret the material obtained.

7. Summarize findings and draw conclusions.

# Sources of Data

Information and data applied in developing the study were obtained from documentary sources, personal consultations, and selected subjects. The documentary sources included the following: published and unpublished theses and dissertations, research studies, published articles, and professional books which were related to the present study. Personal consultations with administrators and teachers of the Huntsville Public School System and with certain faculty members of Sam Houston State College provided invaluable information and data necessary to the present study. The selected subjects for the study included sixteen third-grade pupils attending the Huntsville Elementary School, Huntsville, Texas, during the academic year of 1964-1965.

# Methods of Collecting Data

The data pertinent to the development of the present study were collected through the administration of the Otis Quick-Scoring Mental Ability Test (this test being administered by the elementary school), the Stanford Achievement Test, and the Brace Scale of Motor Ability Tests. Further data were obtained through the use of teacher evaluation sheets, teacher consultations, case studies, and related documentary source materials.

# Treatment of Data

The Stanford Achievement Test is a standardized test and was scored by totaling the number of right answers obtained on each test and assigning corresponding grade equivalent scores according to directions found in the test booklet. In scoring the Brace Scale of Motor Ability Tests, the sum of the tests passed determined the scaled score to be assigned to each pupil. The standard scores were treated statistically for purposes of interpretation of the findings. The mean, standard deviation, significant difference between the means, and the value of t were computed for pre- and postexperimental data obtained on both test instruments.

An investigation of the significant difference between the results derived from pre- and post-test scores on both test instruments was computed for the control group and the experimental group. In addition, the significance of the difference between the means of the control group and the experimental group was computed for all test scores. In computing the means on the Stanford Achievement Test, average reading scores and average arithmetic scores for each pupil were used. The acquired data were analyzed and interpreted in regard to statistical methods.

## Definition of Terms Used

#### in the Chapter of Findings

To facilitate general understanding of the statistical findings, the following definitions of terms and phrases are presented as they were applied to the data contained in the present investigated materials.

<u>Number</u>: Refers to the number of samples or cases in the study or in each group. It is designated by the symbol  $\underline{N}$ .

<u>Control Group</u>: Refers to samples included in the control group and is designated by the symbol C.

Experimental Group: Refers to samples included in the experimental group and is designated by the symbol  $\underline{E}$ .

<u>Pre-Test</u>: Refers to the first administration of the tests and is designated by the symbol  $\underline{X}$ .

<u>Post-Test</u>: Refers to the final administration of the tests and is designated by the symbol  $\underline{Y}$ .

Mean: Refers to "an average or 'measure of central

tendency'."<sup>28</sup> " . . .the most reliable of the measures of central tendency."<sup>29</sup> The mean in the present study was calculated by a computer. The formula employed for computing the mean is as follows:

$$\overline{X} = \frac{\underline{\xi} X}{n}$$
 or  $\overline{X} = \frac{\underline{\xi} Y}{n}$ 

The sum of X  $(\pounds X)$  over the number refers to the individual pre-test scores and the sum of Y  $(\pounds Y)$  over the number refers to the individual post-test scores.

Standard Deviation: ". . . the standard deviation, or SD (also designated by the Greek sigma sign  $\sigma$ ), is the most reliable of the measures of variability. . . The SD. . . may be defined as that measure which indicates the scatter or spread of the middle 68.26 per cent of the scores taken from the mean of the distribution."<sup>30</sup> The SD was obtained by the computer through the use of the following formula:

$$s^2 = \frac{\pounds \chi^2}{n} - \overline{\chi}^2$$

or

$$s^2 = \frac{\pounds X^2}{n} - \left(\frac{\pounds X}{n}\right)^2$$

since the mean  $\overline{X} = \frac{\pounds X}{n}$ 

<sup>28</sup>Henry E. Garrett, <u>Elementary Statistics</u>, New York: Longmans, Green and Company, 1956, p. 27.

<sup>29</sup>H. Harrison Clarke, <u>Application of Measurement to</u> <u>Health and Physical Education</u>, Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1961, p. 430.

<sup>30</sup>Ibid., p. 435.

Significant Difference: Refers to a measure of reliability and is used to measure the significance of a difference between the means of two small correlated samples. The formula employed in computing the significant difference between pre- and post-test scores for the C group and the E group is as follows:

$$\overline{D} = \frac{\underline{2} D}{n}$$

$$s^{2} = \frac{\underline{2} D^{2}}{n} - D^{2}$$

$$s = \sqrt{s^{2}}$$

$$s_{\overline{d}} = \sqrt{n-1}$$

$$t = \frac{\overline{D}}{s_{d}}$$

 $\underline{D}$  is the means of the differences between the two tests. s is the standard deviation and  $s_d$  is the standard error of the mean of the differences. "t, in this case the ratio of the mean of the differences to the standard error of the mean, by the formula  $t = \frac{\overline{D}}{s_d} \cdot u^{31}$ 

The formula employed to find the significance of a difference between the means of two small uncorrelated samples (example: the significant difference between C group pre-test reading scores and those of E group) is as follows:

G. Milton Smith, <u>A Simplified Guide to Statistics</u>, New York: Holt, Rinehart and Winston, Inc., 1964, p. 86.

$$= \frac{\overline{X} - \overline{Y}}{\left(\frac{\pounds X^2 + \pounds y^2}{n_x + n_y - 2}\right) \left(\frac{n_x + n_y}{n_x \cdot n_y}\right)}$$

t

" $\overline{X}$  and  $\overline{Y}$  are the sample means,  $n_{\overline{X}}$  and  $n_{\overline{y}}$  the number of cases in each sample, and x and y the deviations of the individual scores from the means of their respective samples."<sup>32</sup> In using this formula both samples are considered together; therefore, the value of t is found in Fisher's Table "opposite d.f. =  $n_{\overline{x}} + n_{\overline{y}} - 2$ ."<sup>33</sup>

#### Summary

The procedures and methods utilized in the development of the present study have been presented in the preceding chapter. Chapter IV includes the findings and interpretations of obtained data pertinent to the study.

<sup>32</sup><u>Ibid</u>. p. 89. <sup>33</sup><u>Ibid</u>., p. 89.

## CHAPTER III

## THE CASE STUDIES

The improvement in certain aspects of educational learnings can be evaluated by the use of instruments of measurement. However, this method does not allow or present individual behavioral changes which are assumed to have developed or occurred as a result of learning. It was felt by the investigator that through the use of case studies, pertinent information and insight could be gained into the behavioral aspects of each individual pupil. This case study approach made possible a relatively comprehensive collection of data on each pupil.

The design of the present research study necessitated individual evaluation of observable behaviors preceding and following the program of activities of each pupil included in the experimental group. The individual case studies include the collected and summarized data. No attempt was made to compare individual pupils with others.

Collection of data included in the case studies was obtained by the following techniques:

1. Information derived from teacher evaluation sheets and teacher interviews.

2. Test scores obtained from the Otis Quick-Scoring Mental Ability Test, the Stanford Achievement Test and the Brace Scale of Motor Ability Tests. Observer's daily log during the period of activity.

In the development of the case studies, an effort was made to include all information pertinent to the investigation. When possible, the information was reported in the words of the person speaking. The preceding is indicated by the use of quotation marks placed around the phrase or statement; i.e., E-5 stated, "I like to stand and balance."

An "Observers' Log" appears in each case immediately following the responses to activities. The observers included the investigator and one other graduate student who reported, independently, information concerning the pupil's reactions and performance in the various activities in which she participated in each class session.

The obtained data were compiled into a case study for each member of the experimental group and were organized to include the following information:

1. An introductory statement concerning age, family constellation, family relationship, health status and school attendance.

2. A summary of school records including intelligence quotient, mental age, chronological age, test scores, areas of underachievement, and teacher observations.

3. The characteristics of the pupil at the beginning of the study as shown in teacher interviews and by the pupil's responses to the first class session. 4. A summary of the pupil's responses to class activities throughout the three months of class sessions as revealed through the Observer's Log.

5. Characteristics of the pupil at the end of the study as shown through test scores and observed behavior. The use of code names was necessary in the development of the case studies.

The basic plan employed in developing the case studies was conceived from the study by Montague, "The Effects of Dance Experiences Upon Observable Behaviors of Women Prisoners."<sup>1</sup>

The following is an example of a case study and the Observer's Log. All other case studies may be found in Appendix J, pp. 144-182.

## CASE STUDY OF E-2

#### Introductory Statement

E-2 is an eight year old who gives one the first impression of being "all glasses" and the "ham" of the group. She is always neatly dressed. She is left-handed in all throwing activities but writes with her right hand.

Her immediate family consists of a father who is

<sup>1</sup>Mary Ella Montague, "The Effects of Dance Experiences Upon Observable Behaviors of Women Prisoners," Unpublished Doctoral Dissertation, New York University, New York City, New York, 1961. an instructor at Sam Houston State College, a mother, an older sister and a brother. The family relationship is good.

E-2 is in good health but often has headaches. Her school attendance is good with few absences. She is generally enthusiastic and happy.

#### Summary of School Records

E-2 attended the first grade in Huntsville and the second grade in Upper Marlboro, Maryland.

E-2 has an Intelligence Quotient of 129 and a Mental Age of 12-10 according to results of the Otis Quick-Scoring Mental Ability Test. Her chronological age at the time the Stanford Achievement Test was administered was 8-4. Test scores on the Basic Reader's Test for the first grade were very high and high average. The rating for the second grade from the Upper Marlboro school was "on grade level." E-2 received a scale score of 52 on the Brace Scale of Motor Ability Tests. According to teacher evaluation, she is underachieving in the areas of reading, arithmetic, handwriting, language, and spelling.

E-2 received an average reading score of 4.1 and an average arithmetic score of 3.3 on the Stanford Achievement Test.

E-2's present teacher credits the pupil's underachievement to a "lack of skills and foundation because of varied curriculum." The teacher ranked E-2 as slightly below average in relation to the class. She was not a discipline problem in class, she was accepted by her peers, and she participated in class activities. Her general coordination was good; but, according to the teacher, she seemed to have a fine coordination problem.

## Characteristics at Beginning of Study

E-2 had an extrovert personality and was very confident, aggressive, and overt in her actions. She was verbal at all times and very competitive in all activities, always wanting to be the "best." Her general response to all activities was "That's easy, I can do that." E-2 had an inquisitive mind and liked to know what the next activity was going to be before the present one was completed. Therefore, at times, she was restless and fidgety, her attention span seemed to be very short. When she had accomplished a stunt, she wanted to go on to the next one immediately, showing little concern for the other members of the group. However, E-2 was very conscious of how the other pupils performed and was not at all reserved in letting them know if their performance was wrong. She wanted to be first in everything and tended, at times, to be sarcastic with the other pupils if she did not have her way. She was confident and very determined in everything that she attempted.

E-2's general coordination was good but she was slightly below average in over-all strength as measured by the Brace Scale.

## Observer's Log for E-2 During the Period of Activities

- Feb. 1 E-2 was a very self-confident child. Her actions were aggressive and overt. She wanted to know, "What are we going to do today?" This question was asked the investigator before class started. She is generally enthusiastic and happy. She likes the attention of the other pupils and the teacher.
- Feb. 3 E-2 wanted to be first in all the activities. She definitely assumed the leadership of her peer group. The other pupils seemed to look to her for this leadership.
- Feb. 5 E-2 and her partner (E-6) did well in jumping rope together. She tended to be impatient with those pupils who had difficulty in the activity. She would state, "Oh, you can't do anything right and it's simple." This type of statement did not seem to bother the other members of the class.
- Feb. 8 E-2 acted as the leader for Red Light, Green Light. The other pupils did not question her commands. She seemed perfectly at ease and confident in this capacity.
- Feb. 10 No comment.
- Feb. 12 E-2 performed efficiently in posture relay and posture tag game. Her balance and agility in these activities was good.
- Feb. 15 E-2 was delighted and amused at the other pupils in the Japanese Tag game. Her coordination and agility was good. She avoided being tagged by changing direction and change of pace in running.
- Feb. 19 No comment.
- Feb. 22 E-2 was very emphatic in wanting the teacher to mark the distance of her jump when jumping over the brook for distance. She seemed to be disappointed when she did not win the game.
- Feb. 24 E-2 was verbal and aggressive today. She stated, "I know how to do the seal walk" and commenced to show the teacher. She seemed to want the attention of the group and the teacher.

E-2 stated that her mother did exercises with her. She tended to be very verbal, almost to the point of interrupting. She stated that balancing "hurts the backs of my legs. I want to do arm exercises." She wanted to jump "like jumping rope." She wanted to know how to do the turtle walk. She said "It's harder to pat stomach. I can't." In reference to another pupil she said, "No fair! She got two turns."

March 1

The following statements were made by E-2 today. She was very verbal and outgoing. "I don't like the rocking chair. It's hard to hop on the right and clap. I'm not used to the paddle yet. Is it mine? Can I bring fifteen cents? Let's do the arm circles. Let's have a rest. Jump like this? You're pushing on me! She's got a pretty sharp eye." It was a little difficult for anyone else to get a word in edgewise. During Red Light, Green Light, E-2 tended to be argumentative with the leader. She stated several times, "I didn't move!!" She would then flounce back to the starting line in a sullen mood which didn't last long.

- March 3 E-2 didn't want to touch her toes or do the arm exercise today. She said, "I can't close my eyes and walk cause I can't see the line" when they were instructed to walk ten steps with their eyes closed. Her eye-hand coordination with both hands was good when balancing the ball on the paddle.
- March 5 "I can't touch my toes." She wanted to do some push-ups and jumping jacks because she had been practicing every night. E-2 used her left hand in hitting the ball with the paddle. When asked if she were left-handed, she said, "I do everything with my left hand, but I write with my right hand."
- March 8 E-2 was rather quiet and non-verbal today. She was lacking in enthusiasm.
- March 10 E-2 tended to be impatient with the other pupils. She also stated, "I'm not going to run!" She wanted to show the class how her brother skips. She seemed delighted with her ball passing ability and stated, "I'm doing it!"
- March 15 E-2 was the first one to reach the playground and asked, "What we gonna play?" She seemed to have regained her enthusiasm.

March 17 E-2 didn't want to play in a circle. She wanted to do exercises all period. In reference to another pupil she said "She can't run." She was very aggressive in avoiding being tagged in the Hang-On Tag game. She used a change of direction and a change of pace in her running.

March 22 E-2 was absent from school.

- March 24 E-2 complained about everything today and had an uninterested and unenthusiastic attitude toward the class activities.
- March 26 E-2 enjoyed being the center of attention in her movement study of a rabbit. She tended to "ham it up" and entertain the other pupils. She did a movement sequence depicting her future career of nursing. She said she was going to go to college and graduate as a nurse. E-2 did not imitate the actions or movements of the other pupils but seemed to lead in all the activities.
- March 29 E-2 tended to watch the other pupils to see that they didn't cheat in the paddle relay. She would tell them that they were cheating if they used their free hand to balance the ball.
- March 31 E-2 stated that she didn't like to do the arm circles. She stated that being in a circle was not exercise. She said she was tired after the Cat and Mice game.
- April 2 E-2 executed very good control in hitting the ball in a downward direction. She said she had been practicing.
- April 5 No comment.
- April 7 E-2 became impatient with E-5's inability to keep up in the Rhythm game.
- April 9 E-2 had E-1 for a partner in the Forward and Backward relay. She became very impatient with E-1's inability to keep up with her and stated, "I'm not going again with \_\_\_\_!" E-2 performed well in dribbling the playground ball.
- April 12 E-2 tossed the tennis ball with her left hand. Her catching ability and moving while tossing and catching was very good.
- April 14 E-2 performed the skip and clap well. In the simulated Jacks game she used her left hand.

- April 24 E-2's execution of the backward walk was fair. She tended to be argumentative in Red Light, Green Light. She appeared quite enthusiastic and happy.
- April 28 E-2 was delighted with the crawling activity. She threw the playground ball overhand very well. She seemed disappointed when class was over.
- April 30 E-2 wanted the teacher to give them a party since it was the last day of class. She asked the teacher if they could continue to have this class until school was over. She didn't want to go back into a class with the other pupils and her regular teacher.

## Characteristics at the End of the Study

E-2's chronological age when the Stanford Achievement Test was readministered was 8-9. She received an average reading score of 4.2 and an average arithmetic score of 4.1 on the second testing. Her scale score on the Brace Scale of Motor Ability Tests retest was 72. The improvement on the Brace test was 20 points, on the average reading .1 and on the average arithmetic test .8.

E-2's over-all strength seemed to have improved at the end of the study as did her fine coordination. She seemed to become a little more tolerant of the other pupils and a little less impatient with them. She maintained a position of leadership in the class without being overbearing. She was generally enthusiastic and happy and performed well in all activities.

The fact that she writes with her right hand but appears to be dominantly left-sided could be a factor in her inability to function successfully in academic areas of study.

## The Program of Activities Utilized with the Experimental Group

The design of the present investigation called for the instruction of selected motor activities to pupils comprising the experimental group. Criteria were formulated to assist the investigator in the selection and presentation of movement experiences which would concur with the needs, interests and abilities of third grade pupils. Activities included in the plan of motor experiences coincide with the psychomotor abilities of the subjects.

Each class session encompassed motor activities ranging from strenucus to less strenucus movement patterns. The activities included a wide scope of neuromuscular skills involving agility, elasticity and flexibility, gross motor coordination, eye-hand coordination, balance and control.

The motor activities were presented in thirty minute sessions three days per week. Class sessions generally were held on the playground area; however, it was necessary to conduct a few of the sessions in a classroom due to inclimate weather.

Each daily record plan includes the purposes of the activities, the equipment used (if any) and a listing of the activities presented in the class session. Individual and group reactions which seemed important are also presented in each plan.

The following is an example of a daily record

plan. All other record plans may be found in Appendix I, pp.96-143.

> Class Activities for February 22, 1965

#### Purposes:

To strengthen the trunk and feet.

To increase general elasticity and flexibility.

To develop an awareness of bending and stretching.

To develop an awareness of the body in space.

To develop increased ability to adjust to variations in body positions.

To develop and ensure skills in running.

To develop a sense of balance and increased coor-

dination.

#### Equipment

None

#### Procedures:

A discussion of the correct methods of performance for the various movement exercises preceded each activity.

1. The pupils were directed in the following movement exercises: a.

Jumping Jacks

b. Rocking Chair--keeping knees and arms straight touch toes, sit down on the heels, touch toes and return to a standing position with hands on hips. Repeat ten times.

Touch the toes ten times without losing с. the balance or moving the feet about.

Arm circles--extend arms straight out from d. shoulders and make a fist with the hands. Keeping the arms straight and the fists clenched, do five small circles forward and five circles in reverse.

e. "Small and Tall"--drop to the ground--slap the ground with your hands, bounce up--jump high and clap hands over your head. Relax while you're down and stretch hard when you're up."<sup>17</sup> Repeat five times. Reach high!

2. Skipping--skip forward to the turning line and back to the starting line. Use toes to push off--try to be as light as a feather.

3. Hopping--hop five times on the right foot, in place. Hop on the left foot five times in place.

4. Running--run to the base, tag it and run back.

5. Jumping for distance--stand with feet parallel behind the starting line, bend the body at the waist and knees. Jump as far as possible. Land on both feet without losing the balance.

6. Exchange Tag--circle formation: 'It' walks around the circle and tags another player. The tagged person races 'It' to the base and back to the vacant place in the circle. The person losing the race becomes 'It'.

Individual Reactions Which Seemed Important:

E-2 seemed disappointed when she did not jump the farthest.

E-3 seemed to be mingling and talking more freely

with the other pupils.

17

E-5 was slow to understand some of the directions.

E-8 seemed to try harder in the running activities.

Group Reactions Which Seemed Important:

As a whole, the group was enthusiastic. They

Liselott Diem, <u>Who Can</u>, Frankfort, Germany: Nilhelm Limpert - Publisher, 1962. p. 12. seemed disappointed when the class session was over and were reluctant to go back to the classroom.

## CHAPTER IV

## ANALYSIS, INTERPRETATION AND TREATMENT OF FINDINGS

A study was conducted on the effect of improved motor ability on the academic achievement of sixteen third grade underachieving girls enrolled in the Huntsville Elementary School, Huntsville, Texas.

Data obtained from pre- and post-administrations of the Elementary Battery for grades three and four of the Stanford Achievement Test and the Brace Scale of Motor Ability Tests were compared statistically. The data obtained on both the experimental and control group of samples were compared on a pre- and post-experimental basis to determine the significance of the difference between the two test administration results. In addition, data obtained on both groups were compared on a pre- and post-experimental basis to determine the significant difference between the two samples.

The case studies of the experimental group were also analyzed on a pre- and post-experimental basis.

## Description of the Samples Studied

The sixteen third grade girls who participated in the study were between the ages of eight and nine years. The samples were selected, by teacher evaluation, from the four third grade classes at Huntsville Elementary School. The sixteen subjects were divided, by random selection, into experimental and control groups comprised of eight pupils each. Case studies were developed on each pupil included in the experimental group. In addition, a daily Observer's Log was kept on the pupils composing the experimental group during the period of activities to facilitate interpretation or observable behavior. Code names were assigned to all participating pupils.

## Stanford Achievement Test Scores

The Stanford Achievement Test scores for the subjects were obtained from pre- and post-experimental test administrations. As shown in Table I, these scores yielded a numerical representation of the pupils' present performance level in the areas of reading and arithmetic. The mean sum score of the sixteen samples in average reading was 4.0625 with a standard deviation of .8400. The mean sum score of the samples in average arithmetic was computed to be 3.4375 with a standard deviation of .5955.

## Brace Motor Ability Test Scores

Brace scaled scores were acquired from pre- and post-experimental test administrations. The scale scores represent the pupils' motor ability scores<sup>1</sup> or the pupils'

<sup>1</sup>David Kingsley Brace, <u>Measuring Motor Ability</u>, New York: A. S. Barnes and Company, 1927, p. 104.

"native motor ability."<sup>2</sup> The mean sum score of the sixteen samples on the Brace Test was computed to be 48.0000 with a standard deviation of 12.6210, as depicted in Table I.

## TABLE I

## MEAN SUMS AND STANDARD DEVIATIONS OF THE TOTAL GROUP OF SUBJECTS INDICATED BY PRE- AND POST-EXPERIMENTAL DATA

	Mean		Standard Deviation
Average Reading	4.0625		.8400
Average Arithmetic	3.4375	÷ 	•5955
Intelligence Quo- tients	106.5000		8.9226
Motor Ability	48.0000		12.6210

## Interpretation of Statistical Data

The mean, standard deviation and significance of the difference between pre- and post-experimental data was computed separately for both the experimental group and the control group. The mean which is a measure of central tendency and "is nothing more than the familiar average"<sup>3</sup> was computer calculated by the use of the formula described in

<sup>2</sup>National Research Council of The Research Section, <u>Measurement and Evaluation Materials in Health, Physical</u> <u>Education and Recreation</u>, Washington, D. C.: American Association for Health, Physical Education and Recreation, 1950. p. 101. <sup>3</sup>Milton G. Smith, <u>A Simplified Guide to Statistics</u>, New York: Holt, Rinehard and Winston, Inc., 1964, p. 17. Chapter II.<sup>4</sup> The standard deviation, defined as "that measure which indicates the scatter or spread of the middle 68.26 per cent of the scores taken from the mean of the distribution," was computer calculated from the original scale scores by the use of the formula described in Chapter II.<sup>6</sup>

# Pre- and Post-Test Results

Variables employed in computing the data were as follows: variable one, average reading; variable two, average arithmetic; variable three, intelligence quotient; and variable four, Brace scores.

The mean performance of the control group on the pre-test was 4.3500 and the standard deviation was .6907 for variable one. Variable two yielded a mean performance of 3.0250 with a standard deviation of .2492. Mean performance of variable three was 107.8750 with a standard deviation of 6.1047. Variable four produced a mean performance of 38.2500 and a standard deviation of 11.3231. The range of scores on variable one was from 3.2 to 5.7. Range of scores on variable two was from 2.7 to 3.3 Intelligence

# <sup>4</sup>Supra, p. 32.

<sup>5</sup>H. Harrison Clarke, <u>Application of Measurement to</u> <u>Health and Physical Education</u>, New Jersey: Prentice-Hall, Inc., 1959, p. 435.

<sup>6</sup>Supra, p. 32.

quotients for the Control group ranged from 96 to 116. Variable four had a score range from 19 to 58.

