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THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

THE EFFECT OF HOME LEARNING KITS ON THE READING READINESS OF DISADVANTAGED KINDERGARTEN CHILDREN

A DISSERTATION

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MARI GUMM SCOTT

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THE EFFECT OF HOME LEARNING KITS ON THE
READING READINESS OF DISADVANTAGED
KINDERGARTEN CHILDREN

APPROVED BY

DISSERTATION COMMITTEE

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CHAPTER I

THE PROBLEM AND DEFINITION OF TERMS USED

INTRODUCTION

It is assumed that pre-school children in our culture learn normally when environmental opportunity presents itself at the proper time, and when all the basic perceptual systems are intact. However, an alarming number of children enter kindergarten each year who are destined to become educational casualties because their development has been thwarted by a disadvantaged environment. These children have not had the opportunity to assimilate the normal learning indigenous to the middle-class public school curriculum.

During the past two decades massive governmental programs have been initiated for the express purpose of ameliorating the educational deficit of the disadvantaged pre-school child. Many of these Federally Funded programs such as "Head-Start" have been designed to provide the low-income disadvantaged child with the social and cognitive experiences similar to those enjoyed by his middle-class peer.

A review of the literature related to reading

readiness, which will be summarized in chapter II, revealed a wide number of Early Childhood Models designed to facilitate learning readiness. However, the literature revealed no kindergarten model that provided disadvantaged kindergarten children with supportive, sequenced didactic materials to work with in the home, the type of materials normally enjoyed by the middle-class child. The lack of a supportive home readiness follow-through program has forced kindergarten teachers into setting instructional priorities which frequently result in failure to meet the readiness needs of many children. This observation is supported by Bereiter and Engelmann who report that a normal kindergarten program comprises only about 500 hours of time. A meager time allotment indeed in which to overcome disadvantages that accumulate over some 20,000 hours (the approximate number of hours a child is awake between the age of one and the time he enters kindergarten).[1]

I. THE STATEMENT OF THE PROBLEM

The purpose of this investigation was to determine if a significant difference in reading readiness test results would occur when two groups of disadvantaged

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[1]Carl Bereiter and Siegfried Engelmann, Teaching Disadvantaged Children in the Preschool (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1966), p. 9.

kindergarten children were compared. One group was provided with Home Learning Kits designed to help reduce the cumulative deficit of disadvantaged kindergarten children, and the other group was not. Both groups otherwise received the same treatment.

Hypothesis: A significant difference in reading readiness would occur when an experimental group is compared with a control group, with the experimental group outperforming the control group.

Importance of the study. For years educational theorists, administrators, and teachers have been concerned with compensatory education. There is general agreement that early intervention is desirable. Bloom states that evidence so far suggests that marked changes in the environment in the early years can produce greater changes in intelligence than will equally marked changes in the environment at later periods of development. He further states that steps must be taken to ameliorate environmental deprivation as early in the individual's development as education and other social forces can be utilized.[2] Hunt suggests combating inferior environmental conditions by altering, for part of their waking

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[2]Benjamin S. Bloom, Stability and Change in Human Characteristics, (New York: John Wiley and Sons, 1964), p. 193.

hours, the conditions under which children develop.[3] The question is, "How?"

This study is attempting to develop a tool in the form of a learning kit which will assist in altering the environment during the first public school experience. The Kindergarten Home Learning Kit is a set of eight sequential kits. Each kit contains activities to facilitate learning the cognitive, language, and fine motor skills that most middle-class children assimilate through interaction with their environment. The tasks are sequenced, beginning with the very simple and progressing to the most complex. Each kit contains instructions to the parents on the use of the materials. The instruction sheet for the parents to read is written at no more than a fourth grade reading level as measured by the Gunning-Fog Index of Readability. In addition the parents were given more detailed instructions at a meeting which was held with them each time a new Kindergarten Home Learning Kit was given to the children. The materials were planned so that the child would receive some benefits with no parental assistance. Most of the activities were self-correcting so that the child could benefit from independent play.