The mean performance of the Experimental group on pre-tests was 3.3625 and the standard deviation was .5342 on variable one. Variable two yielded a mean performance of 2.9125 and a standard deviation of .4290. The mean value of variable three for the Experimental group was 105.1250 and the standard deviation was 11.6058. The mean performance for variable four was 45.5000 with a standard deviation of 10.1277. Range of scores for variable one was from 2.5 to 4.1. Variable two showed a score range from 2.4 to 3.6. The intelligence quotients for the Experimental group ranged from 94 to 129. Variable four yielded a score range from 29 to 58.

Retest scores for the Control group yielded a mean value of 4.6625 and a standard deviation of .6802 on variable one. Mean performance was 3.9500 and standard deviation was .3664 for variable two. Variable three remained the same as that on the pre-test. The mean performance of variable four was 47.8750 with a standard deviation of 9.0307. The scores of Control group ranged from 3.7 to 5.6 on variable one and from 3.5 to 4.6 on variable two. Range of scores on variable four were from 35 to 58. The range on intelligence remained unchanged.

The post-test results for the Experimental group yielded a mean performance of 3.8750 and a standard deviation of .8908 on variable one. Variable two showed a mean

performance of 3.8625 and a standard deviation of .4172. Variable three remained the same as on the pre-test. Variable four yielded a mean value of 60.3750 with a standard deviation of 10.1127. The range of scores on variable one was 2.6 to 5.0. Range of scores for variable two was 3.2 to 4.3 and for variable four from 40 to 72.

Table II represents the preceding data and includes the variables, means and standard deviations of the Control group and the Experimental group on a pre- and post-test basis.

". . .a correlation exists between two samples of scores when they represent the performance of a single group of subjects."<sup>7</sup> The significance of the difference between pre- and post-experimental test results was computed by using the formula explained in Chapter II.<sup>8</sup> This formula ". . .reduces to a test of whether the mean of the differences is significantly different from zero. . ."<sup>9</sup> The value of t is interpreted as to whether to accept or reject the null hypothesis.

> The null hypothesis. . .asserts flatly that the true mean difference between the two groups being compared is zero; and that the obtained difference (if one is found) is inconsequential and could well be zero. . . In rejecting a null hypothesis, we assert

<sup>7</sup>Smith, <u>op</u>. <u>ci</u>t. p. 84. <sup>8</sup>Supra, p. 33.

<sup>9</sup>Smith, op. cit. p. 84.

TABLE II

SIGNIFICANCE OF THE DIFFERENCE BETWEEN THE MEANS OF TWO SMALL CORRELATED SAMPLES

of Difference (t) Significance 1.5632 3.8980 3.9121 1.8103 4.8366 10.3759 111 111 Standard Deviation .6802 .8908 .4172 .3664 6.1047 9.0307 11.6058 10.1127 Post-Test 4.6625 3.8625 3.8750 3.9500 107.8750 47.8750 105.1250 60.3750 Mean Deviation .6907 .2492 6.1047 5343 .4290 Standard 11.3231 11.6058 10.1277 Pre-Test 4.3500 2.9125 3.3625 105.1250 Mean 3.0250 107.8750 38.2500 45.5000 Control Group: Experimental Variables Group: N N --M 4

53(a)

that the difference obtained is significant, that it indicates the existence of a true difference greater than zero. In accepting the null hypothesis, . . .we concede that there is no reason to suspect --as far as our data are concerned--that the true difference is not zero.<sup>10</sup>

For most investigations, the acceptance or rejection of the null hypothesis is based on the following:

(a) to accept the null hypothesis (that is to regard the difference as not significant) when t is less than 1.96 (5% level of confidence); (b) to reject the null hypothesis (that is, to regard the difference as significant) when t is greater than 2.58 (1% level of confidence); and (c) neither to accept nor reject the null hypothesis (that is, to regard the difference as one of doubtful significance) when t lies between 1.96 and 2.58.<sup>11</sup>

The standard error of the mean of the differences between the pre- and post-reading scores of the Control group was .1999. The value of t was calculated to be 1.5632. According to the Fisher Table, this value of t is not significant at the five per cent level of confidence;<sup>12</sup> therefore, the null hypothesis must be accepted.

The standard error of the mean of the differences between pre- and post-arithmetic scores for C group was .2373 and the value of t was found to be 3.8980. The value of t was significant beyond the one percent level of confi-

<sup>10</sup>Henry E. Garrett, <u>Elementary</u> <u>Statistics</u>, New York: Longmans, Green and Company, 1956, p. 92.

> <sup>11</sup>Smith, <u>op</u>. <u>cit</u>. p. 77. <sup>12</sup>Ibid., p. 87.

dence; therefore the null hypothesis is rejected. Thus, we can say that the pupils improved significantly on the post-test.

A standard error of the mean of the differences for C group on the Pre- and post-administrations of the Brace Scale was 2.4603 with a t value of 3.9121. The value of t is significant beyond the one per cent level of confidence; therefore, the null hypothesis is rejected. Hence, it has been found that the C group improved significantly on the readministration of the Brace Test.

A calculated standard error of the mean of the differences for the Experimental group on the pre- and postreading test was .2831. The value of t was found to be 1.8103. This t value is not significant at the five per cent level of confidence so the null hypothesis is accepted.

The standard error of the mean of the differences on pre- and post arithmetic tests for E group was .1024 with a t value of 10.3759. The null hypothesis was rejected as this difference is significant beyond the one percent level of confidence. Therefore, the E group improved significantly in arithmetic.

The standard error of the mean of the differences for E group on the Brace pre- and post-experimental tests was calculated to be 3.0755. The t value of 4.8366 was found to be significant beyond the one per cent level of confidence; therefore, the null hypothesis was rejected. The improvement of the E group on the Brace Scale post-experimental test

was significant.

Table III contains the means, sums of the deviations of the individual scores from their means and the significant differences between the means of the C group and the E group on all data obtained on pre- and post-experimental test administrations.

The difference between the means of the pre-test reading scores was found to be 3.2060 in favor of the C group. This value of t is significant beyond the one per cent level of confidence and the null hypothesis was rejected. Thus, it can be said that the C group mean on reading was significantly higher than that of the E group. The value of t on the post-reading scores was 2.015 in favor of the C group. This value of t is not significant at the five per cent level of confidence; therefore, the null hypothesis must be accepted.

Mean differences and values of t on pre-test arithmetic scores was .6250 and the null hypothesis was accepted. The value of t on the post-arithmetic tests was .4580. The null hypothesis must be accepted as this is not significant at the five per cent level of confidence.

On the Brace Scale, the pre-test scores yielded a t value of 1.3500 in favor of the E group. This value is insignificant and the null hypothesis must be accepted. The value of t on the post-test was 2.6561 in favor of the E group. The value of t is significant beyond the five per cent level of confidence. This indicates that the E group's TABLE III

SIGNIFICANCE OF THE DIFFERENCE BETWEEN THE MEANS OF TWO SMALL UNCORRELATED SAMPLES

.4580 2.6561 2.015 t 5.5548 .9400 552.1248 715.8748 1.2187 3.2387 x and y Squared Sums of 11 11 11 11 11 11 N X XN 2<sup>2</sup> N2 NN Ns Post-Test 4.6625 3.9500 3.8750 3.8625 = 47.8750 = 60.3750 Mean 11 11 11 11 X N N × 12 X Significance of Difference (t) .6250 3.2060 1.3500 .4348 3.3400 1.3883 = 897.5000 718.0000 1.9987 x and y Squared Sums of 11 11 11 11 11 N X a N X N y2 NS NX Pre-Test 4.3500 3.3625 3.0250 2.9125 38.2500 45.5000 Mean 11 11 11 11 11 11 N N X X × 12 ables Vari--I 2 +

 $\overline{Y}$  = Experimental Group

= Control Group

×

 $\pounds$  of deviations of individual scores from M's of their respective samples II or Ły<sup>2</sup> KX S

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improvement in motor ability was significantly higher than that of the C group. (See Table III).

## Summary

Comparison of pre- and post-experimental test results indicated that the C group showed an insignificant gain on the post-experimental reading test. C group showed a significant degree of improvement on the post-arithmetic test and a significant degree of improvement on the post-experimental Brace Scale.

The E group indicated an insignificant difference in pre- and post-test reading performance. This group indicated a significant degree of improvement on the post-experimental arithmetic and the motor ability test.

The C group indicated a significantly greater degree of performance than did the E group on the pre-experimental reading test. Post-experimental test results showed an insignificant difference in the means of the two groups. There was not a significant difference in the two groups as denoted by pre- and post-test results in the area of arithmetic.

The data obtained and computed on the motor ability test indicated that there was an insignificant difference in the means of the two groups on the pre-test. Post-test results designated a significantly greater degree of performance improvement by the E group than by the C group.

## CHAPTER V

## SUMMARY, CONSLUSIONS AND RECOMMENDATIONS

The present study was undertaken to determine the effect of improved motor ability on the academic achievement of third grade underachievers. Selection of the samples to be used in the study was made by the third grade classroom teachers through the method of evaluation sheets. The Stanford Achievement Test Battery for grades three and four and the Brace Scale of Motor Ability Tests was administered the second week in December and the first two weeks in January. Case study information on the pupils comprising the experimental group was obtained through teacher interviews. The intelligence quotients were acquired from the results on the Otis Quick-Scoring Mental Ability Test administered by the classroom teachers in November. Through the development of the present study an effort was made to effect the following subproblems:

1. To determine the initial status of academic achievement of sixteen third grade underachievers.

2. To determine the initial status of motor ability of the sixteen selected third grade underachieving girls.

3. To select and administer the instructional program of selected motor activities.

4. To compare the status of each participant on a pre- and post-experimental basis.

A survey was conducted of available literature pertaining to motor ability, academic achievement and underachievers. It was disclosed that no studies identical to the present research had been published.

The Stanford Achievement Test Battery, for grades three and four, was selected to measure the academic performance level and the Brace Scale of Motor Ability Tests was selected to measure the motor ability of the selected samples. The aforementioned tests were chosen according to criterion for the selection of valid and reliable instruments of measurement.

Data obtained from pre- and post-experimental administrations of the Stanford Achievement Test and the Brace Scale of Motor Ability Test were coded, computed and analyzed. A summarization of the findings, conclusions and recommendations evolved through the research are set forth in the present chapter.

## Summary of the Findings

The ensuing data obtained on pre-test results describes the status of the subjects at the outset of the study. The Control group's reading performance level at the beginning of the study was, theoretically, the third month of grade four; whereas, their actual grade placement was the fourth month, grade three. Their theoretical performance level in arithmetic was beginning third grade and their actual grade

placement was the fourth month, third grade. The performance level of the control group at this time in motor ability was below average.

The status of the Experimental group at the beginning of the study in reading was a theoretical grade level performance of grade three, the third month when their actual grade placement was the fourth month, third grade. Their theoretical performance level in arithmetic was the ninth month, grade two. The performance of the experimental group in general motor ability at the outset of the study was slightly below average.

It may, therefore, be ascertained from the preceding information that the Control group had a much higher performance level in the area of reading at the outset of the study than did the Experimental group. In actuality, the Experimental group was slightly below their actual grade placement level of performance in reading and the Control group was a grade level above in performance level in accord with their actual grade placement.

The theoretical performance level of the two groups in arithmetic differed only slightly. Both groups were achieving below their actual grade placement level in this area.

There was only a slight difference in the performance level of the two groups in general motor ability, both being below average in relationship to established norms.

The status of the subjects at the termination of the study was obtained through post-experimental testing results. The status of the Control group in reading at the end of the study, theoretically, was the sixth month of grade four; whereas, their actual grade placement at this time was the ninth month, grade three. Their theoretical performance level in arithmetic at the end of the study was the ninth month of grade three. Their theoretical performance level in arithmetic at the end of the study was the ninth month of the third grade. This was in accordance with their actual grade placement as it was the same. Performance level of the Control group on the motor ability test at the end of the study remained slightly below average.

The status of the Experimental group at the end of the study in reading was a theoretical grade level performance of grade three, the eighth month and their actual grade level was the ninth month of grade three. Their theoretical performance level in arithmetic at this time was the eighth month of grade three while their actual grade placement was the ninth month of grade three. The performance level of the Experimental group in general motor ability at the termination of the study was slightly above average.

According to statistical computation, neither group showed significant achievement improvement on the post-experimental test results in the area of reading. The post-test results obtained on the arithmetic test revealed that each

group made significant achievement gains in this area. General motor ability post-test results indicated that the Experimental and the Control group made significant improvement gains in this area.

In calculating the significance of the differences in the means of the two groups on an initial test basis, it was found that the Control group had a significantly higher mean value in reading than the Experimental group. However, on the post-experimental test, there was not a significance in the differences of the respective means. The differences in group means on the pre- and post-experimental arithmetic tests were not significant. In the area of general motor ability, there was not a significant difference in the mean values of the two groups. However, on the post-experimental test data, the Experimental group indicated a significant degree of improvement when compared to that of the Control group.

The computed mean sums of the intelligence quotients indicated that the two groups were homogeneous.

Improved motor ability did not seem to affect the academic achievement of the samples studied in this research. However, the sample was small and the period of activity was relatively short in duration; this could have had a bearing on the obtained results. There was also a degree of control which could not be regulated or realized, this being the interaction of the two groups in other school situations;
therefore, it was not possible to control the exchange of information between the subjects. There is also a question as to whether all subjects included in the study were actual underachievers.

The case studies developed on the Experimental group of subjects revealed certain observable behavior in each pupil during the period of activities. This observable behavior tended to indicate that participation in motor activities favorably improved the behavioral aspects of each pupil in every instance.

#### Conclusions

The present study of sixteen third grade underachievers determined the following conclusions:

1. The two samples were homogeneous groupings according to intelligence quotients.

2. The improvement of general motor ability tends to have an insignificant effect on academic achievement.

3. There is a significant improvement in general motor ability as a result of participation in intensified motor experiences.

4. There is no significant relationship between motor ability and academic achievement of third grade underachievers.

5. The participation in physical activity classes tends to produce favorable behavioral changes in the participants.

## Recommendations for Further Study

The implications derived upon the basis of the present study indicate the need for further study in the area of motor ability, its relationship to and effect on academic achievement. The following recommendations for research are based upon the implications of the present study:

 Determine the effect of improved motor ability on academic achievement of third grade underachievers over an extended duration of time.

2. Determine the effect of improved motor ability on academic achievement of a larger sampling of third grade underachievers.

3. Determine the relationship between improved motor ability and academic achievement following an intensified activity program extending over a long period of time.

#### BIBLIOGRAPHY

#### Books

- Bovard, John F., Frederick W. Cozens and Patricia E. Hagman. <u>Tests and Measurements in Physical Education</u>. Philadelphia: W. B. Saunders Company, 1949.
- Brace, David Kingsley. <u>Measuring Motor Ability</u>. New York: A. S. Barnes and Company, 1927.
- Brogan, Peggy and Irene K. Fox. <u>Helping Children Learn</u>. New York: World Book Company, 1955.
- Bucher, Charles A. and Evelyn M. Reade. <u>Physical Education</u> <u>in the Modern Elementary School</u>. New York: The MacMillan Company, 1958.
- Burt, C. The Backward Child. New York: Appleton-Century. 1937.
- Clarke, H. Harrison. <u>Application</u> of <u>Measurement to Health</u> <u>and Physical Education</u>. New Jersey: Prentice-Hall, Inc., 1959.
- Cratty, Bryant J. <u>Movement Behavior and Motor Learning</u>. Philadelphia: Lea and Febiger, 1964.
- Evans, Ruth and others. <u>Physical Education for Elementary</u> <u>Schools</u>. New York: McGraw-Hill Book Company, Inc., 1958.
- Fait, Hollis F. <u>Physical Education for the Elementary School</u> <u>Child.</u> Philadelphia: W. B. Saunders Company, 1964.
- Freeman, G. L. <u>Energetics of Human Behavior</u>. Iowa City: University of Iowa Press, 1948.
- Garrett, Henry E. <u>Elementary Statistics</u>. New York: Longmans, Green and Company, 1956.
- Geri, Frank H. <u>Games</u>, <u>Rhythms</u>, <u>and Stunts for Children</u>. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1957.

- Gibson, J. <u>Perception of the Visual World</u>. Boston: Houghton Mifflin, 1959.
- Halsey, Elizabeth and Lorena Porter. <u>Physical Education</u> for <u>Children</u>. New York: The Dryden Press, 1958.
- La Salle, Dorothy. <u>Guidance of Children Through Physical</u> <u>Education</u>. New York: The Ronald Press Company, 1957.
- Liselott, Diem. <u>Who Can</u>. Frankfort, Germany: Wilhelm Limpert-Publisher, 1962.
- Magary, James F. and John R. Eichorn (eds.). <u>The Exceptional</u> <u>Child</u>. New York: Holt, Rinehart and Winston, 1964.
- Richardson, Hazel A. <u>Games for the Elementary School Grades</u>. Minneapolis: Burgess Publishing Co., 1960.
- Riedman, Sarah R. <u>The Physiology of Work and Play</u>. New York: Holt, Rinehart and Winston, Inc., 1950.
- Smith, G. Milton. <u>A Simplified Guide to Statistics</u>. New York: Holt, Rinehart and Winston, Inc., 1964.
- Tredgold, A. F. <u>A Textbook of Mental Deficiency</u>. Baltimore: William Wood, 1937.

#### Periodicals

- Berkowitz, Pearl H. "Some Psychophysical Aspects of Mental Illness in Children," <u>Genetic Psychology Mono-</u> graphs, 63:103-148, 1961.
- Brock, John D., Walter A. Cox and Erastus W. Pennock. "Motor Fitness," <u>Supplement of the Research Quarterly</u> of the American Association of Health, <u>Physical</u> <u>Education</u>, and <u>Recreation</u>, 17:407, May, 1949.
- Clarke, Harrison H. and Boyd O. Jarman. "Scholastic Achievement of Boys 9, 12, and 15 Years of Age as Related to Various Strength and Growth Measures," <u>Research Quarterly of the American Association of Health</u>, <u>Physical Education</u>, and <u>Recreation</u>, 32:155-162, May, 1961.

- Duff, O. Lee and Laurence Siegel. "Biographical Factors Associated with Academic Over- and Underachievement," <u>Journal of Educational Psychology</u>, 51:43-46, Feb., 1960.
- Espenschade, Anna. "Development of Motor Coordination in Boys and Girls," <u>Research Quarterly of the American</u> <u>Association of Health, Physical Education, and</u> <u>Recreation</u>, 18:30-43, March, 1947.
- Hardy, M. C. "Improvement in Educational Achievement Accompanying a Health Education Program," Journal of Educational Research, 30:110-23, 1936.
- Hoefer, C. and M. C. Hardy. "The Influence of Improvement in Physical Condition on Intelligence and Educational Achievement," <u>Yearbook of the National Society for</u> the Study of Education, 27 (I):371-387, 1928.
- Keogh, Jack and David Benson. "Motor Characteristics of Underachieving Boys," Journal of Educational Research, 57:339-44, 1964.
- Kephart, Newell C. "Perceptual-Motor Aspects of Learning Disabilities," <u>Exceptional</u> <u>Children</u>, 31:201-206, Dec., 1964.
- Kulcinski, Louis H. "The Relation of Intelligence to the Learning of Fundamental Muscular Skills," <u>Research</u> <u>Quarterly of the American Association of Health</u>, <u>Physical Education</u>, and <u>Recreation</u>, 12:37-46, Dec., 1948.
- McCloy, C. H. "A Preliminary Study of Factors in Motor Educability," <u>Research Quarterly of the American</u> <u>Association of Health, Physical Education, and</u> <u>Recreation</u>, 11:28-39, May, 1940.
- Rarick, Lawrence G. and Robert McKee. "A Study of Twenty Third Grade Children Exhibiting Extreme Levels of Achievement on Test of Motor Efficiency," <u>Research</u> <u>Quarterly of the American Association of Health</u>, <u>Physical Education</u>, and <u>Recreation</u>, 20:142, May, 1949.

- Ray, Howard C. "Inter-relationships of Physical and Mental Abilities and Achievements of High School Boys," Research Quarterly of the American Association of Health, Physical Education, and Recreation, 11:129-49. March, 1940.
- Seils, Leroy G. "The Relationship Between Measures of Physical Growth and Gross Motor Performance of Primary Grade Children," <u>Research Quarterly of the Ameri-</u> can Association of Health, <u>Physical Education</u>, and <u>Recreation</u>, 22:244-60, May, 1951.
- Sloan, William. "Motor Proficiency and Intelligence," <u>Ameri-</u> <u>can Journal of Mental Deficiency</u>, 55:394-406, 1950-51.
- \_\_\_\_, "The Lincoln-Oseretsky Motor Development Scale," Genetic Psychology Monographs, 51:183-252, 1955.
- Yarmolenko, A. "The Motor Sphere of School-Age Children," Journal of Genetic Psychology, 43:298-318, 1933.

#### Measuring Instruments

- Kelley, T. and others. <u>Stanford Achievement Test</u>. New York and Tarrytown: Harcourt, Brace and World, Inc., 1953.
- Otis, Arthur S. <u>Otis Quick-Scoring Mental Ability Test</u>. Alpha Test Form As. New York: Harcourt, Brace and World, 1952.

#### Theses and Dissertations

- Coefield, John R. and Robert H. McCollum. "A Case Study Report of Seventy-eight University Freshmen Men with Low Physical Fitness Indices." Microcarded Master's Thesis, University of Oregon, 1955.
- Jarman, Boyd. "Academic Achievement of Boys Nine, Twelve, and Fifteen Years of Age as Related to Physical Performances." Master's Thesis, University of Oregon, 1959.

- Montague, Mary Ella. "The Effects of Dance Experiences Upon Observable Behaviors of Women Prisoners." Unpublished Doctoral Dissertation, New York University, New York City, New York, 1961.
- Page, Getty. "Case Studies of College Men with Low Physical Fitness Indices." Master's Thesis, Syracuse University, 1940.

#### Other Sources

- Growth and Development of the Child. Part IV. Appraisement of the Child. <u>White House Conference on Child</u> <u>Health and Protection</u>. New York: The Century Co., 1932.
- "Physical Education for Children." <u>A Report of the National</u> <u>Conference in Physical Education for School Chil</u> <u>dren of Elementary Age</u>. Washington D. C., 1951.

Personal interviews with the Elementary Teachers. Huntsville Elementary School, Huntsville, Texas. November 1964 and May 1965. APPENDIX

## Appendix A

## TEACHER EVALUATION SHEET

Studer	nt
School	
I. II.	Academic behavior A. Chief area (or areas) of underachievement 1. Reading 2. Arithmetic 3. Handwriting 4. Language 5. Spelling B. Academic ranking in relation to class 1. Slightly below average 2. Probably will fail 3. Failing Social behavior A. Discipline problem in class? yes B. Accepted by peers? yes C. Motivated to learn? yes D. Participates in class activities? yes
III.	Motor behavior A. General coordination 1. Awkward or clumsy? yes no 2. Fine coordination problem? yes no
IV.	Health A. Generally healthy? yes no B. Hearing problem? yes no C. Visual problem? yes no D. Excessive absenteeism? yes no E. Enthusiastic and happy? yes no
V.	What do you think is the major reason for the student's lack of achievement?

Teacher

## Appendix B

Code Name

#### DATA COLLECTING FORM FOR TEACHER INTERVIEWS

- A. Family background
  - 1. Family constellation
  - 2. Occupation of parents
  - 3. Family relationship
- B. Health status and school attendance
- C. Summary of school records

### Appendix C

Code Name

#### SUMMARY SHEET

This sheet is for the purpose of summarizing the information and data collected on each individual pupil.

Introductory statement

A. Physical characteristics and appearance

B. Family background

C. Health status

D. Summary of school records

E. Characteristics at beginning of study

## Appendix D

The Stanford Achievement Test shown in this appendix is a sample of the ones used for pre-testing.

Appendix D

Elementary Battery

\_\_\_\_ Date\_\_

1 -	
1	FORM
	K

# STANFORD ACHIEVEMENT TEST

\_\_\_\_\_ State\_\_

TRUMAN L. KELLEY • RICHARD MADDEN • ERIC F. GARDNER • LEWIS M. TERMAN • GILES M. RUCH

City or town.

INTED IN U.S.A.

	1 Par. Mean.	2 Word Mean.	AVER. READ.	3 Spell.	4 Lang.	5 Arith. Reas.	6 Arith. Comp.	AVER. ARITH.	Battery Median
Grade Equiv.									
Age Equiv.									
%-ile Rank									

Individual Profile Chart																			
								G	RADE	SCORE	SCAL	E							
	10	15		20	25	30 L	35	40	45	50	55	60	65	70 1	75 1	80	85 1	90 1	
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2 Word Mean.	-+++	+++	+++++	++++		++  ++	+++++	<u>++</u> +++	-+-+-+-+	+ + + + + +	<del></del>	+++++	+++++++++++++++++++++++++++++++++++++++	++++	+ + <b>+</b> + +	+++++	+ + + + +	+ + +	2 Word Mean.
3 Spell.		+++	++++			+++++	+++++	+++++	+++++	+++++	++++	+++++	+++++	+++++++++++++++++++++++++++++++++++++++	+ 1 - 1 + + +	++++++	+ + + + + +	+ + +	3 Spell
4 Lang.		+++-	++++		++++	+++++	++++++	+++++	+++++	+++++		+++++	+++++	+++++	+++++	+++++	+++++	+++	4 Lang.
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SAT: ELEM. : K-15

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Stanford Eleme

# TEST 1 Paragraph Meaning

We saw a lazy grasshopper and a bus in the garden. The <u>10</u> was just re- but the <u>11</u> was digging its home. 10. grasshopper child ant garde 11. gopher squirrel ant grassho The Indians had no matches, but the another way of starting fires. They covered that when two pieces of very stone that we call flint are struck tog sparks will fly. By means of the sparks flint the <u>12</u> were able to light their <u>12</u> . 12. Indians men people pionee 13. matches stoves fires way
but the <u>11</u> was digging its home. 10. grasshopper child ant gard 11. gopher squirrel ant grassho The Indians had no matches, but the another way of starting fires. They covered that when two pieces of very stone that we call flint are struck tog sparks will fly. By means of the sparks flint the <u>12</u> were able to light their <u>12</u> . 12. Indians men people pionee 13. matches stoves fires way
The Indians had no matches, but the another way of starting fires. They covered that when two pieces of very stone that we call flint are struck tog sparks will fly. By means of the sparks flint the <u>12</u> were able to light their <u>12</u> . <b>Indians men people pionee</b> 13. matches stoves fires way
12. Indians men people pionee 13. matches stoves fires way
13. matches stoves fires way
Pow is tallow then Dials but Dials
older of the two boys. The shorter b <u>14</u> . The younger boy is <u>15</u> . 14. young fat Dick Roy 15. thin Dick short Roy
Sue had an apple and an orange. She "Which do you choose?" Jane said, "I the orange." <u>16</u> said, "Then I will this <u>17</u> ." 16. She Sue Jane Lou
17. one orange candy apple
John's mother gave him a watch. said, "Come home at six o'clock. Do n late." John came home when his <u>18</u> ten minutes of six. Mother said, "I am you came home <u>19</u> ." 18. watch friend mother clock 19. at last early finally running

## EST 1 Paragraph Meaning (Continued)

Plants get water through their roots. Each ig root branches into smaller and smaller arts until the rootlets at the end are as thin s hairs. These tiny 20 wrap themselves round bits of earth and take up food and 21 from them.

).	twigs	stems	rootlets	plants	
•	pieces	water	material	things	
	-				

The mother mosquito lays eggs in the ater, and the eggs hatch into little wigglers hat come to the top of the water to breather at come to the top of the water to breather at a come to the top of getting rid of mosquitoes to drain the <u>22</u> out of pools and puddles. you cannot drain these, put some oil on the ater. The wigglers will <u>23</u> because they ill not be able to get air to <u>24</u>.

mosqu	itoes	mud v	water	wigglers
leave	swim	wiggle	e die	
fly	breathe	eat	blow	

At school we play dodge ball. The children rm a circle. One child stands in the center d throws a big 25 toward the others. a child is hit, he has to stand in the 26d 27 the ball.

ring	wheel	tire	ball
center	yard	corner	circle
throw	bounce	hit	push

If you look at a pencil, you will often see number printed on it to show how hard the id is. Number 1 pencils are very soft. umber 2 pencils are a little harder than umber 1 pencils, but are not so hard as umber 3 pencils. Ann's Number 2 pencil <u>28</u> than Mary's Number 3 pencil, but it <u>29</u> than Alice's Number 1 pencil.

longer	shorter	softer	harder	
longer	shorter	softer	harder	

Long ago the Indians of the Great Plains killed and ate buffaloes. They made their tepees and clothing out of buffalo skins. Some of their cooking vessels were even made of rawhide from the same animal. The horns and bones provided tools. Thus, the <u>30</u> was in many ways a useful <u>31</u> to these Indians.

30. buffalo deer skin meat31. material product thing animal

The sand on our ocean beaches was once rock. Tides and waves pound the rocks, and the tiny 32 that are broken off are called grains of 33.

32.	bits	shells	plants	microbes
33.	corn	wheat	sand	rock

Next to the air we breathe, water is the most necessary thing for life. Persons can live for several weeks without food. To go without  $\underline{34}$  for more than a few days will cause even the strongest man to die. One can go without  $\underline{35}$  much longer than he can go without water.

34.	air	food	sleep	water
35.	air	food	breathing	anything

The first permanent English colony in America was established at Jamestown in Virginia, chiefly for commercial purposes. The second colony was founded in Plymouth, Massachusetts, by the Pilgrims, who had suffered religious persecution at home. Unlike the founders of <u>36</u>, who sought financial gain, the <u>37</u> came to America in order to practice their <u>38</u> without interference.

36.	$\mathbf{P}$ lymouth	Jamestown	New York	Mexico
37.	$\mathbf{E}$ nglish	Virginians	Pilgrims	French
38.	business	religion	trade p	olitics
]			Go on to the n	ext page.

Stanford Elementary

## TEST 1 Paragraph Meaning (Continued)

Once there was a boy who liked to earn money. He lived in a house with a garden in which he raised vegetables. Every day he took some of his <u>39</u> to the market to <u>40</u> . 39. money flowers carrots toys 40. spend sell show play	An important part of the work on far which grow fruit and vegetables is the pick or harvesting. When peas, peaches, beans, berries are ripe, they must be <u>44</u> at on The job is often done by <u>45</u> who tra with their families from one field to anoth stopping wherever a particular kind of <u>46</u> is <u>47</u> . 44. harvested cultivated used shipp
-	45. tramps workers salesmen stude
	46. fruit vegetable crop thing
	47. ripe found growing seen
In olden days men made their own pens from the quills of feathers. It required con- siderable skill to cut a pen properly so as to suit one's individual taste in writing. Stu- dents were always on the lookout for good goose, swan, turkey, or other bird feathers. Goose quills made the most satisfactory <u>41</u> for general <u>42</u> , but schoolmasters liked pens made from the <u>43</u> of swan feathers because they fitted best behind the ear. <b>41. feathers</b> pens birds points	In general, insects may be divided into t classes. The group that lives on solid foot has biting mouth parts. The group the lives on liquid foods has long, hollow, sucking mouth parts. The butterfly visits flowed drawing up its food with its long sucking two in $48$ form. Grasshoppers do untold data age to grain and other farm crops. Becauthe grasshopper eats $49$ food, its mouth parts are of the $50$ type.
42 ugo woon timog offects	48. solid liquid convenient dry
42. USC WEAL LILLES ELLEUIS	49. green plant liquid solid
43. ends stubs quills parts	50. biting sucking hollow strong

Sto

## ST 2 Word Meaning

FCTIONS: Draw a line under the one word <sup>18</sup> If you choose between two things, you that makes the sentence true, as shown in decide hurry plan wait the first sample. Look at all four words <sup>19</sup> Strength means and choose the best one. duty power slow natural <sup>20</sup> To invite means to IPLES. e name of a color is thank listen promise ask milk red <sup>21</sup> Delighted means arm pet e day that comes after Fridav is true proud pleased beautiful 22 A dove is a **I**onday Tuesday Saturday Sunday flower cloud bird queen kitten will drink <sup>23</sup> A huge thing is very nothing bread milk cookies small strong dark large chair is to <sup>24</sup> To command is to sit on talk to cut with ride upon order answer destroy complete Ve can eat <sup>25</sup> A shelter gives sunshine wind corn gold warmth protection food hope **n** apple is a farm fruit pie cart <sup>26</sup> When a train has left, it has f a boy and girl have the same mother and ther, they are brother and departed fallen hidden arrived baby child aunt sister <sup>27</sup> A heavy load is 'omorrow will come not light not soft firm large Monday after today late early <sup>28</sup> Children who assist in doing something are ce is frozen greedy helpful selfish peculiar milk cream jelly water <sup>29</sup> When people look for something, they f I drop a glass plate, it will probably engage in a bend bounce break spill game search march service lew York is a large <sup>30</sup> If something is small and pretty, it is boat city factory capital china dainty lace golden mall means <sup>31</sup> A tree that is not standing straight is first early boy little slender powerful stooped slanting 'o begin is to <sup>32</sup> A long stick carried to help one walk is a bring carry find start handle staff club hammer 'o repair is to <sup>33</sup> The things made in a factory are what it spend fix need miss produces purchases destroys extends hildren are people who are very <sup>34</sup> A vessel is a short fair friendly young bell basket boat lake o be whole is to be <sup>35</sup> Something that can't be done is broken old all together religious difficult unusual assured impossible chapel is a <sup>36</sup> Someone who does a job well likes to be picture church store cross improved blessed nursed praised cross means <sup>37</sup> One who always tries to get ahead has behind going street over authority ambition kindness temper you have a pain just above your foot, it <sup>38</sup> To divide means to in your shoulder figure chest wrist ankle count take awav separate Stop. No. RIGHT 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38

 Gr. score
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## TEST 3 Spelling

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ST 4 Language

**4**7<sup>b</sup>

ECTIONS: In each pair of words in heavy type in the letter below there is an error in either capitalization or punctuation. You are to decide which one of each pair has	DIRECTIONS: Each exercise below has two num- bered parts. One part is written well and
the correct capitalization and punctuation. Then mark the answer space at the right that has the same number as the correct form.	<ul> <li>makes good sense. The other is written poorly. Choose the good one and mark the answer space which has the same number as your choice.</li> <li>SAMPLE: 1 We'll go when you are ready.</li> <li>2 We'll go. When you are ready.</li> </ul>
PLES: This is $\begin{array}{c}1 & \text{mr. Jones.}\\2 & \text{Mr. Jones.}\\& \end{array}$ 3 St. Louis, Missouri 4 St. Louis Missouri	1 Why he likes ice cream.       1       2         2 Why does he like ice cream?       1       2         3 The circus train carried lions.       3       4
618 Maple $\begin{bmatrix} 1 & \text{avenue} \\ 2 & \text{Avenue} \end{bmatrix} \begin{bmatrix} 1 & 2 \\ 2 & \text{Avenue} \end{bmatrix} \begin{bmatrix} 1 & 2 \\ 1 & 2 \end{bmatrix}$	4 A circus train with lions. $22$ 5 We went home after the game. $5$ 6 We went home.After the game.
Fenton, $\frac{3}{4}$ vermont 2 $5 \text{ november} 5, 1953 \overset{5}{1} \overset{6}{1} 3$	<ul> <li>1 We girls have regular jobs. Which we do each morning.</li> <li>2 We girls have regular jobs which we do each morning.</li> </ul>
ar aunt Mary, ar Aunt Mary,	3 Together we wash the dishes.       3       4         4 Together wash the dishes.       3       4         5 Both of us make our beds.       5       6
chool $\frac{5}{6}$ we've been having	6 Afterward make our beds. 1 At the zoo one monkey had a nut which he was trying to crack. 27 27 27
them a note which $\frac{1}{2}$ said, "Please 1 210	<ul> <li>2 At the zoo one monkey had a hut.</li> <li>Which he was trying to crack.</li> <li>3 The other monkey chased him. To the top of the tree. And down again.</li> <li>4 The other monkey chased him to the</li> </ul>
e to our room for a $\frac{3}{4}$ surprise." $\frac{3}{4}$ 11 e you ever made a cross $\frac{5}{6}$ jack-o'-lantern? $\frac{5}{6}$ 12	<ul> <li>top of the tree and down again.</li> <li>5 A third monkey sat in a corner. He watched the chase.</li> <li>6 A third monkey sat in a corner he state the share</li> </ul>
three sharp $\begin{array}{c}3 \\ 4 \\ teeth \end{array}$ three sharp $\begin{array}{c}3 \\ 4 \\ teeth \end{array}$ three sharp $\begin{array}{c}3 \\ 4 \\ teeth \end{array}$ three sharp $\begin{array}{c}3 \\ 4 \\ 14 \end{array}$	1 Our class gave a program. When we finished our unit on "Pioneer Days." 1 30 2 Our class gave a program when we
ing a book called $\begin{array}{c}1\\2\\ \end{array}$ "Bambi." $\begin{array}{c}1\\2\\ \end{array}$ "Bambi." $\begin{array}{c}1\\2\\16\end{array}$ finished reading it $\begin{array}{c}3\\4\\ Today.\end{array}$ $\begin{array}{c}3\\4\\17\end{array}$	<ul> <li>a First a scene acted out in a log cabin.</li> <li>a First we acted out a scene in a log cabin.</li> <li>b Which our parents liked very much.</li> <li>c Our parents liked it very much.</li> <li>d 32</li> </ul>
1 With love, 2 With Love,	1 The girls wore calico dresses.       1       2         2 The girls in calico dresses.       1       2         3 The boys wearing fringed jackets.       3       4         4 The boys wore fringed jackets.       3       4

TEST 4 .	Language	(Continued)
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**4**8<sup>a</sup>

DIRECTIONS: In each sentence, decide which of the numbered words is correct. Then mark the answer space at the right which has the same number as the word you have chosen.	At school they $\begin{array}{c} 3 \\ 4 \\ 1 \\ earned \end{array}$ us spelling
<b>SAMPLE:</b> Apples $\frac{1}{2}$ is good	Did you $\frac{1}{2}$ write to your cousin?
$\frac{1}{2}$ Them dogs just had a fight. $\frac{1}{2}$ 35	One day I $_{4 \text{ run}}^{3 \text{ ran}}$ all the way home
The boys $\frac{3}{4}$ aren't ready vet. $\frac{3}{4}$ 36	Have you $\frac{5}{6}$ an eraser?
The $\frac{5}{2}$ girls they asked me to come	Sally had already $\frac{1}{2}$ went home
The $\frac{6}{6}$ girls to conterm $\frac{1}{2}$	They ${}^3_4$ themselves asked us to come
Where $\frac{3}{2}$ are the other here?	Everyone has $\frac{5}{6} \frac{\text{took}}{\text{taken}}$ a turn
$4 \text{ is}  \text{the other boys} \dots \dots$	Has Mr. Brown $\frac{1}{2} \operatorname{spoke}^{\operatorname{spoken}}$ to this class?
Ann $_{6 \text{ brought}}$ her doll to school	It's $\frac{3}{4}$ real really cold outdoors
Last night Bob $\frac{1}{2}$ said to me, "Go home." 41	Nobody has $\frac{5}{6}$ at $\frac{1}{6}$ his carrots
Where is my $\frac{3}{4} \frac{\text{book}}{\text{book}} \frac{3}{\text{at}}^2 \cdots \cdots$	<sup>1</sup> Let Jane be first in line
He said that no bones were $\begin{array}{c}5 \\ 6 \\ broken \\ \end{array}$ broken $\begin{array}{c}0 \\ 43 \end{array}$	There $3 \text{ were}$ nine men on the team
We can't find $\frac{1}{2}$ anything wrong $\frac{1}{2}$ $\frac{2}{44}$	There $4_{\text{was}}$ time then on the team
I $\begin{array}{c} 3 \\ 4 \\ knowed \end{array}$ you would be late $\begin{array}{c} 3 \\ 4 \\ 45 \end{array}$	I nope 6 you're well now
Will you $\frac{5}{6} \frac{take}{bring}$ this book to Mary?	John's bicycle works <sup>1</sup> / <sub>2</sub> good.
May all of $\frac{1}{2}$ we fourth graders go? $\frac{1}{2}$ $\frac{2}{47}$	Mike is $\frac{3}{4}$ lying on the couch
3 They're getting on the bus.	Why don't $\frac{5}{6}$ we girls play tag?
Our teacher $\frac{5}{6}$ doesn't scold us	You haven't $\frac{1}{2} \operatorname{ridden}^{\operatorname{rode}}$ in our car
Don't you think he may $1 \text{ of } \log t2$	I don't know $\frac{3}{4}$ whose turn comes next
She must the may $2 \text{ have left} \cdots \cdots = 50$	That man might have $\frac{5}{6}$ stole the ring
She put the vase down $\frac{5}{4}$ carefully. $51$	Did you and $\frac{1}{2} \frac{he}{him}$ eat lunch together?
Give the kittens ${}_{6}^{5}$ there milk	
He $\frac{1}{2}$ draw drawed some water from the well $\frac{1}{2}$ 53	Stop. No. right ( ) × 2 ( No. omitted or double marked (
Gr. score         below 10         10         11         12         13         14         15         16         17         18         19         20         21         22         23         24         25           Gr. score         below 10         10         11         12         13         14         15         16         17         18         19         20         21         22         23         24         25           Difference (Cont'd)         41         42         43         44         45         46         47         48         49         50         51         52         54         55         52         54         55         52         54         55         57         54         55         52         54         55         52         54         55         54         55         52         54         55         54         55         54         55         54         55         54         55         54         55         54         55         54         55         54         55         54         55         54         55         54         55         54         55         56         56         55	26         27         28         29         30         31         32         33         34         35         36         37         38         39         40         Sum         Sum         Subtract
Gr. score 43 45 46 48 49 51 53 55 57 59 61 63 65 66 69 71 73 74 76 78 80 83 8	5 88 92 97 102 109 above 110

## ST 5 Aritnmetic Reasoning

ECTIONS: Find the answers to these problems as quickly as you can. Write the answer for each problem on the dotted line at the right of the problem. In problems of buying, pay no attention to a sales tax. Use a separate sheet to figure on.

PART I How many dolls are 2 dolls and doll?	<sup>12</sup> Mike rode his bicycle 13 blocks the first day, 9 blocks the second day, and 22 blocks the third day. How many blocks did he ride all three days?
oxes. How many boxes have both hildren?	<sup>13</sup> Two dimes and two nickels are how many cents?
Sert caught 2 butterflies yesterday, this morning, and 3 this afternoon. Iow many did he catch all together?	<sup>14</sup> A 2-ring circus has 8 monkeys in each ring. How many monkeys are there in the circus?
Bob sees 3 red apples and 6 green nes on the tree. How many apples oes he see in all?	<ul><li><sup>15</sup> Louise gave away 35 stamps and had</li><li>57 left. How many stamps did she have before she gave any away?</li></ul>
Aother bought 3 new dresses for	<sup>16</sup> Dan has 17 jacks and Joe has 8. Dan has how many more jacks than Joe?
lary, 4 for Jean, and 2 for Alice. Iow many dresses did she buy all ogether?	<sup>17</sup> Harry has 4 marbles and 3 balls. John has 2 marbles and 6 balls. How many marbles have the two boys?
'here are 9 pencils on the desk. Jim         akes 5 for his row. How many         encils are left?	<sup>18</sup> Steve got 38 addition examples right and 24 subtraction examples right. How many examples were right all together?
ay, 5 the next, and 1 the next. iow many pennies did he put in the ank in all?	<ul> <li><sup>19</sup> A farmer had 137 sheep in a field. He put 42 of the sheep in his barn. How many sheep were left in the</li> </ul>
le had 10 books on the table. here are 4 left. How many books ave been taken away?	<ul> <li><sup>20</sup> Bill missed 23 air-rifle shots and hit</li> <li>37. How many times did he shoot?</li> </ul>
low many chairs have we in all? here are 14 at the front, 7 at the ible, and 12 at the back of the	<sup>21</sup> Father bought ice cream for 79 cents. How many cents in change should he get back from two half dollars?
en found 13 shells and Ned found 6. en found how many more shells an Ned?	<sup>22</sup> Ruth has 24 lines to learn for the play. She says she will learn 4 new ones every day. At that rate, how many days will it take to learn all 24 lines?
nn picked 19 roses. She gave one ozen of them to a sick friend. How any roses did she have left?	<ul> <li><sup>23</sup> Nancy had 7 feet of ribbon. She sold 1 yard to Jane. How many feet of ribbon did she have left?</li> <li>Go on to the next page.</li> </ul>

#### Stanford Element

## TEST 5 Arithmetic Reasoning (Continued)

24 How many cents will 6 boxes of break-<sup>35</sup> Here are some figures. Which numfast food cost at 16 cents a box? ber is in the square? <sup>25</sup> The 249 pupils of a school eat lunch in 3 different groups. If all three groups had the same number of pupils, how many would be in each <sup>36</sup> A foot is how many inches? group? <sup>26</sup> George gathered 184 shells at the <sup>37</sup> Which is the largest of these numbers? beach. If he divides them equally 401 98 357 199among 8 of his friends, how many shells will each get? <sup>38</sup> Write four hundred six in numbers. <sup>27</sup> The clerk says the cost of the meat <sup>39</sup> What number would come next after is 61 cents. Betty gave him three these three? quarters. How many cents should 530 430 330 her change be? 28 The school library has 24 shelves. <sup>40</sup> Write one-half in numbers. Sue counted 34 books on one shelf. If each shelf has the same number of <sup>41</sup> Write the fraction which books, how many books are there all together? tells what part of this circle is black. <sup>29</sup> The cost of a new school flag was shared equally by 7 Scout troops of our school. The flag cost \$3.85. <sup>42</sup> This chart tells how hot it was one How many cents was each troop's On which day was it hottest? week. share? 100° <sup>30</sup> Jane read 15 pages in her book in 80° 45 minutes. That was an average 60° of how many minutes per page? 400 Sun. Mon. Tues. Wed. Thurs. Fri. Sat. PART II <sup>31</sup> Which month comes next after April?\_\_\_\_\_ <sup>43</sup> Which is the largest? <sup>32</sup> Write the one of these which will buy  $\frac{1}{10}$  $\frac{1}{40}$  $\frac{1}{50}$  $\frac{1}{20}$ the most: dollar dime nickel quarter <sup>44</sup> One of these numbers tells you about <sup>33</sup> Write the one of these that is used to how many inches the doorknob is from the floor. Look at the doorshow the cost of something: knob. Which of the numbers below pt. ć ft. lb. tells best about how many inches <sup>34</sup> What number is written under the it is from the floor? space where Friday (Fri.) should be? 3 12 24 36 MAY Sun. Wed. Sat. <sup>45</sup> Write the Roman numeral XVI in 1 2 3 4 5 6 7 figures.

No. RIGHT 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 Gr. score 12 13 14 15 17 18 20 21 22 23 25 26 27 28 29 30 31 32 33 34 35 36 37 37 38 39 40 41 43 44 45 47 48 50 51 53 56 58 61 64 67 69 72 73 75 ECTIONS: Look at each example carefully to see what you are to do. Do the examples and copy your answers in the column marked "Answers" at the right.

	and the second	1	[	1	1
SAMPLE A	SAMPLE B	1	2	3	Answers
2	6	5	2	6	A
+2	1	<u>+4</u>	+7		<u> </u>
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					3
	5	6 Add	7	8	4
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	~				8
	10	11	12	13	9
76	79	2 5	28	94	10
<u> </u>	34	+ 8 4	5	34	10
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	15	16	17	18	14
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Stanford Eleme

## TEST 6 Arithmetic Computation (Continued)

23		24 Add	25		26	Answ
	7 × 9 =	1 7 9 5 7 9 0 3 6 5	_	323 -276	2)1 8	6     23        24        25        26
27	504 <u>×4</u>	28 Add 4883 7886 454	29 3 5 5	48 ÷6 =	30 7	27 7 9 28 29 30
31	\$ 2.2 2 2.0 7 \$	32 4 1 - 3 6	0 4	\$ 2.5 4 <u>× 7</u> \$	34 6	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
35	4 <u>)1220</u>		) )	3 2 <del>)</del> 6 4	38	35 36 37 38
39	\$ 3)\$ 2.0 9	40 _×70	0 8 41	700 ×970	42 6 8)1 6	39 \$ 1 5 40 41 42

No. RIGHT 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 Gr. score 10 - 10 11 12 13 14 15 16 17 20 22 24 26 27 28 29 30 31 33 34 35 36 37 38 39 40 41 42 44 45 47 48 50 51 53 55 58 62 68 74 80 85 The Stanford Achievement Test shown in this appendix is a sample of those used for post-testing.