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[3]J. McVicker Hunt, "The Implications of Changing Ideas on How Children Develop Intellectually," Children, 11:83-91, 1964.

Objectives of the Study. The main objective of this study was to devise a tool which would enhance the disadvantaged kindergarten child's readiness for reading.

The specific objective was to determine the effects of the Kindergarten Home Learning Kit as measured by reading readiness achievement test scores.

II. STATEMENT OF THE NULL HYPOTHESES

The specific null hypotheses tested in this study were stated as follows:

1. There are no significant differences in the vocabulary scores between the disadvantaged children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home Learning Kits.
2. There are no significant differences in the listening comprehension scores between the disadvantaged children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home Learning Kits.
3. There are no significant differences in the visual perceptual matching scores between the disadvantaged children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home

Learning Kits.

4. There are no significant differences in the alphabet recognition scores between the disadvantaged children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home Learning Kits.
5. There are no significant differences in the numerical and quantitative reasoning scores between the disadvantaged children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home Learning Kits.
6. There are no significant differences in the copying scores between the disadvantaged children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home Learning Kits.

III. DEFINITION OF TERMS USED

1. Reading Readiness -- Specific developmental skills which are acquired through the child's interaction with the environment. Acquisition of these skills begins at birth and is a continuous and ongoing process. The skills are listed as follows:
   1) Language skills, which include labeling or

oral vocabulary development, receptive language, and expressive language. Receptive language is the ability to receive and comprehend the language of others. Expressive language is the ability to express oneself in meaningful and comprehendible units of speech.

2) Visual skills, which include visual perception, visual discrimination, visual memory, and visual association.

3) Auditory skills, which include auditory perception, auditory discrimination, auditory memory, auditory association, rhyming skill, and blending skill.

4) Sound-symbol matching.

5) Cognitive skills, which include laterality and directionality, temporal and spacial sequencing, classification, seriation, physical knowledge, social knowledge, logical knowledge, and representation.

2. Perceptual-Motor Development -- The abilities which enable a child to do with his muscles what he intends and desires to do.

3. Disadvantaged Child -- When using the middle-class oriented public schools as a point of reference: any child who for any reason falls short of the school's

imposed standard of knowledge and ability can be considered educationally disadvantaged.

4. Kindergarten Home Learning Kit -- A zippered canvas flight bag filled every three weeks with a new set of learning toys and manipulative materials.

IV. AN ANALYSIS OF THE RATIONALE OF THE LEARNING KIT

The materials packaged in the learning kits were developed to give the disadvantaged kindergarten child readiness experiences in the areas in which they are frequently deficient. Experiences which have usually been available to the middle-class child all during his preschool years. After a comprehensive review of the relevant research, Spicker found that the disadvantaged child's major areas of deficit were general language ability, visual and auditory imagery and sequential memory, and fine motor control.[4] These skills are crucial to mental manipulation, abstraction, and an understanding of what is not present. Future success in reading is dependent upon these skills.

The preceding statements indicate the specific deficient areas of the disadvantaged child. He frequently begins school one to three years behind his

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[4]Howard K. Spicker, "Intellectual Development in Early Childhood Education," Exceptional Children, 37:629-640, May, 1971.

middle-class peers; and unless there is effective intervention, the deficit gap becomes cumulative and widens as he progresses through school. The learning kit was developed to help parents facilitate intervention before formal reading instruction begins. Many of the materials in the learning kit would be suitable for the child of three or four, which actually would be an optimal age, since early compensatory intervention results in greater cognitive gains. However, since kindergarten is the first public school experience for children, the Kindergarten Home Learning Kit was developed as a suitable vehicle for providing disadvantaged five-year-olds with additional learning experiences.