Appendix E

Elementary Battery

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1	FOI	RM
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# STANFORD ACHIEVEMENT TEST

RUMAN L. KELLEY • RICHARD MADDEN • ERIC F. GARDNER • LEWIS M. TERMAN • GILES M. RUCH

lame		Age	Grade	Boy	Boy or girl				
'eacher	School		Date of birth	Year	Month	Day			
ity or town	State		D	a <b>te</b>					

	1 Par. Mean.	2 Word Mean.	Aver. Read.	3 SPELL.	4 Lang.	5 Arith. Reas.	б Arith. Comp.	AVER. ARITH.	Battery Median
Grade Equiv.									
Age Equiv.									
7ile Rank	5								

										Inc	lividu	al Pr	ofile C	hart							
	GRADE SCORE SCALE																				
	10		15	2	0	25		30 L	35	40	45	50	55	60	65	70	75	80	85	90 1	
1 Par. Mean.		++	+++	+++	++++	+ + +	• • •	+ + +	· · · · -	<u>+ + + </u> i +	+ + + + +	+ + + + +	++++++	<del>· · · } · ·</del>	+ + + + + +	-+++++	+ + + + + +	++++	+ + + + +		1 Par. Mean
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4 Lang.	++-	+++	+++	+++	+ +-+	+ + +	* * *	+ + +	+-+_+	+ + +   +	+ + + + + -	+++++	+++++	+ + + + + +	+++++	+++++	+++++	+++++	+++++	+++	4 Lang.
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	10		15	2	0	25		30	35	40	45	50	55	60	65	70	75	80	85	90	
	1.0		1.0	2	0	2.5		50	50	GRA	DEE	QUIVAL	LENTS	CALE	5.5	.0	1.5	00	0.5	50	

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## TEST 1 Paragraph Meaning

DIRECTIONS: Find the word that belongs in each space, and draw a line under it. Do not write in the spaces.	Milk is one of the best foods. In this country most people use cows' mi but in many countries they use goats' <u>6</u> It does not taste like <u>7</u> milk.
SAMPLE:	6. meat milk cheese food
wheat grows on farms. Most bread is made from wheat. If farmers did not plant $51$ , most people would have no $52$ to eat.	7. real fresh cows' whole
51. corn potatoes rice wheat	
52. oranges bread carrots eggs	
See the big white rabbit. He can run $1$ .	Father picked up his present. Before he opened it he held it up to his e "I know what it is," <u>8</u> said. "It is clock I can 9 it tick."
1. play fast pretty walk	
	8. he we I Mother
	9. feel hear see watch
Trot, trot, I come. Billy is on my back. Soon I shall eat my hay. I am a little $2$ .	
2. pony calf dog sheep	A forest takes a long time to grow. Wh we cut down trees to use for wood, we show plant more trees. If we do not $10$ not trees, our fine $11$ will soon be gone.
We had red, white, and blue paint. We painted the chair 3	10. plant make find use
2 vollow block eren block	11. buildings forests homes orchar
3. yenow black orange blue	
At the store Mother bought meat, bread, and apples. I asked, "Mother, will you buy me some candy?" "No," said Mother, "I will not buy <u>4</u> . "But I will buy jam to spread on this nice	Our family stayed all night at a camp. the morning we built a fire to $12$ our brea fast. Afterward we $13$ our paper plat and cups in the flames. Then we put out th 14 with water.
tresh <u>5</u> ."	12. warm cook serve eat
4. anything sweets chocolate candy	13. burned tried washed used
5. toast bread cake fruit [2	14. lightplatesfiretowels2Go on to the next page

## IST 1 Paragraph Meaning (Continued)

A baby cow is a calf; a baby cat is a kitten; baby dog is a puppy. John has a dog named lu, and Alice has a cat named Susan. Lulu s a family of five <u>15</u> and Susan has four w <u>16</u>.

calves	colts	kittens	puppies
calves	colts	kittens	puppies

Flies carry dirt on their feet and bodies. should not let them touch our food. If keep all our <u>17</u> in covered dishes, <u>18</u> cannot <u>19</u> it.

candy	chee	ese	food	garbage
mice	flies	$\mathbf{ch}$	ildren	bugs
eat	get	see	touch	

A magnet sometimes is shaped like a horsee. It will pull pieces of iron and steel to alf even when it is not touching the pieces. k put some tacks on the table. Then he d his 20 near the tacks. The 21nped from the table and stuck to the gnet.

hand	hammer	thumb	magnet
tacks	dishes	steel	pieces

Bob and Pat played a game of ringtoss. ch boy took two turns and threw three rings h turn. Bob scored two points the first te and three points the <u>22</u> time. <u>23</u> red three points the first time. He said, ' I score <u>24</u> points the second time, I ll win the game."

same	first	second	third
Pat	Bob	Pete	He
any	two	three	four
			,

In the Sahara Desert there are no rivers. Here and there water comes to the surface in a place called an oasis. Men who cross the 25 must carry enough 26 with them to last from one 27 to another.

25.	country	deser	t	ocean	oasis
26.	money	clothing		water	baggage
27.	side	river	city	oasis	

A parachute acts like a huge umbrella. It uses the push of the air to slow down the rate at which a person falls. When a man first jumps from a plane, he starts to fall very fast; but suddenly, when his <u>28</u> opens, the <u>29</u> pushes up against it and <u>30</u> his fall.

28.	mouth	hand	fist	parachute
29.	air	earth	man	plane
30.	stops	slows	helps	causes

Jim rode his bicycle straight to school. His brother Tom walked.

They got to school at the same time. 31 must have started before 32 did.

31.	They	I	Jim	Tom
32.	they	I	Jim	Tom

Children used to celebrate the Fourth of July by shooting off firecrackers. Sometimes an explosion occurred too soon and someone got hurt. Nowadays in our town no one is allowed to shoot <u>33</u>. Instead, the fire department puts on a display of colored <u>34</u> in the evening. Thus we celebrate in a way that is not <u>35</u> to children.

33.	dice	rockets	guns	firecrackers	

34. fireworks firecrackers costumes engines

- 35. enjoyable entertaining dangerous frightening
- [3]

Go on to the next page.

Stanford Elementa

## TEST 1 Paragraph Meaning (Continued)

Two boys live on a farm that has a great many cherry trees. Each summer the 36 have a roadside market where they sell the 37 from their own trees.

36.	gardene	ers	farmers	girls	boys
37.	fruit	nuts	blosson	ns	leaves

One kind of trout, the steelhead, lives part of its life in the Pacific Ocean. In summer the full-grown steelhead, like the salmon, makes its way back up the stream where it was born; there it spawns — that is, lays its eggs. Unlike the salmon, which dies after <u>38</u>, the <u>39</u> returns to the <u>40</u> and comes back upstream the next season.

38.	swimming	spawnii	ng clin	ibing	traveling
39.	creature	cod	fish	steelh	ead
40.	streams	river	ocean	fan	nily

The bodily temperatures of human beings and of apes are quite similar. If an ape, now at home in hot climates, were to adapt himself so as to live in colder regions, one of the first things he would have to <u>41</u> would be how to provide himself with some kind of <u>42</u> which would keep him warm in <u>43</u> weather.

41.	find	remem	ber	be told	learn
42.	house	clothi	ng	fire	activity
43.	cold	hot	rainy	stor	my

Water is a liquid, ice is a solid, and stear a gas. Heat will change ice from a solid the liquid we call  $\_44$ . If we boil water kettle, it will change from a liquid into  $\_45$ \_\_ that we call  $\_46$ \_\_.

44.	cream	milk	wate	r steam
45.	solid	fuel	gas	waves
46.	steam	air	gas	heat

A favorite food of ants is a kind of ho produced by small soft creatures called aph The aphids live on different kinds of pla The <u>47</u> take care of the <u>48</u> by mov them from one plant to another.

47. creatures aphids ants owners48. ants aphids bees honey

Generally speaking, if the name of a to ends in *ia*, the name of a citizen of the town formed by adding *n*; for example, *Phila phian*. If the town's name ends in *on*, letters *ian* are added. If it ends in *a*, not p ceded by *i*, the rule is to add *n*. Thus, a n from Topeka would be called a <u>49</u>; o from Jackson, a <u>50</u>.

49. Topekion Topekan Topekian Topek

50. Jacksonian Jacksonion Jacksoniu Jacksonien

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## EST 2 Word Meaning

RECTIONS: Draw a line under the one word that makes the sentence true, as shown in the first sample. Look at all four words and choose the best one.	<ul> <li><sup>19</sup> Vegetables kept warm too long will improve melt ripen spoil</li> <li><sup>20</sup> Evil things are new strange bad loud</li> </ul>		
MPLES:	<sup>21</sup> We get ham from		
he name of a color is farm milk <u>red</u> pet he day that comes after Friday is Monday Tuesday Saturday Sunday	cattle horses chickens pigs <sup>22</sup> At night the temperature usually turns moist cooler foggy warmer <sup>23</sup> To collect means to		
A robin is a kind of man woman bird cat	<ul> <li><sup>24</sup> To buy ice cream is to</li> <li>eat it taste it pay for it like it</li> </ul>		
A dog sings barks grunts talks	<sup>25</sup> Equal parts are different the same two four		
Do not pet a puppy rabbit bear pony	<sup>26</sup> A cup with a very long handle is called a dipper kettle rack book		
We can write with a pencil wheel story hello	<ul> <li><sup>27</sup> When a storm is approaching, small animals are likely to seek</li> </ul>		
Air is what we breathe eat drink smoke	shadows surface shelter shepherds		
Sleep is warm late funny restful	<sup>20</sup> John's father has a sister. She is John's sister playmate brother aunt		
A minute is longer than a second a day an hour a week	<sup>29</sup> A person who lives and votes in a country is a native visitor leader citizen		
To speak means to laugh talk yell whisper	<sup>30</sup> A straight line is		
We spell a word line game book	<sup>31</sup> If you control something, you		
A good teacher knows how to scold joke shout explain	manage it obey it order it hate it		
A circle is square round long wide	approve pardon win love		
A crowd means many	<sup>33</sup> Certain means		
To come back is to	<sup>34</sup> A man who has written a book of plays is		
return talk walk go	a poet an actor an author a professor		
yell whisper shout scream	<sup>35</sup> To pronounce is to show judge spell speak		
Many cattle together are called a	<sup>36</sup> If an auto can just barely be heard, we call it		
Great means tall short big little	quiet silent noisy loud		
Distant means	mighty famous brave faithful		
before far great north	<sup>38</sup> If something you own is the first one of its kind, you own the		
sufficient standard tiny strange	standard original usual treasure		
	Stop.		

No. RIGHT 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 *Gr. score* 14 15 16 17 18 19 20 21 22 23 24 25 26 26 27 28 28 29 30 31 32 33 35 36 37 38 39 41 42 44 47 50 53 56 60 65 70

TEST 3 Spelling	
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Stanford Elements

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T 4 Language

	TIONS: In each pair of words in heavy ope in the letter below there is an error in ther capitalization or punctuation. You we to decide which one of each pair has the prrect capitalization and punctuation. Then ark the answer space at the right that has are same number as the correct form. LES: This is $\frac{1}{2}$ mr. Jones. $\frac{1}{2}$ Mr. Jones. $\frac{3}{4}$ St. Louis, Missouri $\frac{3}{4}$	DIRECTIONS: Each exercise below has two nubered parts. One part is written well a makes good sense. The other is written poor Choose the good one and mark the answer space which has the same number as your choice SAMPLE: 1 We'll go when you are ready.         2 We'll go. When you are ready.         1 Why the leaves turn red.         2 Why do the leaves turn red?         3 Perhaps he'd like some eggs.	m- ind ily. ace e. <sup>2</sup> 21
	1345 River $\begin{array}{c}1\\2\\ \text{road}\end{array}$	4 Unless he'd like some eggs. 5 The child started to cry.	6 6
	Woodport 3, $\frac{3}{4}$ oregon 2	6 A child's startled cry.	2 <b>23</b>
	$ \begin{array}{c} 5 \text{ november} \\ 6 \text{ November} \\ 7, 1955 \\ 1 \\ 2 \end{array} $ 3	2 He fell to the bottom of the stairs.	24
r	charles, 4 Charles, 3 4	<sup>3</sup> We went on a picnic Sunday. Because it was such a pleasant day	4
0	u know $\begin{array}{c}3 \\ 4 \\ \mathbf{Ive}\end{array}$ been wanting an $\begin{bmatrix} 5 \\ 6 \end{bmatrix}$	4 We went on a picnic Sunday because	25
)	ric train. Well, I got one from 5 6	it was such a pleasant day.	
5 3	mother, and father for my $\  \  _{1} $ 6	<ul> <li>5 Driving out into the country.</li> <li>6 We drove out into the country.</li> </ul>	<sup>6</sup> 26
;]	nday, it nday. It has ten cars	<sup>1</sup> We found a park with picnic tables. <sup>1</sup>	2 2 27
1	er $\frac{3}{4}$ said, "You can haul freight $\ $ 8	$\begin{array}{c} 3 \\ 3 \\ \text{All of us helped unpack the food.} \\ \end{array}$	4
1	passengers." 9	4 And helped unpack the food.	6 28
è	up a $\frac{1}{2}$ track, a freight $\frac{1}{2}$ 10	6 Soon we were stuffing ourselves with food.	29
	ion and a passenger station $1 \frac{3}{11}$	<sup>1</sup> In a pool I saw some tadpoles they were black and wiggly.	2
1	a, do you know what I ${5 \atop 6} {\rm did}{\rm did}{{\rm did}{\rm did}{\rm did}{\rm did}{\rm d$	2 In a pool I saw some tadpoles. They were black and wiggly.	30
[	host broke my train. I can fix my $\frac{1}{1}$	3 They had tails which they used as	
1	ine, but I don't need to now	paddles.	4 31
	e came here on a $\frac{3}{4}$ vacation trip. Our 14	4 They had tails. Which they used as "paddles.	
	is near ${}_{6}^{5}$ green river. In the river were 15	5 Some had feet and some did not.	6 32
	which had come from the $\frac{1}{2}$ mountains $\frac{1}{10}$ 16	1 I took a sieve. Scooped up some tad-	
	e sawed into lumber at a $\begin{array}{c}3\\4\\\text{Mill}\\\dots\end{array}$	poles. Put them in a can. 2 I took a sieve. I scooped up some tad-	33
	aw a boat named the $\frac{5}{6}$ Nancy b. smith. $\frac{5}{6}$ 18	poles and put them in a can.	
	$\begin{array}{c c}1 & \textbf{Your friend,} \\2 & \textbf{Your friend}\end{array}^{1} & \begin{array}{c}2\\19\end{array}$	$\begin{array}{c} 3 \text{ I left them overnight. In the morn-} \\ \text{ing they were dead.} \end{array}$	4
	$\begin{array}{c} 3 \mathbf{ray} \\ 4 \mathbf{Ray} \end{array} \stackrel{3}{\overset{4}{\overset{4}{\overset{1}{\overset{1}{\overset{1}{\overset{1}{\overset{1}{1$	4 I left them overnight in the morning in they were dead.	
	. [ /	7	

## TEST 4 Language (Continued)

T 1 1 1 1 1 1 1 0			
DIRECTIONS: In each sentence, decide which of the numbered words is correct. Then mark	Is this the $\frac{3}{4}$ right road?		
same number as the word you have chosen.	Did Nancy get bumped $\begin{array}{c} 5 \\ 6 \\ badly \end{array}$		
SAMPLE: Apples $\frac{1}{2}$ is good	Each of us $\frac{1}{2}$ had ought to work faster		
$\begin{array}{c}1 \\ 2 \\ 2 \\ \text{Them}\end{array} \text{ boys will get hurt.} \\ \end{array} \begin{array}{c}1 \\ 2 \\ 35\end{array}$	$\operatorname{Jim}_{4}^{3} \operatorname{drank}_{4} \operatorname{two bottles of pop}^{3}$		
$\begin{array}{c} 3 \text{ Mary she} \\ 4 \text{ Mary} \end{array} \text{ can't carry a tune} \begin{array}{c} 3 \\ 1 \\ 3 \end{array} \begin{array}{c} 4 \\ 3 \end{array}$	You must ${}_{6}^{5}$ have heard the noise		
$ \begin{array}{c} 5 \\ 6 \\ \text{Leave} \end{array} $ Alice use the swing $ \begin{array}{c} 5 \\ 6 \end{array} $	Where $\frac{1}{2}$ was you when I telephoned?		
One day Nancy and $\frac{1}{2} \frac{\mathbf{I}}{\mathbf{me}}$ made cookies $\frac{1}{2} = \frac{1}{2}$ 38	He $\frac{3}{4} \frac{\text{doesn t}}{\text{don't}}$ watch where he's going		
He $\frac{3}{4} \frac{\text{ain't}}{\text{isn't}}$ trying to scare you	Everybody had $\frac{5}{6}$ gone on a picnic		
5 That 6 That there box is too small $\int_{1}^{5} \int_{1}^{6} 40$	One girl had $\frac{1}{2}$ written a poem		
The grocer didn't have $\frac{1}{2} \frac{no}{anv}$ pears $\frac{1}{2} = \frac{1}{41}$	Eat this sandwich if $\frac{3}{4}$ you're hungry		
The storm $\begin{array}{c}3 \\ 4 \\ blowed\end{array}$ down a tree $\begin{array}{c}3 \\ 4 \\ 4 \end{array}$ 42	That first day we walked $\frac{5}{6} \frac{\text{too}}{\text{to}}$ far		
We $\frac{5}{6}$ swang back and forth on the gate $\frac{5}{6}$ $\frac{6}{43}$	Ann can walk to school $\frac{1}{2}$ easily		
Helen has $\frac{1}{2} \frac{\text{did}}{\text{done}}$ most of the work $\frac{1}{2} \frac{1}{44}$	Who $\frac{3}{4} \frac{\text{chose}}{\text{chose}}$ the first player?		
Four of us $\frac{3 \text{ knowed}}{4 \text{ knew}}$ the answer	Some of us were $\frac{5}{6}$ lying on the ground		
Everybody ${}^{5}_{6} {}^{\text{swum}}_{\text{swam}}$ fast ${}^{5}_{46}$	When you speak, $\frac{1}{2}$ rise to your feet		
None of $\frac{1}{2}$ us boys wanted to go $\frac{1}{2}$ 47	They built this house ${}^{3}_{4}$ theirselves		
Two cats $\frac{3}{4}$ was sitting on the step $\frac{3}{4}$ 48	<sup>5</sup> They're waiting for breakfast		
My sister ${}^{5}_{6}$ taught me how to read ${}^{5}_{6}$ ${}^{6}_{49}$	Tom can pitch a ball $\frac{1}{2}$ well		
For breakfast I ate $\frac{1}{2}$ an orange $\frac{1}{2}$ $\frac{2}{50}$	I've never $\frac{3}{4} \frac{\text{flew}}{\text{flown}}$ a kite		
Did you ${}^{3}_{4}$ here our concert? ${}^{3}_{4}$ ${}^{4}_{51}$	We had already $\frac{5}{6} \operatorname{sang}^{5}$ two songs		
Nobody has ${}^{5}_{6}$ drawed an elephant ${}^{5}_{6}$ ${}^{6}_{1}$ 52	Has my brother $\frac{1}{2}$ run your train?Stop.No. right () $\times 2$ ()		
His sister had $\frac{1}{2}$ give given him candy $\frac{1}{2}$ 53	No. omitted or double marked $\begin{pmatrix} & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & $		
Difference (R-W) 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 Subtract 74			
DIFFERENCE (R-W) (Cont'd)       41 42 43 44 45 46 47 48 49 50       51 52 53 54 55 56 57 58 59 60       61 62 63 64 65 66 67 68 69 70       71 72 73 74         Gr. score       41 42 44 45 66 48 49 50 52 53       52 53 54 55 65 75 88 59 60       61 62 63 64 65 66 67 68 69 70       71 72 73 74			
11 42 44 43 40 48 49 50 52 53 54 56 57 59 60 62 63 65 66 68	70 71 73 74 76 78 79 81 84 86 89 91 94 97		
[8	DIFFERENCE		

DIFFERENCE .....

RECTIONS: Find the answers to these problems as quickly as you can. Write the answer for each problem on the dotted line at the right of the problem. In problems of buying, pay no attention to a sales tax. Use a separate sheet to figure on.

PART I How many balls are 1 ball and 2 balls?	<sup>14</sup> Martha says she will read 8 books each month next summer. How many			
110w many bansare i ban and 2 bans;	books will she read in three months?			
There were 5 black kittens and 2 white ones. How many kittens were there all together?	<sup>15</sup> Jim has 15 cents and John has 7 cents. Jim has how many more cents than John?			
Fred gathered eggs from three nests. One nest had 3, another 3, and an- other had only 2. How many eggs were there all together?	<sup>16</sup> A farmer has enough seed for 27 rows of white corn and 15 rows of yellow corn. How many rows of both kinds of corn can he plant with the seed he has <sup>2</sup>			
Jack's dog had 7 baby puppies. Jack gave 4 to his friends. How many puppies were left?	<sup>17</sup> John had 17 papers left to sell. He had already sold 19. How many papers did he have at the start?			
How many dolls do both girls have?	<sup>18</sup> Mother paid 61 dollars for a radio and			
Carol has 2 red dresses, 4 blue dresses, and 3 vellow dresses. How many	94 dollars for a rug. The radio cost how many dollars less than the rug?			
dresses is that all together?	<sup>19</sup> There are 18 bricks in one pile, 7 in			
David had 7 toy cars. He gave 3 to his sister. How many did he have left?	another, and 29 in another. How many bricks are there in all three piles?			
Paul brought 3 books, Bill brought 2, and Harry brought 4. How many books did all of them bring?	<sup>20</sup> Don has 11 pennies and 3 pieces of candy. Fred has 2 pennies and 4 pieces of candy. How many pennies do the two heves have?			
Nan got 10 toys for her birthday and has lost 3 How many has she left?	<sup>21</sup> Seven boys had equal shares in a			
A pony cost 98 dollars and a calf cost 62 dollars. The calf cost how many	watermelon patch. They raised 147 watermelons. How many would each boy get as his share?			
One dime and two nickels are how many cents?	<ul><li><sup>22</sup> There are 6 girls in our club. How many inches of ribbon shall we need so that each will have 27 inches?</li></ul>			
Helen has 16 dolls and Rita has 9 dolls. Helen has how many more dolls than Rita?	<ul><li><sup>23</sup> Nancy's mother gave her a dollar to buy meat. Nancy received 23 cents in change. How many cents did the meat cost?</li></ul>			
game, 6 points in the second, and 14 in the third. How many points did we score in all three games?	<ul><li><sup>24</sup> Mr. Brown wants to plant 123 tulips in 3 equal rows. How many tulips will he put in each row?</li></ul>			
	9 ] Go on to the next page.			

# TEST 5 Arithmetic Reasoning (Continued)

<sup>25</sup> Bill had a board 18 inches long. He cut off a piece 1 foot long. How many inches long was the remaining piece?	<sup>38</sup> Here is a calendar for July. On what day of the week is July 20?					
<sup>26</sup> Dan delivered 126 papers in 6 days last week. How many did he deliver each day if the number of papers was	Sun.         Mon.         Tue.         Wed.         Thurs.         Fri.         Sat           1         2         3         4         5         6         7           8         9         10         11         12         13         14					
<ul> <li><sup>27</sup> Laura rides 16 miles each school day on the school bus. If she goes to</li> </ul>	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$					
school 22 days in one month, how many miles will she ride on the school bus during the month?	<sup>39</sup> Which figure is in hundreds place in the number 8763?					
<sup>28</sup> Fred gave the clerk 2 quarters to pay for 27 cents worth of ice cream. How many cents should he get back?	<sup>40</sup> Write the fraction which tells what part of this circle is black.					
<sup>29</sup> If 8 toy cars cost \$1.68, how many cents did each car cost?						
<sup>30</sup> A truck driver went 288 miles in 9 hours. How many miles an hour did he average?	<sup>41</sup> What number would come next after these three?					
PART II <sup>31</sup> Write the one of these which is the longest: yard inch mile foot <sup>32</sup> Write the one of these that tells length: oz. hr. lb. yd <sup>33</sup> A week is how many days? <sup>34</sup> Which month comes next after June? <sup>35</sup> Which is the largest of these numbers? 999 282 98 1001	110 100 90 ? 42 Which of these numbers tells about how many pounds a loaf of bread weighs? 1 5 9 15 43 Here is a picture of a clock. How many minutes is it before 4 o'clock? $1^{10} 12^{10} 12^{2}$ $3^{3} 8^{7} 6^{5}$ 44 Which is the smallest?					
<ul> <li><sup>36</sup> How many hours is it from noon one day to noon the next day?</li> <li><sup>37</sup> A quart is how many pints?</li> </ul>	$\frac{1}{2}  \frac{1}{10}  \frac{1}{4}  \frac{1}{8} \qquad$ <sup>45</sup> Write the Roman numeral XXVI in digits					
	Ste					

No. RIGHT 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 Gr. score 10 - 10 11 12 13 15 17 19 20 22 23 25 27 28 29 31 32 33 34 35 36 37 38 39 40 41 41 42 43 44 45 46 47 48 49 50 52 54 56 58 60 63 65 68 RECTIONS: Look at each example carefully to see what you are to do. Do the examples and copy your answers in the column marked "Answers" at the right.

SAMPLE A	SAMPLE B	1	2	3	Answers
$^{2}$ + 2	6 — 1	$\frac{3}{+5}$	2 + 7	10	A
4					<u>B</u>
	0				2
					3
1	5	6 Add	7	8	
6	7	4	8	60	4
<u>+ 4</u>	4	2 4	5	+ 3 5	b
		_		i. L	6
		×			7
					8
	10	11	12	13	9
8 6 1 3	79 - 53	8 3 + 2 4	4 8 6	87 - 57	10
					11
			×		12
				3. II.	13
	15	16	17	18	14
14 - 9 =	$\times \frac{7}{2}$	547 + 423	37 + 8 =	119 66	15
					16
		. (			17
	4				18
	20	21		22	19
3)6	53 ×3	\$ 8 + 4	3.5 4 4.7 0	1 2 8 × 3	20
		\$			21 \$
				24. 	22
9					

[ 11 ]

Go on to the next page.
TEST 6 Arithmetic Computation (Continued)

23		24 Add	25	26	Answe
	9 × 7 =	476 38 70 946	4 3 1 <u>- 3 8 4</u>	2)168	23          24          25          26
27	30 <sup>6</sup> × 6	28 Add 7974 6573 3789	29 36÷6=	30 <u>601</u> <u>-546</u>	27 28 29 30
31	\$ 1.3 1 - 1.0 2 \$	32 310 - 273	33 \$ 6.3 9 <u>× 4</u> \$	34 6 3 <u>× 9 1</u>	31 \$ 32 33 \$ 34
35	3)2112	36 7 4 × 8 0	37 3 2)9 6	$ \begin{array}{r}     38 \\                               $	35 36 37 38
39	\$ 7)\$ 3.0 5	40 7 5 0 × 6 0 7	$\begin{array}{c} 41 \\ 690 \\ \times 860 \end{array}$	42 5 7)1 4 1 8	39       \$         40

S

No. RIGHT 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 Gr. score 10 || |2 |4 |5 |7 |8 |9 2| 22 23 25 26 27 28 30 3| 33 34 35 37 38 39 40 4| 42 43 44 45 46 47 48 50 5| 52 54 55 57 59 6| 63 65

### Appendix F

The Brace Scale of Motor Ability Tests, Forms M and N, are presented in this appendix and have been taken verbatim from Brace.<sup>1</sup>

> ILLUSTRATIONS OF THE TESTS WITH DESCRIPTIONS AND INSTRUCTIONS ON SCORING

# Form M

# Test 1

Walk in a straight line, placing the heel of one foot in front of and against the toe of the other foot. Start with the left foot. Take 10 steps in all, 5 with each foot. Eyes open.

Failure---l. Losing the balance and stepping out of line.2. Not walking in a straight line.3. Not placing heel to toe.

#### Test 2

Stand Jump into the air and clap both feet together once, and land with the feet apart (any distance).

Failure---1. Landing with the feet touching each other. 2. Failure to clap the feet in the air once.

### Test 3

Lie flat on the back on the floor. Fold the arms across the chest. Raise the trunk to a sitting position. Do not raise the feet above the floor, or unfold the arms.

Failurel.	Raising the feet above the floor. (	This
	does not include sliding the feet, w	which
	is permissible).	
2.	Unfolding the arms.	

3. Failure to sit up.

<sup>1</sup>David Kingsley Brace, <u>Measuring Motor Ability</u>, New York: A. S. Barnes and Company, 1927, pp. 105-124.

Stand. Fold the arms behind the back. Kneel onto both knees. Get up without losing the balance or moving the feet about.

Failure---1. Losing the balance either going down or getting up.

2. Moving the feet after standing up. .

3. Unfolding the arms.

### Test 5

Take a front leaning rest position, i.e., place the hands on the floor, arms straight, extend the feet back along the floor until the body is straight (in an inclined position to the floor). Bend the arms, touching the chest to the floor, and push up again to straight arms. Do this <u>3 times</u> in succession. Do not touch the floor with the legs or waist.

Failure1. Failure to	push up	o 3 times.
----------------------	---------	------------

- 2. Failure to touch the chest to the floor each time.
- 3. Resting the knees, thighs, or waist on the floor at any time.

# Test 6

Squat on the heels with feet together and knees out, and hands between the knees with fingers touching the floor. Spring up onto both heels, with legs straight and toes up, and swinging both arms out at the side level with floor. The feet should then be about 18 inches apart. Head up. Repeat this exercise three times (in all) rhythmically.

Failure---1. Failure to get the arms and legs in position.

2. Failure to do it three times in succession without stopping.

#### Test 7

Stand with feet together. Jump into the air and make a full turn to the left, landing on the same spot. Do not lose the balance or move the feet after they strike the floor. Failure---1. Failure to get all the way around.
2. Moving the feet after they strike the
floor.

# Test 8

Jump into the air and clap the feet together twice and land with the feet apart (any distance).

Failure---1. Failure to clap the feet together twice. 2. Landing with the feet touching each other.

#### Test 9

Stand on the right foot. Grasp the left foot behind the right knee. Bend and touch the left knee to the floor, and stand up without touching any other part of the body to the floor, or losing the balance.

Failure---1. Touching the floor with any part of the body except the left knee.

2. Failure to touch properly and stand with right leg straight, and without losing the balance.

#### Test 10

Hold the toes of either foot in the opposite hand. Jump up and jump the free foot over the foot that is held, without letting go.

Failure---l. Letting go of the foot that is held.2. Failure to jump through the loop made by holding the foot.

#### Form N

#### Test 11

Jump into the air and slap both heels with the hands behind the back.

Failure --- I. Failure to touch both heels.

Stand, kick the right foot up so that the toes come at least level with the shoulders. Do not fall down on the floor.

Failure---1. Failure to kick as high as the shoulders.2. Falling down and touching the floor with any part of the body other than the feet.

#### Test 13

Stand on the left foot. Bend forward and place both hands on the floor. Raise the right leg and stretch it back. Touch the head to the floor, and regain the standing position without losing the balance.

Failure---1. Inability to touch the head to the floor. 2. Losing the balance and having to touch the right foot down or step about.

#### Test 14

Stand with both feet tight together. Bend down, extend both arms down between the knees, around behind the ankles, and hold the finger together in front of the ankles without losing the balance. Hold this position for five seconds. (Counted by scorer.)

Failure---1. Failing over.2. Failure to touch and hold the finger of both hands together.

3. Failure to hold the position for five seconds.

### Test 15

Stand with both feet together. Swing the arms and jump up in the air, making a full turn to the right. Land on the same spot and do not lose the balance, that is, do not move the feet after they first strike the floor.

Failure---l. Failure to make a full turn and land facing in the same direction as at the start.2. Losing the balance and having to step about to keep from falling.

Kneel onto both knees. Extend the toes of both feet out flat behind. Swing the arms and jump to the feet without rocking back on the toes, or losing the balance.

Failure---l. Having the toes curled under and rocking back on them.2. Failure to execute the jump, and stand

still on both feet.

#### Test 17

Fold the arms across the chest. Cross the feet and sit down cross-legged. Get up without unfolding the arms or having to move the feet about to regain the balance.

Failure---1. Unfolding the arms. 2. Losing the balance. 3. Failure to get up.

# Test 18

Stand on the left foot. Hold the bottom of the right foot against the inside of the left knee. Place hands on hips. <u>Shut both eyes</u>, and hold the position for ten seconds, without shifting the left foot about on the floor.

Failure---l. Losing the balance.2. Taking the right foot down.3. Opening the eyes or removing the hands.

### Test 19

Take a squat rest position. That is, place the hands on the floor between the knees and close to the feet. Bend the elbows slightly and place both knees <u>well over</u> the elbows. Rock forward onto the hands, raising the feet from the floor. Support the body on the hands. Hold the position for five seconds (as counted by the scorer).

Failure---1. Failure to keep the body off the floor for five seconds.

Stand on the left foot with the right foot extended forward off of the floor. Sit down on the heel of the left foot, without touching the right foot or hands to the floor. Stand full up without losing the balance.

Failure---1. Failure to sit all the way down on the left heel.

- 2. Touching the right foot or hands to the floor.
- 3. Failure to stand up with left leg straight before touching the right foot.

# Appendix G

Code Name

OBSERVATION SHEET FOR SUMMARY OF INDIVIDUAL REACTIONS TO DAILY ACTIVITIES

I. Responses to activities

A. Response to directions and demonstrations

B. Performance of skills

C. Relationship with others

II. Verbal responses which seemed important

# Appendix H

Date

# GUIDE SHEET FOR DAILY CLASS ACTIVITIES

I. Purposes

II. Equipment

III. The activities

IV. Individual actions which seemed important

V. Group reactions which seemed important

# Appendix I

# PLANS FOR EACH CLASS SESSION

Each plan includes the purposes, the equipment used, the reasons for the plan and a listing of the activities presented to the class. Individual and group reactions which seemed important are also presented.

The word teacher, as employed in this section of the appendix, refers to the investigator.

# Class Activities for February 1, 1965

### Purposes:

To improve strength, endurance, flexibility and agility.

To improve the basic movement patterns of running, skipping and hopping.

### Equipment:

None

### Procedures:

The teacher instructed the pupils in the various activities listed below:

1. The pupils were asked to race to the turning line and back to the starting line.

2. Relays:

a. Skip to the turning line and back to the starting line.

b. Hop to the turning line on the right foot and return to the starting line by hopping on the left foot.

3. Pum-Pum-Pullaway

"The players are behind a goal line marked across one end of the play area. Another goal line is marked on the opposite end. One player, who is It, stands in the center of the play area and calls, 'Pum-pum-pullaway! Come, or I will pull you away!! At this signal, all players must run to the opposite goal while It tries to tag them before they reach the goal. Those who are tagged stay in the center and help to tag the remaining players as the game is continued..."1

4. Crows and Cranes

"The players are divided into two teams, one the crows and the other the cranes. The players of both teams are lined up across the play area contacting their team's starting line. The teacher stands at one end of the two lines of players and calls either 'Crows'! 'Cranes'! If she calls 'Crows' the crows run and are chased by the cranes. If a crow is tagged by a crane before he reaches safety behind his own goal line, he becomes a crane. The cranes are chased by the crows when the teacher calls 'Cranes'!"

#### Individual Reactions which Seemed Important:

E-2 was very aggressive and overt in her behavior.

E-1 tended to keep her head ducked throughout the

class session.

E-3 shrugged her shoulders when she felt she hadn't performed well.

E-4 remained non-verbal and solemn.

<sup>1</sup>Hazel A. Richardson, <u>Games for the Elementary School</u> <u>Grades</u>, Minneapolis: Burgess Publishing Co., 1960, p. 65

<sup>2</sup>Ibid., p. 51.

E-5 did not mix and mingle with the group but tended to remain apart and alone.

E-8 had an "I can't do it" attitude.

# Group Reaction which Seemed Important:

The group as a whole seemed to enjoy the class session and the activities. Generally they tended to be shy. They tried very hard to please the teacher.

> Class Activities for February 3, 1965

#### Purposes:

To improve strength and flexibility

To improve general agility.

#### Equipment:

Jump rope

## Procedures:

The teacher instructed and demonstrated the following activities:

1. Hop on the right foot for five counts.

2. Hop on the left foot for five counts.

3. Run through the rope as it is swinging toward you.

4. Run through the rope with a partner as it swings toward you.

5. Pum-Pum-Pullaway<sup>3</sup>

<sup>3</sup>Supra, p. 97.

### Individual Reactions which Seemed Important

E-1's movements seemed restricted by her selfconsciousness.

E-2 wanted to be first in all the activities.

E-3 appeared awkward and clumsy.

E-5 remained withdrawn.

E-8 had to be coaxed into running through the swinging rope. She would say, "I can't do it."

# Group Reactions which Seemed Important

The group as a whole seemed enthusiastic and excited. They participated in the activities with zeal and responded to directions favorably.

# Class Activities for February 5, 1965

### Purposes:

To improve strength and endurance

To improve agility and flexibility.

### Equipment:

Jump rope

# Procedures:

The pupils engaged in the following activities:

1. Race to the turning line and back to the start-

2. Short Potato Race

Two lines are drawn ten feet apart. At the signal the pupils tag the line to the right and then the

line to the left. They repeat this procedure until the signal to stop is given.

3. Jump rope with a partner.

4. Duck Walk to the turning line and back to the starting line. (Lines are ten feet apart.)

5. Jumping Jacks

Individual Reactions which Seemed Important

E-1 had difficulty jumping rope with a partner.

E-5 could not jump the rope.

E-8 had difficulty performing the jumping jacks. Group Reactions which Seemed Important

The group responded well to all directions and instructions. They were enthusiastic and happy throughout the class session.

> Class Activities for February 8, 1965

#### Purposes:

To improve strength, agility and flexibility.

To improve endurance.

To improve sensory-motor coordinations.

#### Equipment:

Jump rope

#### Procedures:

1. Jumping Jacks

2. Rocking Chair--keeping knees and arms straight touch toes, sit down on the heels, touch toes and return to

a standing position with hands on hips.

3. Jump rope

4. Short Potato Race--on the signal, race to the turning line, tag it and race back to the starting line, tag it and repeat until the signal to stop is given.

5. Red Light, Green Light

"The player selected to be It stands on a goal line marked across one end of the play area. The other players are on a starting line at the opposite end. The child who is It calls, 'Green Light!' He turns his back to the players and counts aloud, '1-2-3-4-5-6-7-8-9-10-Red Light!' The players start on the signal, 'Green Light!' and run toward the goal line, but they must stop on the words, 'Red Light!' On this signal, It turns to face the players. If he sees a player moving his feet, he sends him back to the starting line. Each player tries to be the first to reach the goal line...<sup>4</sup>

Individual Reactions which Seemed Important

E-1 seemed more friendly with the other pupils.

E-2 seemed confident as the leader for Red Light, Green Light

E-3 had difficulty coordinating her body in doing the Rocking Chair activity.

E-5 couldn't perform the Jumping Jacks.

E-8 was very slow in the Potato Race and seemed to have difficulty in keeping her balance.

Group Reactions which Seemed Important:

The group seemed disappointed when the class session terminated. They wanted the teacher to come every day.

<u>Ibid</u>., p. 66.

# Class Activities for February 10, 1965

#### Purposes:

To improve strength, endurance and agility.

To improve elasticity and flexibility.

Equipment:

Bean bags

### Procedures:

1. Bean Bag Relay--bean bags are placed on the turning line. The first player in each team runs to the line and brings the bean bag back to the starting line. The next player returns the bean bag to the turning line. The relay is repeated until one team wins.

2. Circle formation moving in a counterclockwise direction:

- a. Walking
- b. Tip-toeing
- c. Skipping
- d. Hopping
- 3. Pinch-Oh!

"The players stand in a line with their backs toward the goal and with hands joined behind their backs. One child, selected to be It, stands facing the line of players, and about ten feet from them, waiting to chase them to the goal. The first child to the line pinches, or squeezes, the hand of his neighbor as he calls, 'Pinch!' The pinch is passed on from player to player until it reaches the child at the opposite end of the line. The last child, after receiving the pinch, calls, 'Oh!' This is the signal for the players to drop hands and run to the goal line across the opposite end of the play area. The child who is It tries to tag the players before they reach the goal line. The first child whom he tags becomes It and the game is repeated.<sup>5</sup>

4. Red Light, Green Light<sup>6</sup>

# Individual Reactions which Seemed Important:

E-3 continues to shrug her shoulders and twist her

hair.

E-4 remained withdrawn and solemn.

E-5 was unable to skip.

E-8 ran slowly in the Bean Bag Relay.

#### Group Reactions which Seemed Important:

The group seemed very excited during the Bean Bag Relay. They seemed to enjoy the competitive activities.

### Class Activities for February 12, 1965

#### Purposes:

To improve posture.

To improve general coordination.

To improve balance and agility.

# Equipment:

Bean bags

<sup>5</sup><u>Ibid</u>., p. 62

<sup>6</sup>Supra., 101.

Procedures:

1. Jumping Jacks

2. Touch the toes ten times without moving the

feet about.

3. Rocking Chair

4. Posture Tag

"The players are scattered over the play area. Two players are chosen; one is It the other is the runner; and each player has a bean bag on his head. The runner may transfer his bean bag to any other player's head and that player is then the runner. When a runner is tagged he becomes It and the chaser becomes the runner.<sup>7</sup>

5. Posture Relay

"The players are arranged with players in file formation, as for <u>Simple Relay</u>. The first player in each file has a bean bag. At the signal to start, he puts it on his head, runs to the goal line and back, and hands the bean bag to the next player. Each team member, in turn, receives the bean bag, places it on his head, and runs, until the whole team has participated. The team finishing first wins the relay.<sup>8</sup>

### Individual Reactions which Seemed Important:

E-1 restricted herself in running activities.

E-4 was very slow and very deliberate in the Pos-

ture Tag and Posture Relay games.

E-5 was very awkward and clumsy.

E-8 appeared awkward in the Posture Relay.

<sup>7</sup><u>Ibid</u>., p. 64.

<sup>8</sup>Ibid., p. 63.

# Group Reactions which Seemed Important

The group seemed very enthusiastic and excited over the Posture Games. They responded well to directions and demonstrations.

> Class Activities for February 15, 1965

## Purposes:

To improve posture.

To improve general coordination and balance.

# Equipment:

Bean bags

# Procedures:

- 1. Jumping Jacks
- 2. Posture Tag
- 3. Posture Relay
- 4. Japanese Tag

"In this tag game the player who is tagged places one hand wherever he was tagged; if he was tagged on his back, he places one hand on his back as he tries to tag some else. . "11

5. Squat Tag II

Squat Tag II is played. . .with the runner safe in a squat or deep knee-bend position. . . the number of 'squats' permitted as safety from the chaser is limited. . .12

<sup>11</sup><u>Ibid</u>., p. 59.

<sup>12</sup><u>Ibid</u>., p. 97.

# Individual Reactions which Seemed Important:

E-l tended to remain in the same area when playing "Squat Tag."

E-2 avoided being tagged by changing her direction while running.

E-3 seemed to enjoy the activities more today.

E-5 couldn't do the Jumping Jacks.

# Group Reactions which Seemed Important:

The pupils seem to be including all the members of the class in the activities. Their enthusiasm and excitement continues. They delighted in the "Japanese Tag" game.

> Class Activities for February 19, 1965

#### Purposes:

To improve balance, strength, endurance and flexibility.

### Equipment:

Bean bags

# Procedures:

- 1. Crows and Cranes<sup>13</sup>
- 2. Posture Relay<sup>14</sup>
- 3. Nose and Toes Tag

<sup>13</sup>Supra., p.97.

<sup>14</sup>Supra., p.104.

"This game is played as a simple tag game, except that the runner may escape being tagged by grasping his nose with one hand and his foot with the other hand. A player who is tagged become It and the game is continuous."<sup>15</sup>

4. Squat Tag II<sup>16</sup>

# Individual Reactions which Seemed Important:

E-3 seemed more confident and relaxed.

E-7 was enthusiastic and excited during the activi-

ties.

E-8 was awkward and clumsy in the Posture Relay and the Squat Tag game.

# Group Reactions which Seemed Important:

The group seems to be improving in endurance and flexibility. They responded well to directions and demonstrations.

### Class Activities for February 22, 1965

#### Purposes:

To strengthen the trunk and feet.

To increase general elasticity and flexibility

To develop and awareness of bending and stretch-

ing.

To develop an awareness of the body in space.

To develop increased ability to adjust to variations in body position.

<sup>15</sup>Ibid. p. 61.

<sup>16</sup>Supra., p. 105.

To develop and ensure skills in running.

To develop a sense of balance and increased coordination.

Equipment:

None

### Procedures:

A discussion of the correct methods of performance for the various movement exercises preceded each activity.

 The pupils were directed in the following movement exercises:

a. Jumping Jacks

b. Rocking Chair--keeping knees and arms straight touch toes, sit down on the heels, touch toes and return to a standing position with hands on hips. Repeat ten times.

c. Touch the toes ten times without losing the balance or moving the feet about.

d. Arm circles--extend arms straight out from shoulders and make a fist with the hands. Keeping the arms straight and the fists clenched, do five small circles forward and five circles in reverse.

e. "Small and Tall"--"Drop to the ground-slap the ground with your hands, bounce up--jump high and clap hands over your head. Relax while you're down and stretch hard when you're up."<sup>17</sup> Repeat five times. Reach high!

<sup>17</sup>Liselott Diem, <u>Who Can</u>, Frankfort, Germany: Nilhelm Limpert-Publisher, 1962, p. 12. 2. Skipping--skip forward to the turning line and back to the starting line. Use toes to push off--try to be as light as a feather.

3. Hopping--hop five times on the right foot, in place. Hop on the left foot five times in place.

4. Running--run to the base, tag it and run back.

5. Jumping for distance--stand with feet parallel behind the starting line, bend the body at the waist and knees. Jump as far as possible. Land on both feet without losing the balance.

6. Exchange Tag--circle formation: 'It' walks around the circle and tags another player. The tagged person races 'It' to the base and back to the vacant place in the circle. The person losing the race becomes 'It'.

Individual Reactions which Seemed Important:

E-2 seemed disappointed when she did not jump the farthest.

E-3 seemed to be mingling and talking more freely with the other pupils.

E-5 was slow to understand some of the directions.

E-8 seemed to try harder in the running activities.

Group Reactions which Seemed Important:

As a whole, the group was enthusiastic. They seemed disappointed when the class session was over and were reluctant to go back to the classroom.

# Class Activities for February 24, 1965

Purposes:

To strengthen the arms, trunk, legs and feet.

To increase elasticity and flexibility.

To develop an awareness of bodily movement in various positions.

To develop a sense of balance.

### Equipment:

None

### Procedures:

1. Touch the toes ten times.

2. Balance first on the right foot and then on the left foot without moving the feet about or losing the balance.

3. Rocking Chair<sup>18</sup>

4. Pat the stomach and rub the head at the same time. Not pat the head and rub the stomach.

5. Crab walk

6. Duck walk

7. Rhythm game--sitting in a semi-circle: each pupil is given a number from one to eight. Number one is the pupil at the head of the line and number eight is the pupil at the base of the semi-circle. All pupils slap their

<sup>18</sup>Supra., Chapter III, p. 45.

thighs twice, then clap hands twice, and snap the fingers of the left hand once. All pupils keep the same rhythm. During the rhythm sequence and without breaking the rhythm, number one starts the game by calling out her number as she snaps the fingers of the right hand. As she snaps the fingers of the left hand she calls another number from two to eight. The number called repeats the sequence and calls another number. When a person misses by breaking the sequence, she goes to the foot of the semi-circle and all the other pupils move up one number.

# Individual Reactions which Seemed Important:

E-2 was very verbal and aggressive. She stated, "I know how to do the seal walk."

E-3 seemed to lose her self-consciousness and become more assertive during the activities. She became verbal in instructing one of the pupil's in the crab walk saying, "Lift up your body. She's a big crab!"

E-5 stated that she did not feel well.

E-8 seemed somewhat sullen and uncooperative. She didn't want to do some of the activities. Group Reactions which Seemed Important

The group as a whole was attentive and industrious. They had a little difficulty in attempting the rhythm game but soon were performing well.