It is the contention of the writer that most parents sincerely want their children to succeed in school. But, because of difficult home conditions, a frequent shortage of money, and lack of guidance, parents do not know what to do. Their own past school experiences have made them feel inadequate in matters of education. Toys and materials that foster learning are often prohibitive in cost, thus preventing many disadvantaged children from receiving the benefits that are derived from such toys. Even when money is not a factor, many parents lack the ingenuity to provide toys that are suitable at the various developmental stages.

The Kindergarten Home Learning Kit was therefore

designed to provide a suitable sequence of toys and materials in an effort to partially compensate for learning-play experiences that did not occur at the optimal time.

The child was given the kit at school the day the parents had their instructional meeting. He kept it at home for three weeks. He then brought it back to school. It was emptied of the old materials and refilled with new materials.

The Kindergarten Home Learning Kit itself was a zippered canvas flight bag, sixteen inches long, seven inches wide, and nine inches high. It was large enough to hold the necessary materials, yet small enough to be carried and manipulated by the five-year-old child.

There were ten different tasks in each kit. Each task could be used in several different ways. The various activities included: 1) nursery rhyme books and dittoed rhyming sheets to develop rhyming skills; 2) lotto type games to develop labeling, classifying, and association; 3) numerous activities involving both three and two dimensional shapes for visual and tactile perception; 4) magnetic cards to match for rhyming words, opposites, likenesses and differences; 5) boxes of shapes to insert and match; 6) activities and toys at different difficulty levels to develop seriation; 7) pictures to sequence; 8) block and pegboard patterns to copy from visual

inspection and memory; 9) a new puzzle in each kit for fine motor manipulation and visual perception; 10) letters that were for a pegboard, letters that were puzzles, magnetic letters, and plastic letters to match and to use in copying words; 11) letters on clothespins that were to be matched and affixed to a wheel; 12) pictures to trace with onion-skin for fine motor control; 13) the child's name to model with play-dough and trace through acetate and onion-skin; 14) paper dolls for body parts; 15) body parts drawn on contact paper to be cut out and placed on a body outline; 16) lacing cards; 17) color form kits for expressive language and dramatic play; 18) templates of shapes and objects to aid memory of form and fine motor development; 19) sound cylinders made from plastic Easter eggs to match for auditory discrimination; and other related activities all designed to remediate and reinforce. Each kit contained as part of its permanent equipment, scissors, new crayons, play-dough, a small chalkboard and chalk, pencil, paper, and a small magnetic board.

V. DELIMITATIONS OF THE STUDY

Several delimitations must be considered when examining the data contained in this study.

1. The study was limited to fifty disadvantaged kindergarten students -- twenty-five who

received treatment and twenty-five who served as controls.

2. The study was limited to the Sapulpa Public Schools, District I-33, Sapulpa, Oklahoma. The Sapulpa system in 1972-1973 had 4,200 students, 375 of whom were in kindergarten. Thirty-three percent of the total enrollment came from economically deprived areas.
3. The Metropolitan Readiness Tests were used to obtain pre-test and post-test data for the investigation. By comparing the data derived from the two groups, final evaluations were made. The findings can be considered valid only in Sapulpa, Oklahoma, or communities with a comparable school population.
4. No account was attempted to determine the amount of parental or sibling assistance given to each of the children using the kits.
5. Logistically, these readiness skills should already have been introduced and acquired. Therefore, intervention at the kindergarten level when reading skills are being presented simultaneously would not result in optimal effectiveness.

VI. ORGANIZATION OF THE DISSERTATION

A review of the literature pertinent to this study will be considered in chapter II. Also included will be related literature concerning the kindergarten curriculum as it relates to reading.

The experimental design of this study with the techniques and procedures employed in gathering the data are presented in chapter III.

Chapter IV contains the results of data gathering and analysis. Also included is a certain amount of interpretation.

The study concludes with chapter V which contains a study summary, the conclusions, and recommendations.

The Appendices include a description of the individual kits, and the individual test scores of the children involved in the study.