# Class Activities for February 26, 1965

### Purposes:

To increase strength and flexibility.

To improve balance and agility.

Equipment:

None

### Procedures:

The class session was held in the classroom due to cold weather.

1. Rocking Chair<sup>19</sup>

2. Arm Circles<sup>20</sup>

3. Balance on the right foot for ten counts.

4. Balance on the left foot for ten counts.

5. Duck walk ten steps.

6. Crab walk--forward ten steps and backward ten.

7. Pat the head and rub the stomach at the same time. Rub the head and pat the stomach.

8. Rhythm game<sup>21</sup>

# Individual Reactions which Seemed Important:

E-2 stated, "No fair! She got two turns!"

E-3's performance of the duck walk and the crab walk was awkward and clumsy.

<sup>19</sup>Supra., p. 45 <sup>20</sup>Supra., p. 45-46. <sup>21</sup>Supra., p. 110-111. E-6 wanted to march.

E-7 stated, "That's easy." (To rub the stomach and pat the head simultaneously.)

E-8 stated "Girls aren't supposed to have arm muscles."

# Group Reactions which Seemed Important:

The group seemed fidgety and restless today. They wanted to go outdoors.

> Class Activities for March 1, 1965

#### Purposes:

To strengthen the arms, trunk, legs, and feet. To increase elasticity and flexibility.

To develop and increase a sense of balance.

To develop an awareness of the body in various locomotor movements.

# Equipment:

None

# Procedures:

The teacher gave instructions and demonstrations regarding correct techniques and movement patterns.

- 1. Arm circles<sup>22</sup>
- 2. Touch the toes ten times.
- 3. Circle formation:

<sup>22</sup>Supra., pp. 45-46

a. Walking

b. Tip-toeing

c. Skipping

d. Marching

e. Hopping and clapping simultaneously

4. Balance on the right foot and the left foot for a count of ten.

5. Rocking Chair

6. Relays

a. Run to the turning line and back to the starting line.

b. Hopping--hop on the right foot to the turning line and hop on the left back to the starting line.

7. Jumping: Drop to the ground--slap the ground with your hands, bounce up--jump high and clap hands over your head. Stretch hard when you're up and relax while you're down.<sup>23</sup>

8. Red Light, Green Light<sup>24</sup>

The teacher concluded the class session by giving each pupil a Fli-back paddle. The pupils were allowed to experiment with them for a few minutes before class terminated. They were instructed to practice with the paddles at home to see how many times they could consecutively hit the ball in an upward direction and in a downward direction.

> <sup>23</sup> Supra., p.108. <sup>24</sup> Supra., p.101.

The pupils were asked not to play with the paddles in the classrooms.

Individual Reactions which Seemed Important:

E-1 asked to be first in the activities.

E-2 made the following statement in regard to the paddles, "Is it mine? Can I bring fifteen cents?"

E-3 showed more assertiveness.

E-5 wanted to be the leader in Red Light, Green Light.

E-6 asked in reference to the paddles, "What if they break?"

E-8 argued with E-2 saying, "\_\_\_\_, you moved, too!" She wanted to know if her brother and sisters could play with the paddle.

### Group Reactions which Seemed Important:

The group as a whole was very enthusiastic in regard to the relays and Red Light, Green Light. They were very excited over the paddles and immediately began to experiment with them. When the class session was over the pupils seemed reluctant about going back to the classrooms.

Class Activities for March 3, 1965

### Purposes:

To increase strength and agility. To increase balance and stability. To improve eye-hand coordination. Equipment:

Fli-Back Paddles

# Procedures:

1. Touch the toes ten times.

2. Arm circles<sup>25</sup>-five forward, five backward.

3. Rocking Chair<sup>26</sup>-ten times

4. Balance for ten counts on the right foot and then for ten counts on the left foot.

5. Jump as high as you can and try to catch a cloud. Stretch as you jump.

6. Practice with the Fli-back paddles:

a. While holding the paddle in the right hand, balance the ball on the paddle while walking to the base and back.

b. Repeat using the left hand.

7. Pupils practiced hitting the ball in an upward direction with the paddles.

Individual Reactions which Seemed Important:

E-2 didn't want to touch her toes or do the arm circles.

E-5 stated, "I like to stand and balance." "I can't hit the ball. Let me show you!"

<sup>25</sup> Supra., p. <sup>26</sup> Supra., p.  $E\mathcar{-}7$  made the statement, "It's kinda hard to balance the ball."

# Group Reactions which Seemed Important:

The group was very attentive and serious during the work with the paddles and were anxious to show the teacher they had practiced with the paddled.

> Class Activities for March 5, 1965

#### Purposes:

To increase flexibility and strength.

To increase an awareness of the body in space.

To increase eye-hand coordination.

Equipment:

Fli-Back Paddles

### Porcedures:

The class session was held in the classroom due to inclimate weather.

1. Touch the toes ten times without losing the balance or moving the feet about.

2. Balance for ten counts on the right foot and ten counts on the left foot without losing the balance or moving about.

3. Walk ten steps with the eyes closed.

4. Duck Walk

Practice with paddles:

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a. While holding the paddle in the right hand balance the ball on the paddle, walk to the base and return to the starting line.

b. Repeat using the left hand.

c. Try hitting the ball in a downward direction ten times in succession.

d. Try to hit the ball in an upward direction ten times in succession.

Individual Reactions which Seemed Important:

E-1 was creative in performing the Duck Walk stunt.

E-2 stated, "I can't touch my toes!"

E-5 wanted to do the Rocking Chair. She wanted to know which was her right leg.

#### Group Reactions which Seemed Important:

The group was very anxious to work with their paddles and balls. Most of them had practiced with them the night before.

Class Activities for March 8, 1965

#### Purposes:

To increase flexibility and strength of the shoulders, trunk and legs.

To improve eye-hand coordination.

### Equipment:

Fli-Back Paddles

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Procedures:

1. Arm Circles<sup>27</sup>

2. Walk and clap at the same time.

3. Skip in a circle.

4. Stand on the toes without losing the balance and moving the feet about.

5. Balance on the right foot and then on the left foot.

6. Flying Dutchman--Circle formation, hands joined, facing the center of the circle. Two extra players remain outside the circle holding hands. They walk around the outside of the circle and tag any pair of joined hands calling as they do, "Flying Dutchman." The two players who have been tagged race the tagging couple to the base and back to their place in the circle. The couple who loses the race becomes the taggers and the procedure is repeated.

Individual Reactions which Seemed Important:

E-1 didn't seem to enjoy the Flying Dutchman game.

E-3 stated that the base was too far from the circle.

E-5 stated that she didn't like to do the arm circles.

<sup>27</sup>Supra., pp.45-46

E-6 stated that she already knew how to play Flying Dutchman.

E-8 was restless and fidgety.

Group Reactions which Seemed Important:

Some of the group members were somewhat selfish in "teaming up" for Flying Dutchman. They tended to repeatedly tag the same couples during the game.

Class Activities for March 10, 1965

#### Purposes:

To improve basic movement patterns.

To improve sensory-motor coordinations.

To improve balance and agility.

Equipment:

Playground ball

Procedures:

1. Relays

a. Race to the turning line and back to the starting line.

b. Skip to the turning line and back to the starting line.

c. Hop to the turning line and back to the starting line.

2. Simon Says

One player is selected as the leader, he stands in the front of the class and the other players stand facing the leader. The leader gives commands, some of which are prefaced by 'Simon says' and some of which are not. The players must do everything commanded which is preceded by 'Simon says'; but they must not obey a command which is not preceded by 'Simon says'. Any player who makes a mistake is out of the game if the leader sees the error and calls his name.  $.^{28}$ 

The teacher acted as the leader for the game. The pupils were commanded to do such activities as squat, hop, turn to the right, jump into the air, etc.

3. Pupils formed two single lines facing one another:

a. Bounce the ball to the person opposite

b. Pass the ball to the person opposite

4. Leap over the brook:

a. Take off and land on both feet.

b. Leap from one foot to the other.

c. Land without making a noise.

Individual Reactions which Seemed Important:

E-1 wanted to explain the game Simon Says.

E-2 stated, "I'm not going to run!"

E-3 wanted to jump over the brook first.

E-5 said, "I'm pooped!"

#### Group Reactions which Seemed Important:

The group seemed to enjoy the games and were enthusiastic in all the activities. They seemed to ignore the argumentativeness of a couple of the pupils.

> 28 Richardson., p. 95.

# Class Activities for March 15, 1965

#### Purposes:

To improve eye-hand coordination.

To improve strength and flexibility.

Equipment:

Fli-Back Paddles

# Procedures:

1. Rocking Chair<sup>29</sup>

2. Jumping Jacks

3. Relay

a. Race to the turning line and back to the starting line. Tag the next player in line.

b. Repeat by hopping to the turning line on the right and back on the left foot.

c. Repeat skipping to the turning line and tip-toeing back to the starting line.

4. Paddle exercises:

a. Balance the ball on the paddle while holding it in the right hand and walk twenty steps.

b. Repeat using the left hand.

c. Hit the ball ten times in an upward direc-

tion.

<sup>29</sup> Supra., p. 45.
d. Repeat hitting the ball in a downward direction.

5. Flying Dutchman<sup>30</sup>

Individual Reactions which Seemed Important:

E-1 stated to E-5 "Quit pushing me and making me go down!" She seemed irritable today.

E-2 was the first to reach the playground. She asked, "What we gonna play?"

E-3 stated, "My left (hopping on the left foot) is my awfullest one."

E-4 reacted for the first time to the class activities. She became quite excited during the relays.

Group Reactions which Seemed Important:

The group seemed overly enthusiastic during the relays. They enjoyed and reacted favorably to the competi-tion.

Class Activities for March 17, 1965

Purposes:

To improve strength and flexibility.

To improve eye-hand coordination.

To develop an awareness of the body in relationship to others.

> 30 Supra., p. 119.

Equipment:

Fli-Back Paddles

Procedures:

1. Paddle relays:

a. Balancing the ball on the paddle while holding it in the right hand walk to the base and back to the starting line.

b. Repeat using the left hand to hold the paddle.

2. Relays

a. Hop to the base while holding hands with a partner.

b. Run to the base while holding hands with a partner.

3. Flying Dutchman<sup>31</sup>

4. Hang-On Tag--the pupils are scattered around the playing area in pairs with joined hands between them. There is a Runner and a Chaser. The Runner goes in and out around the couples followed by the Chaser. The Runner seeks safety by joining hands with one of the players in a pair. The partner of the player that the Runner has joined hands with then becomes the Runner. The game continues until the Runner is caught and becomes the Chaser.

5. Crab Walk

Supra,, p.119.

6. Hit the ball in an upward direction and in a downward direction ten times.

## Individual Reactions which Seemed Important:

The group as a whole did not practice aggressiveness in playing Hang-On Tag. Their response to the directions of the game was somewhat confused. They were so excited about playing they didn't listen to the directions.

### Class Activities for March 22, 1965

#### Purposes:

To improve eye-hand coordination.

To develop awareness of the body in performing directed movement patterns.

To increase flexibility and elasticity.

## Equipment:

Fli-Back Paddles

#### Procedures:

The class session was held in the classroom due to rainy weather.

 Walk around the room while balancing the ball on the paddle. Hold the paddle in the right hand.

2. Repeat holding the paddle in the left hand.

3. Elephant Walk relay--keep knees straight and grasp ankles with the hands. On the signal, elephant walk to the turning line and back. Touch off the next player. 4. The pupils were instructed to present a movement study depicting an activity. While each pupil performed her movement sequence the others tried to guess what they were doing.

Individual Reactions which Seemed Important:

E-3 tended to rush her movement study.

E-6 depicted a rhinoceros.

# Group Reactions which Seemed Important:

The group reacted enthusiastically to the movement studies.

# Class Activities for March 24, 1965

## Purposes:

To develop an awareness of the body in space and in relationship to others.

To improve agility.

To improve eye-hand coordination.

Equipment:

Fli-Back Paddles

Procedures:

Class met in the classroom due to rainy weather.

1. Circle formation moving in a counterclockwise direction:

a. Tip-toe

b. Hop--both feet; on right foot; on left foot.

c. Skip

2. Movement studies continued.

3. Paddle exercises:

a. Hit the ball ten times in a downward direction.

b. Hit the ball ten times in an upward direc-

4. Rhythm game<sup>32</sup>

# Individual Reactions which Seemed Important:

E-1 was very secretive about her movement study.

E-2 complained about everything and had an uninterested and unenthusiastic attitude toward the class activitues.

E-8 was nervous and self-conscious while doing her movement study.

Group Reactions which Seemed Important:

The group as a whole seemed somewhat submissive and unenthusiastic. They responded well to the movement studies and the rhythm game.

# Class Activities for March 26, 1965

### Purposes:

To develop an awareness of the body through movement patterns.

To increase the strength of the arms and shoulders.

se Supra., pp. 110-111. To improve elasticity.

Equipment:

None

#### Procedures:

The class session was held in a classroom due to rainy weather.

- 1. Jumping Jacks
- 2. Push-ups
- 3. Movement sequences
  - a. Depict an animal
  - b. Imitate a doing activity such as washing

#### dishes.

c. Move across the room by hopping twice and walking three steps. Repeat the sequence.

d. Pretend you are walking on hot coals.

e. Pretend you are walking in water.

f. Pretend you are walking in deep mud.

g. Pretend you are sneaking up on someone.

Individual Reactions which Seemed Important:

E-1 tended to "show-off" in performing the activities. She was very creative.

E-2 depicted her future career.

E-4 appeared nervous and couldn't remember the locomotor sequence.

# Group Reactions which Seemed Important:

The group as a whole seemed nervous and self-

conscious in performing their individual activity. In the movement activities in which the pupils performed as a group, they were relaxed and at ease. They tended to imitate one another in the performance of the movements.

## Class Activities for March 29, 1965

# Purposes:

To improve eye-hand coordination.

To improve strength, agility and flexibility.

# Equipment:

Fli-Back Paddles

Procedures:

1. Arm rotations 33

2. Touch the toes ten times without losing the balance or moving the feet about.

3. Crab Walk--to turning line and back to start-

4. Elephant Walk--to turning line and back to starting line.

5. Relay: Ball and Paddle

a. Balance the ball on the paddle while holding it in the right hand. Walk to the turning line and back.

b. Balance the ball on the paddle while holding it in the left hand. Walk to the turning line and back.

<sup>33</sup>Supra., pp.45-46

6. Hit the ball in an upward direction ten times.

7. Hit the ball in a downward direction ten times.

8. Walk fifteen steps with the eyes closed.

# Individual Reactions which Seemed Important:

E-2 tended to watch to see if any of the other pupils were cheating in the paddle relay.

E-8 talked and giggled during the class session and did not hear instructions.

## Group Reactions which Seemed Important:

The group as a whole reacted favorably to all the activities. They responded well to directions and demon-strations.

# Class Activities for March 31, 1965

#### Purposes:

To improve general strength, agility and flexibility. To improve eye-hand coordination.

#### Equipment:

Fli-Back Paddles

# Procedures:

- 1. Jumping Jacks
- 2. Rhythm Game<sup>34</sup>
- 3. Elephant Walk

<sup>34</sup>Supra., pp. 110-111

4. Duck Walk

5. Practice three minutes with the ball and paddle.

a. Hit the ball in an upward direction.

b. Hit the ball in a downward direction.

6. Cat and Mice--one child is selected to be the cat. The cat chases the mouse or mice in and out the circle formed by the other pupils holding hands.

# Individual Reactions which Seemed Important:

E-2 stated that she was tired after Cat and Mice.

E-1 stated, "One of these days I'm going to get out of this class."

E-8 seems to be gaining confidence in herself. Group Reactions which Seemed Important:

The pupils were very clever in preventing the Cat from getting to the Mouse when the Mouse was on the inside of the circle. Their reactions were enthusiastic. The pupils seem to be improving in eye-hand coordination in working with the paddles.

> Class Activities for April 2, 1965

#### Purposes:

To improve general motor ability. To improve strength and flexibility.

Equipment:

Fli-Back Paddles

Procedures:

1. Rocking Chair<sup>35</sup>

2. Jumping Jacks

3. Race to the turning line and back to the start-

4. Flying Dutchman<sup>36</sup>

5. Hang-On Tag<sup>37</sup>

6. Red Rover--the class is divided into two teams The teams stand at a distance of ten yards apart facing one another with hands joined. One team calls "Red Rover, Red Rover, let \_\_\_\_\_come over." The person whose name is called tries to break through the chain of joined hands of the calling team. If she is successful, she choses one of the team members to join her team. If she is unsuccessful, she must join that team. The game is repeated as the teams alternately call Red Rover.

7. Nose and Toes Tag<sup>38</sup>

8. Paddle exercises--hitting ball upward and down-ward.

<sup>35</sup>Supra.,p.45. <sup>36</sup>Supra.,p. 119 <sup>37</sup>Supra., p. 124. <sup>38</sup>Supra., p. 107.

## Individual Reactions which Seemed Important:

E-1 appeared afraid of the Red Rover game.

E-6 stated, "I told you I'd beat the rest of them."

E-8 appeared enthusiastic about the running activities. Group Reactions which Seemed Important:

The group, as a whole, seemed to enjoy all of the games and were very enthusiastic about the nose and toes tag game. Some of them had a little difficulty in balancing while holding their nose with one hand and their foot with the other.

## Class Activities for April 5, 1965

#### Purposes:

To improve strength and agility.

## Equipment:

None

#### Procedures:

- 1. Skip to the base and back to the starting line.
- 2. Flying Dutchman<sup>39</sup>
- 3. Hang-On Tag<sup>40</sup>
- 4. Red Rover<sup>41</sup>

<sup>39</sup>Supra., p. 119. <sup>40</sup>Supra., p. 124. <sup>41</sup>Supra., p. 131

5. Squirrels in Trees -- "The players are divided into groups of three and the players in each group are numbered 'one', 'two', and 'three'. Number 'one' and 'two' join both hands to form a tree; number 'three' is the squirrel and he stands in the tree formed by the other two players. The groups of three are scattered over the play There should be one or more extra squirrels area. without a tree. The teacher calls, 'Squirrels run!' This is the signal for the squirrels to run from their tree to another tree, and while they are changing to another tree the extra squirrels attempt to get into a tree. Only one squirrel is allowed in a tree and someone is always left without a tree with each change. As soon as all of the trees are full the signal is repeated and the game continues. After the game has been repeated several times, new squirrels are designated."42

#### Individual Reactions which Seemed Important:

E-1 tended to be lazy in all the games which called for running.

E-5 seemed to tire during the running activities.

Group Reactions which Seemed Important:

The group reacted favorably and enthusiastically to the class activities. They seemed disappointed when the class session was over.

# Class Activities for April 7, 1965

#### Purposes:

To improve basic movement patterns.

To improve strength and flexibility.

To improve sensory-motor coordination.

To improve eye-hand coordination.

<sup>42</sup> Richardson., p. 18.

### Equipment:

Fli-Back Paddles

Procedures:

times.

The class session was held in a classroom due to rainy weather.

1. Arm Circles<sup>43</sup>

2. Touch the toes ten times without losing the balance or moving the feet about.

3. Balance on the right leg with the eyes closed for ten seconds.

4. Stand on the left foot for five seconds with the eyes closed.

- 5. Crab Walk and Duck Walk
- 6. Elephant Walk relay
- 7. Rhythm game<sup>44</sup>

8. Movements in a circle formation:

a. Walking

b. Tip-toeing

c. Hopping on the right foot

d. Hopping on the left foot

9. Paddle exercises:

a. Hit the ball in an upward direction ten

<sup>43</sup>Supra., pp. 45-46.

<sup>44</sup>Supra., pp. 110-111.

b. Hit the ball in a downward direction ten

times.

## Individual Reactions which Seemed Important:

E-2 became impatient with E-5's inability to keep up in the rhythm game.

E-3 had difficulty in the elephant walk.

E-5 had to be shown her right hand from her left. Group Reactions which Seemed Important:

The group seemed to enjoy the anumal stunts. They reacted to the Rhythm Game with an attitude of serious concentration.

# Class Activities for April 9, 1965

### Purposes:

To improve locomotor skills.

To develop an awareness of the body in relation to others.

To improve strength, agility and flexibility.

To improve eye-hand coordination.

# Equipment:

Medium-sized playground ball

Fli-Back Paddles

#### Procedures:

1. Race to the end of the block and back to the starting line.

### Individual Reactions which Seemed Important:

E-1 didn't run back from the end of the block.

E-4 had to be shown several times how to slap the ground before the tennis ball bounced twice.

# Group Reactions which Seemed Important:

The pupils delighted in the simulated Jacks game. They were enthusiastic during all the activities.

Class Activities for April 23, 1965

#### Purposes:

To improve agility and flexibility.

To improve eye-hand coordination.

Equipment:

Tennis Balls

Medium-sized Playground Ball

# Procedures:

1. Rocking Chair<sup>49</sup>

2. Short Potato Race<sup>50</sup>

3. Dribble the playground ball to the turning line and back to the starting line. Repeat.

4. Walk backward to the turning line and back to the starting line.

<sup>49</sup>Supra., p. 45.

<sup>50</sup>Supra., pp. 99-100.

5. Toss the tennis ball into the air and catch it as you are walking to the turning line and back to the starting line.

6. Area Tag--the pupils are spread out over the designated playing area. The Chaser attempts to tag them. When a player is tagged, he assists the Chaser in tagging the remainder of the players.

7. Red Light, Green Light<sup>51</sup>

Individual Reactions which Seemed Important:

E-2 tended to be argumentative with the leader in Red Light, Green Light.

E-5 volunteered to be the leader for Red Light, Green Light.

# Group Reactions which Seemed Important:

The group, as a whole, was very alert and enthusiastic today. They responded well to directions and demonstrations.

# Class Activities for April 28, 1965

#### Purposes:

To improve strength, agility and flexibility. To improve eye-hand coordination.

<sup>51</sup>Supra., p. 114.

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# Equipment:

Medium-sized Playground Ball

Procedures:

1. Exercises

a. Touch the toes ten times.

b. Rocking Chair<sup>52</sup>

c. Arm Circles<sup>53</sup>

d. Jumping Jacks

2. Race to the turning line and back to the starting line. Repeat.

3. Skip to the turning line and back to the starting line.

4. Walk backward, in a straight line, to the turning line and back to the starting line.

5. Area Tag<sup>54</sup>

6. Crawl ten paces

7. Dribble the playground ball to the turning line and throw it back to the next player in line.

Individual Reactions which Seemed Important:

E-1 tended to remain in the same area for area tag.

E-4 continued to become more verbal and enthusiastic about the activities.

<sup>52</sup>Supra., p. 45. <sup>53</sup>Supra., pp. 45-46. <sup>54</sup>Supra., p.141.

# Group Reactions which Seemed Important:

The pupils were enthusiastic about the area Tag game. Their responses to the activities were favorable.

> Class Activities for April 30, 1965

Purposes:

To improve agility and elasticity.

Equipment:

None

## Procedures:

1. Jumping Jacks

2. Rocking Chair<sup>55</sup>

3. Walk backward to the turning line, tag it and return to the starting line.

4. Run to the turning line, tag it and return to the starting line tagging off the next player.

5. Repeat by skipping to the turning line.

6. Area Tag<sup>56</sup>--The player is safe in a squatting position. Each player may have three safeties.

Individual Reactions which Seemed Important:

The group was disappointed that this was the last day of "physical education."

<sup>55</sup>Supra., p.45.

<sup>56</sup>Supra., p.141.

### Appendix J

## CASE STUDY OF E-1

#### Introductory Statement

E-l is an eight year old whose appearance is characterized by excessive weight tending toward obesity. She is very conscious of her appearance and is always dressed nicely and neatly. She tends to remain somewhat aloof in her relationships with other pupils and tries to act somewhat grown-up for her age.

Her immediate family consists of a father who is with the Army R.O.T.C. program at Sam Houston State College, a mother who is a Registered Nurse at the Huntsville General Hospital, an older brother, and a younger sister. According to teacher evaluation, the family relationship is good.

E-l is in good health and her school attendance is good with few absences. She is generally enthusiastic and happy, tending, however, at times, to be reserved in her reactions.

# Summary of School Records

E-1 has an Intelligence Quotient of 116 and a Mental Age of 9-9 according to the Otis Quick Scoring Mental Ability Test. Her chronological age when the Stanford Achievement Test was administered at the beginning of the study was 8-5. Test scores on the Basic Reader's Tests for the first grade were high and for the second grade the scores were low average and high average respectively. E-1 received a scale score of 29 on the Brace Scale of Motor Ability Tests. She is underachieving, according to teacher evaluation, in the areas of reading, arithmetic, handwriting, language, and spelling.

E-1 received an average reading score of 3.1 and an average arithmetic score of 2.8 on the Stanford Achievement Test.

The first grade teacher made the following observation of E-1: "Is not attentive--works and plays well with others." E-1's present teacher stated that she "Lacks self confidence. Wants to please, reads slowly." The teacher indicated that E-1 was not a discipline problem in class, was accepted by her peers, was motivated to learn, participated in class activities, was not awkward or clumsy, and did not have a fine coordination problem.

# Characteristics at Beginning of Study

E-1 appeared shy but cooperative and responded well to all directions and demonstrations. She did, however, lack self-confidence and appeared self-conscious in attempting the activities included in the Brace Test. She usually kept her head ducked throughout her performances. She was very anxious for the investigator to know that she had taken ballet lessons for two years previous to the present time.

E-1 remained somewhat non-verbal in her reactions to activities and tended to rush her performances on the

Brace Scale of tests, seemingly anxious to get them over with. On a few of the activities, however, she wanted to perform first, stating, "Oh, that's easy. I can do that because I've had ballet." Other members of the group would respond to this statement by referring to the ability of E-1 to perform certain stunts because of her ballet lessons. Upon failure of a stunt, her characteristic statement was "I didn't do it right." She passed only four of the stunts included in the Brace Scale. Generally her balance was fair, agility and strength poor.

# Observer's Log for E-1 During the Period of Activities

- Feb. 1 E-1 tended to be shy and self-conscious. She was lacking in self-confidence and tended to keep her head ducked throughout the class session. She remained somewhat non-verbal during the class period.
- Feb. 3 E-l remained non-verbal and self-conscious. Her movements seemed to be restricted by her selfconsciousness.
- Feb. 5 The activities seem to be somewhat of a chore for E-1. She seemed to be afraid of making a mistake. She had difficulty in jumping rope with a partner.
- Feb. 8 E-1 seemed to be more friendly with the other pupils today. Her movements were less restricted and her performance much better.
- Feb. 10 E-1 seems to be losing her self-consciousness as she entered more freely into the activities.
- Feb. 12 E-1 continued to restrict herself in the running activities. Perhaps she is afraid of falling and hurting herself.
- Feb. 15 E-1 tended to remain in the same playing area

when playing Squat Tag. She concentrated on being safe instead of challenging the chaser.

- Feb. 17 School did not meet today.
- Feb. 19 E-1 continues to restrict herself in running activities. She seems to be enjoying and taking part more in the activities.
- Feb. 22 E-1 has become more friendly and verbal with the teacher and the other pupils. She doesn't seem to keep her head ducked as much as before. In the running activities she still restricts herself.
- Feb. 24 E-l has begun to take part in the group discussions. She seemed very anxious to please the teacher and the other pupils.
- Feb. 26 E-1 was absent from school.
- March 1 E-1 met the teacher at the door to the classroom and asked, "Can I be first?" Her performance in the activities seems to be improving in that she doesn't rush through them as she has been doing. Her self-consciousness seems to be subsiding somewhat.
- March 3 Balance is improving somewhat. However, E-1 appeared quite unsure of herself when walking with her eyes closed. Her fine motor coordination is fair.
- March 5 E-l walked with improved confidence with her eyes closed. She balanced the ball well with both hands. She was quite creative in performing the duck walk and seemed to delight in this activity.
- March 8 E-l didn't seem to enjoy the Flying Dutchman game. She tended to be self-consious of her slowness in running as she couldn't keep up with her partner. She stated to the couple on the outside of the ring, "Don't tag me, I'm too slow." She continues to run as though she is afraid of falling.
- March 10 E-1 volunteered to explain the Simon Says game which she did with relative ease and confidence. In the ball activity, she was afraid to catch the ball and would dodge and close her eyes when it was bounced or passed to her. She was very awkward in throwing the ball and tended to push it instead.

- March 12 Class didn't meet.
- March 15 E-1 seemed somewhat irritable today, at times becoming rude to the other pupils. She stated to E-5, "Quit pushing me and making me go down!" Her balance with the left hand seemed only fair today and rushed as though she were impatient.
- March 17 E-1 did not participate in the running activities because she said, "I have a hurt foot." She did participate in Simon Says and Red Light, Green Light. She appeared very quiet and withdrawn.
- March 22 E-1 was absent from school.
- March 24 E-l seems to be improving in hitting the ball with the paddle. She was very excited and secretive about her movement study.
- March 26 E-1 had trouble doing the push-ups. Her movement study was performed with ease and confidence. She depicted an octopus. E-1 tended to "show-off" in her movement study. She was very creative in walking on hot coals, in deep mud, etc. She seemed quite at ease in these activities.

E-1 was less self-conscious and more self-confident today than ever before.

- March 29 E-1 performed the paddle-ball relay well, with ease and confidence and deep concentration. She is lacking in abdominal muscular strength as she couldn't keep her back straight in the crab walk. Her balance while keeping her eyes closed remains only fair.
- March 31 E-1 seemed unhappy and acrimonious today stating, "One of these days I'm going to get out of this class." She appeared sullen and uncooperative.
- April 2 E-l appeared afraid in the Red Rover game. In the running activities she seemed to be putting forth more effort and enjoying them more than usual.
- April 5 E-l appeared lazy and somewhat uninterested in the class activities today.
- April 7 E-l continues to improve in eye-hand coordination. Her sensory-motor coordination is fair. She especially enjoyed the rhythm game.

- April 9 E-1 and E-2 were partners for the Forward and Backward Relay and had a misunderstanding due to E-1's slowness. E-1 had difficulty in dribbling the playground ball.
- April 12 E-1 was very antagonistic toward the teacher and the other pupils using such statements as "I'm not going to do it," or "Leave me alone! I know how to do it!" She couldn't move while tossing and catching the ball. She had trouble catching the ball.
- April 14 E-1 didn't run back from the end of the block stating that it was too hot to run. Her endurance is only fair. She performed well in skipping and clapping. Her dribbling of the ball was improved today. She had difficulty in the simulated Jacks game as she would catch the ball with two hands instead of one. She seemed unable to catch the ball with one hand.
- April 23 E-1 was very meticulous and serious in her movement while walking backward. She had to look backward as she walked. She still remains somewhat aloof in her relationship with the other pupils.
- April 28 E-1 tended to avoid moving about in the area tag game and tried to be inconspicuous from the chaser. After she had used up all of her safeties, she gave up and allowed herself to be tagged.
- April 30 E-l seemed more enthusiastic about the running activities today. She seemed less afraid of falling and called the attention of the teacher to her new tennis shoes.

#### Characteristics at End of Study

E-1's chronological age when the Stanford Achievement Test was readministered was 8-10. She received an average reading score of 4.7 on the post-test and an average arithmetic score of 4.0. Her scale score on the readministration of the Brace Scale of Motor Ability Tests was 40. The improvement on the average reading score was 1.6 and on the average arithmetic score 1.2. She improved 11 points on the motor ability test.

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E-1 tended to be self-consious and inhibited the first few sessions but gradually began to talk and act more freely with the other pupils and the investigator. At times she seemed to be on the defensive when the activity called for a movement in which she felt awkward and unsure. Frequently, she would tend to give up or half try especially in those activities which called for running. However, toward the end of the study E-1 began to perform with ease and assurance and she had lost a great deal of her self-consciousness and aloofness toward the other pupils. The habit of ducking her head was no longer observed at the end of the study.

# CASE STUDY OF E-2

Case study of E-2 can be found in Chapter III, pp. 37 - 43.

## CASE STUDY OF E-3

# Introductory Statement

E-3 is an eight year old who is characterized by shyness and quietness. She is always neatly and nicely dressed.

Her immediate family consists of a father who is an instructor in the Art Department at Sam Houston State College, a mother, who does not work outside the home, an older brother, a younger brother, and a younger sister. According to her teacher, the family relationship is good.

E-3 is in good health and her school attendance is good. According to her teacher, she is not an enthusiastic and happy child.

# Summary of School Records

E-3 has an Intelligence Quotient of 100 and a Mental Age of 8-8 according to results on the Otis Quick Scoring Mental Ability Test. Her chronological age at the time the Stanford Achievement Test was administered was 8-9. Test scores on the Basic Reader's Test for the first grade were high and very high and for the second grade the scores were low average. E-3 received a scale score of 33 on the Brace Scale of Motor Ability Tests. According to teacher evaluation, she is underachieving in the areas of reading, arithmetic, handwriting, language and spelling and is slightly below average in relation to the class.

E-3 received an average reading score of 3.2 and an average arithmetic score of 2.6 on the Stanford Achievement Test.

The first grade teacher stated that E-3 was "well adjusted--works hard but slowly." Her second grade teacher stated that she was "slow to have supplies ready for use-messy work--very shy. Seldom has all supplies needed." Her present teacher stated that she was a "very shy child. Needs opportunities for self-expression, to help gain selfconfidence." The teacher further indicated that E-3 was not a discipline problem in class, she was not accepted by her peers, she was not motivated to learn, she did not participate in class activities, and she seemed to have a fine coordination problem.

# Characteristics at Beginning of Study

E-3 appeared shy but cooperative and responded well to directions and demonstrations. She appeared overly selfconsious and would almost constantly twist her hair and sigh as though she were bored. Her performance of the stunts on the Brace Test were not hurried, at times tending to be slow, and she seemed to try very hard to do them correctly. E-3's over-all strength and balance is poor as measured by the Brace Scale. She is somewhat awkward and clumsy and has difficulty controlling disciplined movements.

Her reactions to activities were non-verbal and she didn't seem to get excited about anything. She showed little concern for what the other pupils did. E-3 had a habit of shrugging her shoulders and lifting her hands in gesture when she felt as though she hadn't performed an activity well.

# Observer's Log for E-3 During the Period of Activities

Feb. 1 E-3 tended to be shy and overly self-consious. She would twist her hair and sigh as though she were bored. E-3 would shrug her shoulders and lift her hands in gesture when she felt she hadn't performed well in an activity or stunt.

Feb. 3 E-3 appeared awkward and clumsy. She was very unsure of herself and restrained her movements. She was non-verbal with the other pupils and the instructor.

- Feb. 5 E-3's movements were awkward and clumsy. She responded well to directions and instructions. She lacks self-confidence.
- Feb. 8 E-3 seemed to have difficulty in coordinating the various parts of her body. She seemed to lack enthusiasm. E-3 continued to be non-verbal.
- Feb. 10 E-3 seemed unable to control her movements which resulted in awkwardness and clumsiness. Her selfconsciousness remains extreme. She continues to twist her hair and shrug her shoulders.
- Feb. 12 E-3 took great pains in performance in the activities. She seemed to concentrate very hard in the correct execution of the various movements.
- Feb. 15 E-3's performance was slow and deliberate. She seemed very anxious to please the teacher. She seems to have become more interested in the class and the activities.
- Feb. 19 E-3 continues to improve in enthusiasm. She talked more with the other pupils. She seemed to be more confident and relaxed.
- Feb. 22 E-3's coordination seemed to have improved somewhat. She was more at ease and relaxed. E-3 seemed to be mingling and talking more freely with the other pupils.
- Feb. 24 E-3 couldn't coordinate to pat the head and rub the stomach simultaneously. She couldn't keep her back straight in doing the crab walk. Her performance of the duck walk was awkward and clumsy.
- Feb. 26 E-3 seemed enthusiastic and anxious to begin the activities. She was relaxed and at ease with the other pupils. She seemed to be more self-confident in her performance of the activities. She said to E-8, "Lift up your body, crab. She's a big crab." After the crab walk, she asked, "Now what?"
- March 1 E-3 showed increased assertiveness and self-confidence in Red Light, Green Light by telling the leader, "I didn't move." Her movements seem to be less awkward and clumsy. She quoted the teacher in telling one of the other pupils, "Don't play with your paddle in the classroom."

- March 3 E-3 continued to become more verbal and at ease with the pupils and the teacher. She stated that it was easy to balance on the right foot. Her eye-hand coordination was fair in the paddle-ball exercises.
- March 5 E-3 continued to gain in self-confidence. She didn't twist her hair as usual or shrug her shoulders. She seemed more enthusiastic and verbal. She asked the teacher, "How do you do it?" (In reference to the duck walk).
- March 8 E-3 stated that she didn't like the arm circles because they made her arms tired. Her coordination in running seemed improved. She stated that the base was too far to run to tag in Flying Dutchman. E-3 and E-8 seem to be striking up a friendship as they tended to stay together during the class session.
- March 10 E-3 wanted to jump over the brook first. She continued to mingle more and talk more with the other pupils. Her enthusiasm continues to improve as does her coordination.
- March 15 E-3 was enthusiastic and excited during the relay. The habit of twisting her hair and shrugging her shoulders has completely become unobservable. She seems more friendly with the other pupils. She stated, "My left (hopping on the left foot) is my awfullest one." Her performance didn't bother her as it had before and she joked about the mistakes she made.
- March 17 E-3 continued to become more assertive and overt in her behavior. E-3 and E-8 seem to be close friends. They are continuously giggling and talking together. E-3 wanted to do the seal walk.
- March 22 E-3's movement pattern depicted the act of taking water out of a well. She tended to rush her study during the first presentation but just giggled and repeated it when asked to do so. She did not shrug her shoulders or gesture with her hands.
- March 24 E-3 seemed to have improved in general coordination. Her execution of the movements was less awkward and clumsy. Her enthusiasm and response was good.
- March 26 E-3 appeared at ease in performing the movement sequences; however, she tended to imitate other

pupils. She was somewhat ill at ease in depicting an animal in front of the group.

- March 29 E-3 walked fairly well with her eyes closed. Her abdominal muscles are lacking in strength. Her performance of movement patterns seem improved and less awkward.
- March 31 No comment.
- April 2 E-3's movement control and coordination was good. She seemed to perform with ease and confidence.
- April 5 E-3 delighted in the game of Hang-On Tag. She teased the chaser. Her running has greatly improved.
- April 7 E-3 had difficulty with the elephant walk relay due to a lack of flexibility. E-3 and E-8 had to be reprimanded for giggling and not paying attention to directions and instructions.
- April 9 E-3 gave up in the elephant walk relay. She seemed discouraged with her performance of the stunt; however, she did not shrug her shoulders or withdraw. Her dribbling of the playground ball was fair.
- April 12 E-3 had a little difficulty in controlling her tossing and catching of the tennis ball both while standing still and moving. She didn't seem to take it seriously but tended to "cut-up" with E-8.
- April 14 E-3's coordination was good in the skipping while clapping. She had difficulty with eye-hand coordination in the simulated Jacks activity.
- April 23 E-3 had trouble walking backward. She tended to be awkward in the performance of this movement pattern. She was self-confident in her performance.
- April 28 E-3 had no trouble in walking backward today.
- April 30 E-3 gave up when she did the relay wrong. She became very quiet for a time following this as if she was embarrassed; however, before class was over she was laughing and enjoying herself. She told the teacher that she didn't want the class sessions to end.

## Characteristics at End of Study

E-3's chronological age when the Stanford Achieve-

ment Test was readministered was 9-2. On the post-test she received an average reading score of 3.5 and an average arithmetic score of 3.8. Her scale score on the readministration of the Brace Scale was 58. The improvement on the reading score was .3 and on average arithmetic 1.2. She improved 25 points on the motor ability test.

E-3 improved in general coordination, eye-hand coordination and over-all strength. She moved with ease and confidence. Her movements were no longer awkward and clumsy.

E-3 appeared self-confident and sure of herself at the end of the study. She was overt and verbal in her actions as compared to her behavior at the beginning of the study. E-3 showed concern and interest in the other pupils and seemed generally happy and enthusiastic in her relations with them. They seemed to accept and enjoy her.

E-3 was very conscientious about bringing her paddle to each class session. Her responses to the activities were well directed and enthusiastic and she seemed eager to participate and learn.

## CASE STUDY OF E-4

# Introductory Statement

E-4 is an eight year old whose appearance is characterized by long blond hair and a solemn countenance. She is always dressed neatly.

Her immediate family consists of a father who is

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employed by Southwestern Bell Telephone Company and a mother who is unemployed. The family relationship, according to the teacher, is good.

E-4 is in good health and her school attendance is excellent. She did not appear to be enthusiastic or happy. Summary of School Records

E-4 has an Intelligence Quotient of 103 and a Mental Age of 9-0 according to the results of the Otis Quick Scoring Mental Ability Test. Her chronological age at the time the Stanford Achievement Test was administered was 8-11. Test scores on the Basic Reader's Test for the first grade were very high and for the second grade high average. E-4 received a scale score of 52 on the Brace Scale of Motor Ability Tests. According to teacher evaluation, she is underachieving in the areas of reading and handwriting and ranks slightly below average in relation to the class.

E-4 received an average reading score of 3.0 and an average arithmetic score of 2.6 on the Stanford Achievement Test.

Her teacher indicates that E-4 is not a discipline problem in class, she is accepted by her peers, and she participates in class activities. The teacher did not know if she was motivated to learn or if she was enthusiastic or happy.

## Characteristics at Beginning of Study

E-4 is a very quiet and shy child. She remained

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non-verbal at all times and rarely smiled. She moved slowly and deliberately following and responding to directions well. E-4 usually had her head down and rarely looked anyone in the face. Her actions were few but well directed. She usually just sat quietly in her place until she was instructed to perform. She did not seem to have any friends among the group. She had good general coordination, being somewhat weak in strength as measured by the Brace Scale.

# Observer's Log for E-4 During the Period of Activities

- Feb. 1 E-4 appeared to be a very shy and quiet child. She remained non-verbal and solemn. Her movements were slow and deliberate. E-4 tended to keep her head ducked and didn't look the teacher in the face when she was talked to. She remained quite still and withdrawn until instructed to perform. She did not seem to be a part of her peer group.
- Feb. 3 E-4 performed the activities slowly and deliberately. She lacked enthusiasm. She remained non-verbal and unsmiling.
- Feb. 5 E-4's general coordination is good. She remained unenthusiastic.
- Feb. 8 No comment.
- Feb. 10 E-4 continues to be withdrawn and solemn.
- Feb. 12 E-4 was very slow and deliberate in Posture Tag and Posture Relay.
- Feb. 15 No comment.
- Feb. 19 No comment.
- Feb. 22 E-4 remained non-verbal and isolated from the group. Her facial expression did not change but remained solemn. She responded to directions and instructions well.

- Feb. 24 E-4 tended to be shy and unresponsive when instructed to perform the duck walk and making sounds like a duck.
- Feb. 26 No comment.
- March 1 E-4 continued to be unexcited and unenthusiastic. She seems reluctant to relax and join in the fun of the group. She smiled when she was given a Fli-back paddle.
- March 3 E-4 had difficulty in walking with her eyes closed. Remained non-verbal, solemn and unenthusiastic.
- March 8 No comment.
- March 10 E-4 remained quiet and withdrawn, seldom smiling.
- March 15 E-4 reacted to the relay. She became excited and urged her team members to hurry. She seemed to forget herself for a moment and was actually having fun. She became quiet and withdrawn for the remainder of the class session.
- March 17 No comment.
- March 22 E-4 did not appear shy or self-consious in presenting her movement study. She was mechanical and deliberate in her execution.
- March 24 E-4 depicted a dog through her movement study. She was lacking in imagination and enthusiasm during the class activities.
- March 26 E-4 appeared slightly nervous in depicting a running horse. She couldn't remember the locomotor sequence. Her movements continue to be slow and deliberate.
- March 29 E-4's balance while walking with her eyes closed was fair. She failed to keep her back straight in the crab walk. Her eye-hand coordination was good.
- March 31 E-4 was absent from school.
- April 2 E-4 seemed reluctant to try in the Red Rover game. She became verbal in talking with E-7. The two of them seemed to stay together during the class activities.
- April 5 E-4 continued to stay with E-7. They talked and laughed during the class session. E-4 continues

to be non-verbal with the other pupils. She seemed to tire today before class terminated.

- April 7 E-4's over-all strength seemed improved. She continues to converse with E-7.
- April 9 E-4 performed the elephant walk stunt correctly but very slowly. E-4 and E-7 were partners for the activities. She seemed to be enthusiastic and happy during class.
- April 12 E-4 had difficulty in tossing and catching the tennis ball. She appeared to take an interest in the activities. She was very aggressive in avoiding being tagged in Pum-Pum-Pullaway. She seemed enthusiastic and excited.
- April 14 E-4 could not perform the simulated Jacks activity. She couldn't coordinate to slap the ground and catch the ball on the first bounce. Her enthusiasm continues to improve. She talked and joined in conversation with various members of the group.
- April 23 E-4 continued to take part more in the group conversations. E-4 and E-7 seem to have become close friends. E-4 was enthusiastic during the activities. She seemed more at ease and less deliberate in her movements.
- April 28 E-4 continued to become more enthusiastic. She seemed to join in the group and appeared happy and confident in her relationship with the other pupils. E-4 and E-7 had to be reprimanded for talking when instructions were being given.
- April 30 E-4 was enthusiastic and excited during the activities. She appeared at ease and confident in conversing with other members of the class.

## Characteristics at End of Study

E-4's chronological age at the end of the study was 9-4. She received an average reading score of 3.2 and an average arithmetic score of 3.3 on the post-administration of the Stanford Achievement Test. Her Brace scale score at the end of the study was 64. The difference in the pre- and post-test scores in reading was .2, in arithmetic .7 and in

#### motor ability 12.

E-4 appeared less shy and quiet at the end of the study. She had become a part of the group and was confident in her relationships with the other pupils. She was enthusiastic and happy and seemed relaxed and at ease. E-4 had cultivated friendships with the other pupils and was noticed and included in their conversations.

# CASE STUDY OF E-5

## Introductory Statement

E-5 is a nine year old whose appearance is characterized by thinness and a lack of cleanliness. She is usually very poorly dressed and her shoes are generally too big for her and have holes in them.

Her family consists of a father who is a carpenter, a mother who is unemployed and two older sisters. The teacher did not know what kind of family relationship existed in the home.

E-5 is in general good health, there is however, a possibility of a visual problem according to the teacher. She did not appear to be enthusiastic or happy. Her school attendance is poor with very frequent absences.

# Summary of School Records

E-5 is a new student in the Huntsville schools this year. She attended school in Baytown, Texas before coming to Huntsville.

E-5 has an Intelligence Quotient of 94 and a
Mental Age of 8-5 according to results of the Otis Quick Scoring Mental Ability Test. Her chronological age at the time the Stanford Achievement Test was administered was 9-2. Test scores on the Basic Reader's Test are not available. E-5 received a scale score of 43 on the Brace Scale of Motor Ability Tests. She is underachieving, according to teacher evaluation, in the areas of reading, arithmetic, handwriting, language, and spelling.

E-5 received an average reading score of 2.5 and an average arithmetic score of 2.4 on the Stanford Achievement Test.

E-5's present teacher regards her as a discipline problem in class. The teacher further indicates that she is not accepted by her peers, she is not motivated to learn but she does participate in class activities, and she is awkward and clumsy.

#### Characteristics at Beginning of Study

E-5 tended to be shy and withdrawn the first few sessions; however, she began to talk more and volunteer more readily for demonstration as time went on. Her cooperation and response were well directed in all activities.

E-5 tends to be awkward and unsure of herself. She seemed to be overly self-conscious of her appearance and at times called the attention of the investigator to a new dress which her mother had made for her. She appeared to have a slight speech impediment of which she did not seem to be

aware.

E-5 had difficulty in understanding directions and at times it was necessary to repeat them for her. In activities calling for a distinction between right and left she had to be shown right from left. Her balance was fair, strength and agility poor as measured by the Brace Scale.

E-5 tends to be a loner. She does not mix and mingle with the other pupils and they tend to exclude her and make fun of her.

E-5's concentration was poor during the administration of the Stanford Test. She did not appear concerned or interested in the test material. She was restless, chewed her pencil, would sigh and stare into space during the tests.