CHAPTER II

REVIEW OF THE LITERATURE

The purpose of this study as was stated in chapter I, was to determine whether there were significant differences in test results between two groups of disadvantaged kindergarten children. One group was provided with Kindergarten Home Learning Kits and the other was not. Both groups received the same treatment at school.

The literature related to the reading readiness of the disadvantaged child is profuse. For the purposes of this study, the review has been limited to areas considered relevant.

RELATED RESEARCH STUDIES

The related research studies reviewed consist of the following areas: Prerequisites to Reading, A Description of the Disadvantaged Pre-school Child, Educational Needs of the Disadvantaged Child, Parental Involvement, and The Use of Toys as Learning Materials.

I. PREREQUISITES TO READING

There is no term in educational literature as elusive as the term "reading readiness." Its definitions

run a gamut from general platitudes to specific skills. Chall found that an authority's view on readiness was closely related to his definition of reading and to his "method." She also found that those with a complex definition tended to have a larger conception of readiness and advocated a later start.[1] Those who defined beginning reading in terms of learning to decode tended to favor an earlier start and they had a more specific conception of readiness.

Fry also gave a dual definition. He stated that "reading readiness" is a confusing term because it often refers to two different ideas. It can refer to materials and methods of teaching designed to "get the child ready," or it can refer to a developmental state which should be attained before formal reading instruction is begun.[2]

Proponents of both schools of thought support their views with logic and research.

A developmental point of view was taken by Smith who advocates the broad viewpoint of developmental stages. She stated that intelligence, physical fitness, cultural background, emotional development, language ability, home and community experience, social experience, kindergarten

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[1]Jeanne Chall, Learning to Read--The Great Debate (New York: McGraw-Hill Book Company, 1967), p. 59.

[2]Edward Fry, Reading Instruction for Classroom and Clinic (New York: McGraw-Hill Book Company, 1972), p. 270.

attendance, and informal reading activities, are all factors that contribute to maturation.[3] Harris defined "reading readiness" as a "state of general maturity which, when reached, allows a child to read without excessive difficulty." He felt that it is a composite of age, sex, general intelligence, visual and auditory perception, physical health and maturity, freedom from directional confusion, background of experience, comprehension, and use of oral English, emotional and social adjustment, and reading interest.[4] Hall contended that if "kindergarten reading becomes a primary focus, other values may be overlooked, such as providing an environment conducive to building background experience, creating interest in reading, promoting language development, and identifying children with possible learning problems." He felt that we do not yet have the best tools for evaluations of readiness and programs of instruction in pre-reading skills.[5]

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[3]Nila Banton Smith, Reading Instruction For Today's Children (Englewood Cliffs, New Jersey: Prentice-Hall, Incorporated, 1963), p. 465.

[4]Albert J. Harris, How To Increase Reading Ability (New York: David McKay Company, Inc., 1970), p. 21.

[5]Wilson Hall, Reading and the Elementary School Child (New York: Van Nostrand Reinhold Company, 1972), pp. 114-118.

Cohen stated that we need to distinguish between "learning readiness" which is more developmental and "reading readiness" which should be specific. He contended that many disadvantaged children are so perceptually and cognitively deprived, so unable to fixate on an auditory or visual stimulus, so poor in perceptual development, so devoid of oral language, sequential thinking and mastery of basic linguistic patterns, that they are nowhere near ready for a program of "reading readiness." Their need is for a "learning readiness" curriculum.[6]

Edwards hypothesized that when the prerequisites to success in beginning reading have not taken place by grade one, beginning reading proficiency may be severely hampered or not take place at all. He listed the necessary prerequisites as an adequate background of experience, concepts and general information, visual and auditory discrimination ability, oral language facility, physical and emotional intactness, reasoning ability, interest in learning to read, and general adequate intelligence.[7]

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[6]S. Alan Cohen, Teach Them All To Read (New York: Random House, 1969), pp. 126-130.