# Observer's Log for E-5 During the Period of Activities

- Feb. 1 E-5 tended to be shy and withdrawn. She was awkward and clumsy. She was not accepted by the group and was ignored. E-5 seems overly self-conscious and does not mix with the group.
- Feb. 3 E-5 continued to remain withdrawn. She didn't mix and mingle with the other pupils. She was very awkward and clumsy.
- Feb. 5 E-5 continues to be a loner. The other pupils tended to laugh at her awkwardness and clumsiness; however, this didn't seem to bother her. She seemed anxious to please and was enthusiastic. She could not jump rope. She had to remove her shoes to jump because they were too large for her and she stumbled over them.

Feb. 8 E-5 couldn't coordinate her arms and legs in the jumping jacks. She lost a shoe and fell down during the short potato race.

- Feb. 10 E-5 could not skip. Her coordination is poor. She appeared less shy. She was enthusiastic and eager to please.
- Feb. 12 E-5 continued to be awkward and clumsy. She didn't seem to be able to control her legs.
- Feb. 15 E-5 remained unable to perform the jumping jacks. She couldn't coordinate her arms and legs at the same time.
- Feb. 19 E-5 appeared less shy. She was very serious in her attempts to perform the activities and tried very hard to please.
- Feb. 22 E-5 was slow to understand and react to directions. She had to receive help in understanding the Exchange Tag game. She couldn't jump with her feet together.
- Feb. 24 E-5 stated that she did not feel well. She was quiet and unresponsive to the activities. She failed to perform the rhythm sequence. She had to be shown her right hand from her left hand. Her sensory-motor coordination seemed poor.
- Feb. 26 E-5 couldn't perform the rocking chair movements. Her general coordination remained poor. She didn't feel well and her eyes were red.
- March 1 E-5 wanted to be the leader in Red Light, Green Light. She was hesitant and self-conscious in telling the other pupils to go back and start over when they missed. She spoke in a very soft voice and had to be instructed to speak up so that she could be heard. E-5 seemed very excited over receiving the Fli-back paddle and wanted to know if it was really hers to keep.
- March 3 E-5 appeared less shy and self-conscious. She called the attention of the teacher to a new dress her mother had made for her. She stated that she liked to stand and balance. E-5 couldn't balance the ball on the paddle while holding the paddle in the right hand but she did well when holding the paddle in the left hand. She stated, "I can hit the ball! Let me show you. I've been practicing."
- March 5 E-5 wanted to do the rocking chair exercise. She wanted to know which was her right leg. She lost her balance with her eyes closed. She had difficulty in balancing the ball on the paddle. E-5

tends to stay close to the teacher during the class period and seems to want attention and approval.

- March 9 E-5 couldn't find anyone to be her partner. The other pupils would not tag her in Flying Dutchman. She tended to argue with some of the other members of the class.
- March 10 E-5 stated, "I'm pooped" after racing to the tree and back. Her running seems to be improving. She tried very hard to move swiftly in the relays. She was very excited and enthusiastic during the class activities. She had to remove her shoes for the running activities because she could not keep them on.
- March 15 E-5 was absent from school.
- March 17 E-5 was absent from school.
- March 22 E-5 was absent from school.
- March 24-29 E-5 was absent from school
- March 31 E-5 had difficulty with hitting the ball with the paddle. She said that her brother broke her paddle but that her mother was going to get her another one. She used one of the other pupil's paddles during the activities.
- April 2 E-5 had to remove her shoes for the running activities because they kept coming off. The other pupils laughed at her because of this but she just laughed with them. She didn't appear to be as awkward and clumsy without her shoes.
- April 5 E-5 was very enthusiastic and excited over the activities. She seemed to try very hard to do well in them. The other pupils seem to accept her more and she tends to be less of a loner.
- April 7 E-5 fell down while balancing on the right leg. She continued to have trouble with the Rhythm game and missed every time her number was called. She was awkward in performing the crab walk.
- April 9 E-5 could not get her knees straight in the elephant walk.
- April 12 E-5 had trouble with coordination in skipping. She didn't seem able to judge the ball in catching.

She stepped forward on the wrong foot when tossing the ball. E-5 failed to follow directions in the line relay. She could not coordinate in the Forward and Backward Relay.

## April 14 No comment.

- April 23 E-5 had trouble in coordinating and maintaining her balance while walking backward. She wanted to be the leader for Red Light, Green Light. She spoke very softly and had to be instructed to speak more loudly so that the other pupils could hear.
- April 28 E-5 called the attention of the teacher to her new dress and new tennis shoes. Her underarm pattern of throwing was awkward and she stepped forward on the wrong foot in executing the throw.
- April 30 E-5 performed enthusiastically in the activities. She was confident and seemed at ease with the rest of the pupils.

## Characteristics at End of Study

E-5's chronological age at the time the Stanford Achievement Test was readministered was 9-7. She received an average reading score of 2.6 and an average arithmetic score of 3.2 on the test at the end of the study. She received a Brace Scale score of 58 on the post-test. Her improvement on the motor ability test was 15 points, on the reading test .1 and on the arithmetic test .8.

E-5 was not accepted by the other pupils in the group at the beginning of the study. However, toward the end of the sessions she had become less of a loner and participated enthusiastically in the group activities. The other pupils seemed to accept her more and she was no longer laughed at or excluded from their conversations.

E-5 developed self-confidence and tended to become overt in her behavior. She was never a discipline problem in class and seemed very eager to learn and to participate. Her attendance during the period of activities was poor. The parents didn't seem to be concerned over her absences from school.

E-5's appearance seemed to have improved over the period of time in which the investigator was working with the pupils. She frequently had new clothes and new shoes. She was very proud of them and excited when the other members of the class complimented her.

E-5 became less awkward and clumsy in her movement patterns toward the end of the study. Her general motor coordination, however, still needed to be improved. She seemed to have improved slightly in over-all strength, balance and agility in comparison with her performance level on these factors at the beginning of the study. Her difficulty in understanding directions and instructions remained a problem.

## CASE STUDY OF E-6

## Introductory Statement

E-6 is a nine year old whose appearance is characterized by a lack of cleanliness and untidy clothing. She also appears quite nervous and restless.

Her immediate family consists of a mother who is a district Girl Scout supervisor, two older brothers, and a younger sister. The mother and father are apparently divorced. The family relationship is fair, according to the teacher. She further indicated that the mother is frequently away and has little time for the children.

E-6 is in general good health with the exception of having seasonal conjunctivitis for which she receives medication. Her attendance is fair with frequent but not excessive absenteeism. She is generally enthusiastic and happy.

#### Summary of School Records

E-6 has an Intelligence Quotient of 97 and a Mental Age of 8-10 according to the results of the Otis Quick Scoring Mental Ability Test. Her chronological age at the time the Stanford Achievement Test was administered was 9-3. Test scores on the Basic Reader's Test for the first grade are unavailable and for the second grade low average and very high. E-6 received a scale score of 45 on the Brace Scale of Motor Ability Tests.

E-6 received an average reading score of 3.8 and an average arithmetic score of 3.3 on the Stanford Achievement Test.

According to teacher evaluation, E-6 is underachieving in the areas of reading, arithmetic, handwriting, language, and spelling and is average in relation to the class. The teacher further indicates that she is not motivated to learn and does not participate in class activities.

E-6's second grade teacher made the following observation: "Complained of frequent headaches. Allergy makes eyelids red." The present teacher states that E-6 "lives with working mother. Complains of frequent headaches and excessive use of restroom observed. Her eyelids are red all the time because of allergy."

## Characteristics at Beginning of Study

E-6 appeared very enthusiastic and happy about being chosen to participate in the group. She responded well to all directions and demonstrations. She usually met the investigator at the door asking if she could be first in performing the activities for the day. She was very self-confident, tending, at times, to be overconfident, in performing activities.

E-6 seemed to have a slight speech impediment; however, it was not very noticeable and she appeared to be unaware of it. She was verbal about everything and wanted to please.

The allergy did not seem to bother her activities. Her performance on the Brace Scale was generally good. She seemed to have some difficulty in remembering her right from her left when the directions indicated such. Oftentimes, directions had to be repeated to her.

## Observer's Log for E-6 During the Period of Activities\_

Feb. 1 E-6 was enthusiastic and happy. She was eager and verbal concerning everything. She seems well-liked by the other pupils. She was vivacious and confident. Her general coordination is good.

Feb. 3 E-6 was quite eager to perform. She was very talkative and enthusiastic. Her general coordination is very good. She seems to have a great deal of natural athletic ability.

- Feb. 5 E-6 and E-2 were partners in jumping rope. Their performance was good. E-6 was disappointed when class was over.
- Feb. 8 E-6's performance of all activities was excellent.
- Feb. 10 E-6 was very fast in the bean bag relay. She appears to be quite strong and flexible. She was reluctant to go back to the classroom.
- Feb. 12 No comment.
- Feb. 15 No comment.
- Feb. 19 E-6's performance in the activities was controlled, efficient and excellent. She was very anxious to please the teacher.
- Feb. 22 E-6 was very talkative and enthusiastic. She was alert in her responses to instructions and directions. She tended to demand attention from the teacher.
- Feb. 24 E-6 performed the Rhythm sequence efficiently. She was enthusiastic and eager. It was difficult for her to remain still when not performing an activity.
- Feb. 26 E-6 wanted to march. She stated that she had a hurt leg but this did not seem to restrict her participation.
- March 1 E-6 was talkative and enthusiastic as usual. She stated that she did push-ups every night with her brother and that they"were simple." In reference to the paddles she asked, "What if they break?"
- March 3 E-6 was absent from school.
- March 5 E-6 was absent from school.
- March 8 E-6 tended to out-run and pull her partner along in Flying Dutchman. She was very competitive and excited.
- March 10 E-6 wanted to change teams after the second relay because her team was not winning.
- March 15 No comment.
- March 17 E-6 was very aggressive when she was the chaser in the Hang-On Tag game. She stated that she was

- March 22 E-6 depicted a rhinoceros in her movement study. She was confident and at ease when before the group.
- March 24 E-6 was absent from school.
- March 26 E-6 appeared somewhat nervous in depicting an animal. In the other movement activities she was relaxed but tended to imitate other pupils and to "ham" up her executions.
- March 29 E-6 had trouble maintaining her balance when walking with her eyes closed. She appeared nervous while balancing the ball on the paddle.
- March 31 No comment
- April 2 E-6 stated, following the race, "I told you I'd beat the rest of them." E-6 seemed to put forth all of her effort in the activities.
- April 5 No comment.
- April 7 No comment.
- April 9 E-6 dribbled the playground ball very well. She said that she played basketball with her brothers.
- April 12 E-6 performed well in tossing and catching the tennis ball. Her footwork while tossing was coordinated and controlled. E-6 complained of having a headache.
- April 14 No comment.
- April 23 E-6 had no difficulty in performing the activities. The other pupils seem to imitate her movements and watch her performance.
- April 28 E-6 threw the playground ball in an overarm pattern. Her execution of the throw was good and efficient.
- April 30 E-6 remained after class and begged the teacher to continue to meet with them. She had to be urged to return to the classroom.

## Characteristics at End of Study

E-6's chronological age when the Stanford Achievement Test was readministered was 9-8. Her score on the test of reading was 5.0 and on arithmetic 4.3. The differences in her pre- and post-test scores were 1.2 in reading and 1.0 in arithmetic. She received a scale score of 72 on the readministration of the Brace Scale. The difference in the motor ability tests was 26 points.

E-6 maintained her enthusiasm and eagerness for participation throughout the period of activities. She never lacked in self-confidence and entered into all the activities with assurance and ease of performance. She seemed to possess a great deal of natural athletic ability. Her allergy fluctuated according to the climatic changes in the weather.

E-6 rarely complained of headaches and never asked to be excused from class. Her attendance, according to the classroom teacher, had improved.

E-6 usually lingered after the class sessions ended and was reluctant to go back to the classroom. Her interests seemed geared toward physical activity.

## CASE STUDY OF E-7

## Introductory Statement

E-7 is an eight year old whose appearance is characterized by her smallness in size and her shyness. She is always neatly dressed.

Her immediate family consists of a father who is employed by the telephone company and a mother who is unemployed. The teacher did not know what kind of family relation-

# ship existed in the home.

E-7 is in good health and her school attendance is excellent. She is generally not enthusiastic and happy according to the teacher.

#### Summary of School Records

E-7 has an Intelligence Quotient of 101 and a Mental Age of 9-0 according to results of the Otis Quick Scoring Mental Ability Test. Her chronological age at the time the Stanford Achievement Test was administered was 8-12. Test scores on the Basic Reader's Test were not available as she entered school in Huntsville this year. E-7 received a scale score of 58 on the Brace Scale of Motor Ability Tests. She is underachieving, according to teacher evaluation, in the area of handwriting.

E-7 received an average reading score of 3.9 and an average arithmetic score of 3.6 on the Stanford Achievement Test.

According to the teacher, E-7 is not a discipline problem in class, she is accepted by her peers, and she participates in class activities. However, she seems to have a fine coordination problem.

## Characteristics at Beginning of Study

E-7 appeared very quiet and shy. She cooperated and responded well to all directions and demonstrations; however, she tended to be self-consious and hurried her performances in order to get them over with. E-7 remained nonverbal in her reactions to activities and explanations. She rarely conversed with any of the other pupils and didn't seem to have any close friends. Her coordination, agility and balance were good; however, she was lacking somewhat in strength as revealed in the Brace Scale of Tests.

# Observer's Log for E-7 During the Period of Activities

- Feb. 1 E-7 was very quiet and shy. She seemed selfconsious when the other pupils were watching her performances. She remained non-verbal in her relationship with the other members of the group.
- Feb. 3 E-7 remained quiet and non-verbal. Her general coordination is good and she performed well in all the activities.
- Feb. 5 E-7's performance in the activities was good. She was non-verbal and shy.
- Feb. 8 E-7 performed well in the short potato race.
- Feb. 10 E-7's performance of the activities was good. She seemed less shy and talked more freely with the other members of the group.
- Feb. 12 No comment.
- Feb. 15 No comment.
- Feb. 19 E-7 appeared less shy and quiet. She was enthusiastic and excited during the class activities.
- Feb. 22 E-7 had a little difficulty in jumping with her feet parallel. She appeared confident and alert to directions.
- Feb. 24 No comment.
- Feb. 26 E-7 seemed less shy and was talkative with other members of the group. She stated, "That's easy." (To rub the stomach and pat the head simultan-eously).
- March 1 E-7 enjoyed Red Light, Green Light and was very aggressive in "sneaking" up on the leader.

- March 3 E-7 stated, "It's kinda hard to balance the ball." Her eye-hand coordination was good when balancing the ball on the paddle.
- March 5 E-7 seemed to have trouble balancing the ball on the paddle with her left hand. She appeared confident and verbal with the other pupils.
- March 8 E-7 was tagged several times in Flying Dutchman and got tired of running to the base and back. She stated that it was hard to stand on her toes.
- March 10 No comment.
- March 15 E-7 had a problem in balancing the ball with her left hand.
- March 17 E-7 was not aggressive and did not use her head in the Hang-On Tag game. She was enthusiastic and eager in performing the activities. She tended to take an interest and show conern for E-4.
- March 22 E-7's eye-hand coordination was good in balancing the ball on the paddle.
- March 24 E-7 appeared shy while in front of the group and tended to rush her study.
- March 26 E-7 was absent from school.
- March 29 E-7 walked fairly well with her eyes closed. She lacked abdominal strength in maintaining a straight back in the crab walk.
- March 31 No comment.

April 2 No comment.

- April 5 E-7 and E-4 seemed to have developed a close friendship. They tried to stay together during the activities. E-7 appeared confident in performing the activities.
- April 7 E-7 seemed confident and sure of herself in her performance of the movements.
- April 9 E-7 performed well in dribbling the ball.
- April 12 E-7 had a little difficulty in tossing and catching the tennis ball.

- April 14 E-7 couldn't coordinate her skipping and clapping simultaneously. Her eye-hand coordination was good.
- April 23 E-7 continued to gain in self-confidence and assertiveness. She was enthusiastic and excited during the class session. She seemed to have a little difficulty in walking backward.
- April 28 E-7 had to be reprimanded for talking and giggling while instructions and demonstrations were being given. Her underarm throwing pattern was good.

April 30 No comment.

#### Characteristics at End of Study

E-7's chronological age when the Stanford Achievement Test was readministered was 9-5. Her average reading score was 4.7 and her average arithmetic score was 4.3 on the retest. The difference in the pre- and post-test scores was .8 in reading and .5 in arithmetic. She received a scale score of 61 on the readministration of the Brace Scale. The difference in the pre- and post-scores on the motor ability test was 3 points.

E-7 appeared less quiet and shy at the end of the study. She had gained self-confidence in her relationship with the other pupils. She had developed a close friendship with E-4. E-7 tended to be enthusiastic during the class sessions and became verbal and out-going in her reactions toward the end of the study. Her strength did not improve significantly over the period of time.

## CASE STUDY OF E-8

## Introductory Statement

E-8 is a nine year old whose appearance is

characterized by tallness, a slender build, a perpetual smile and long pigtails. Her clothes, usually, were too short for her.

Her immediate family consists of a father who is a plumber, a mother who is a beauty parlor operator, two brothers, and a sister. According to the teacher, the family relationship is average.

E-8 is in good health and her school attendance is excellent. She is generally enthusiastic and happy. Summary of School Records

E-8 has an Intelligence Quotient of 101 and a Mental Age of 9-2 according to results on the Otis Quick Scoring Mental Ability Test. Her chronological age at the time the Stanford Achievement Test was administered was 9-3. Test scores on the Basic Reader's Test for the second grade were middle average and very high. E-8 received a scale score of 52 on the Brace Scale of Motor Ability Tests. According to teacher evaluation, she is underachieving in the areas of reading, arithmetic, handwriting, language and spelling.

E-8 received an average reading score of 3.3 and an average arithmetic score of 2.7 on the Stanford Achievement Test.

E-8's second grade teacher stated that she was "Well adjusted. Good worker, but slow to learn." Her present teacher states that she has "Poor work habits, forming letters cramped and small. Needs participation in class activities."

The teacher further indicated that E-8 was not a discipline problem in class, she was accepted by her peers, she was motivated to learn, and participated in class activities. She seemed, however, to have a fine coordination problem. <u>Characteristics at Beginning of Study</u>

E-8 appeared very shy and self-conscious of her height and, as a result, tended to slump when sitting or walking. She remained non-verbal in her reactions to activities and responded fairly well to directions and demonstrations. It was necessary at times to coax her to try a stunt as she tended to have the "I can't do it" attitude.

E-8 was self-conscious during her performances on the Brace Tests and tended to rush her executions of the stunts. She would hurry back to her chair which was usually in the back of the classroom.

E-8 was awkward and clumsy in all movement activities such as running, skipping, and hopping. She didn't seem to be interested in any of the activities. She was restless and fidgety during written tests, careless and hurried in reading and answering the questions.

# <u>Observer's Log for E-8</u> During the Period of Activities

Feb. 1 E-8 appeared overly self-conscious of her height and as a result tended to slump. Her attitude was one of "I can't do it." She was awkward and clumsy in her movements.

Feb. 3 E-8 was somewhat non verbal. She was self-conscious and shy. She had to be coaxed into performing some of the activities because she would say, "I can't do it."

- Feb. 5 E-8 had difficulty in performing the jumping jacks. She was awkward and clumsy.
- Feb. 8 E-8 was very slow in the short potato race and seemed to have difficulty in keeping her balance. She had difficulty in jumping rope. She seems reluctant in letting her feet leave the ground.
- Feb. 10 E-8 seemed enthusiastic and eager. She appeared self-confident in performing the activities. She ran very slowly taking long strides in the bean bag relay.
- Feb. 12 E-8 was awkward in her performance of posture tag. She appeared enthusiastic but unhurried in the relay. She seemed less self-conscious than usual.
- Feb. 15 No comment.
- Feb. 19 E-8 seemed to enjoy the activities and was more at ease with the teacher. She was awkward and clumsy in the Posture Relay and Squat Tag game.
- Feb. 22 E-8 seemed to try harder in running and appeared to enjoy running.
- Feb. 24 E-8 appeared sullen and uncooperative. She didn't participate in some of the activities. By the end of the period she seemed less sullen and enjoyed the Rhythm game.
- Feb. 26 E-8 had difficulty in balancing on one leg without moving about. She was awkward in performing the duck walk and the crab walk. She appeared somewhat sullen and unresponsive. E-8 didn't want to do a few of the activities. She stated, "Girls aren't supposed to have arm muscles!" She complained of her legs hurting in the duck walk. She wanted to play gossip (a quiet game that they play in the classroom).
- March 1 E-8 was very verbal. She made the following statements: "Watch ! I can jump higher than you." She appeared to try harder to jump than before. She was somewhat argumentative with E-2 in Red Light Green Light. In reference to the paddles she wanted to know if their brothers and sisters could play with them. She said "I'll hide mine."

- March 3 E-8 was absent from school.
- March 5 E-8 wanted to do the crab walk. She was eager and enthusiastic. She wanted to play gossip.
- March 8 E-8 wanted to know if she was balancing right on her right leg. She seemed restless and fidgety. She ran slowly in the Flying Dutchman game so that she and her partner could be 'It'. She accused pupils of failing to hold hands when they were running.
- March 10 E-8 was somewhat lazy in the relays. She seemed to lack enthusiasm.
- March 15 E-8 had difficulty in balancing the ball on the paddle while holding the paddle in the left hand and walking.
- March 17 E-8 didn't respond to directions and they had to be repeated for her. She was very talkative with E-4 and didn't listen to instructions. She tended to prolong the chase when she was the runner in Hang-On Tag by running beyond the boundaries of the playing area.
- March 22 No comment.
- March 24 E-8 was embarrassed and had to be coaxed into presenting a movement study. She depicted a cat. Her movements were unimaginative and restrained.
- March 26 E-8 was very nervous in doing the movement activities. Her movements were small and restrained. She tended to imitate the movements of others.
- March 29 E-8 walked fairly well with her eyes closed. She didn't keep her back straight in the crab walk. She giggled and talked a great deal during class and did not hear some of the instructions.
- March 31 E-8 continued to miss instructions because of talking with other pupils. She seems to be gaining confidence in herself.
- April 2 E-8 appeared enthusiastic and eager in running. Her posture seemed improved and she didn't seem to slump as much as usual.
- April 5 E-8 performed well and less awkwardly in the locomotor movements. She was at ease and self-confident.

- April 7 E-8 had to be reprimanded for talking and failing to listen to instructions. She was sullen and uncooperative the remainder of the period.
- April 9 E-8 appeared to be in good spirits today. She seemed to enjoy the class activities. She was careful about listening to instructions. After class she asked the teacher "Was I good today?" She wanted very much to please. She had a little difficulty in dribbling the playground ball.
- April 12 E-8 had little difficulty in tossing and catching activities.
- April 14 E-8 lacks control in dribbling the ball. She stops after each bounce of the ball. Her eye-hand coordination in the Jacks game was good.
- April 23 E-8 seemed to be pouting and sullen at the beginning of the period; however, toward the end of the period she appeared to be happy and enjoying herself. She didn't have any difficulty in walking backward.
- April 28 E-8 was rather awkward in throwing the playground ball. She seemed enthusiastic and happy.
- April 30 E-8 appeared to pout when the teacher said that this was the last day of class activities. She wanted to run around the block "like the boys do."

## Characteristics at End of Study

E-8's chronological age at the time the Stanford Achievement Test was readministered was 9-8. She received a reading score of 3.1 and an average arithmetic score of 3.9 on the retest. The improvement in reading was -.2 and in arithmetic 1.2. She received a scale score of 58 on the readministration of the Brace Scale. The difference in the pre- and post-motor ability scores was 6 points.

E-8 seemed less shy and self-conscious of her height at the end of the study and did not slump as she did at the beginning of the study. She developed enthusiasm and eagerness in participating in the activities as contrasted with an attitude of laziness at the beginning of the study. She tended to become more competitive and interested in the activities. E-8 appeared less awkward and clumsy in the movement patterns of running, skipping and hopping. She seemed to enjoy the running activities.

E-8 tended to become sullen when reprimanded but soon learned to accept this with a positive attitude. She was verbal and overt in responses to activities toward the end of the study. She had developed a sense of humor which labeled her as the clown of the group. Her relationship with the other pupils was good. She developed a close friendship with E-3 and the two of them tended, at times, to disrupt class with their "cutting up" and giggling.

E-8 appeared uninterested in taking the Stanford Achievement Test at the end of the study and rushed through the test. She usually finished in ten minutes and would sit and make faces at the other pupils or fidget in her chair.

# Vita was removed during scanning