[7]Thomas J. Edwards, "Teaching Reading: A Critique," The Disabled Reader, John Money, Editor (Baltimore, Maryland: The Johns Hopkins Press, 1966), p. 359.

De Hirsh, Jansky, and Langford were more specific in their description of "reading readiness." They described specific skills absent in failing readers and present in superior readers. The skills they discussed are more specific than those listed by some of the other authorities. Among the children who ultimately were reading failures, they found poor auditory discrimination, a limited recognition vocabulary, gaps in language comprehension, poor expressive language, inability to recall words for objects they were attempting to describe, and problems with visual perception. The children who became superior readers displayed advanced linguistic ability, and scored high on reading readiness tests. In addition, they had the advantage of being older in age.[8]

Cohen takes the position that if we waited for the child to be developmentally ready for reading, that is to attain maximal emotional and social maturity, to have had adequate environmental experiences, and to be perceptually ready, most children in many slum areas would never be ready at all. He further stated that when the home does not teach "reading readiness" incidentally, then the school must teach it purposely.[9]

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[8]Katrina de Hirsh, Jeannette Jefferson Jansky, and William S. Langford, Predicting Reading Failure (New York: Harper and Row Publishers, 1966), pp. 47-51.

[9]Cohen, op. cit., p. 11.

This position was supported by Bereiter and Engelmann, who stated that disadvantaged children are already seriously behind other children by age three or four, and if they do not somehow "catch up" they will enter elementary school with handicaps that will spell failure for a large percentage of them.[10]

II. A DESCRIPTION OF THE DISADVANTAGED PRE-SCHOOL CHILD

The disadvantaged child is one who is not prepared to cope with the middle-class public school curriculum. The reasons for a child's lack of readiness to meet the demands of the public school curriculum are varied. However, a large percentage of these children are rendered disadvantaged due to poverty. Their homes are generally overcrowded, restrictive of movement and privacy, understimulating in language, and lack adequate play equipment. Painter stated that children from this type of home frequently enter kindergarten or first grade without the prerequisites or readiness for academic learning. Such a handicap often leads to their placement in classes for the retarded or, if they remain in regular classes, a cumulative deficit occurs which is almost impossible to

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[10]Carl Bereiter and Siegfried Engelmann, Teaching Disadvantaged Children in the Preschool (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1966), p. 19.

overcome.[11]

Kallan completely described the disadvantaged child as follows:

> a) He is physical and visual rather than aural; b) He is content-centered rather than form-centered; c) He is externally oriented rather than introspective; d) He is problem-centered rather than abstract-centered; e) He is inductive rather than deductive; f) He is spatial rather than temporal.
>
> One out of every three children in our school system is classed as "culturally deprived," "disadvantaged," or as a "retarded reader." A retarded reader is generally regarded as one who is reading a year or more below grade placement. The "culturally deprived" child is not culturally deprived. Rather he has been reared in a culture and society that is different from his middle-class counterpart. He has a life style of his own. He is nonverbally oriented and motoric. He lives to survive for today and is quick to take advantage of an opportunity that will afford him pleasure. He is creative, in that he can figure out a way to "circumvent the law when the law is irrelevant to his life," or how to play basketball without the trappings of a gymnasium. He operates spatially, through the physical world, but often does not tune in on temporal orientations, the abstract world.
>
> The child of poverty, of whom we are speaking, suffers from a distinct kind of stimuli privation. He lacks differentiation of visual stimuli in his world. His figure-ground perceptions are inadequate; eye-hand controlled movements are noticeably inadequate. He keeps himself occupied and out of trouble by watching T.V. or listening to a blasting radio. He does not learn to relate to his environment through touching and manipulating his surroundings. Language, per se, is clouded through limited verbal communications with others. Sound is everywhere but auditory discrimination is inadequate. He has no play room, no picture books, few people who would talk to him, no one to

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[11]Genevieve Painter, Infant Education (San Rafael, California: Dimensions Publishing Company, 1968), p. 2.

> read to him, no blocks or games that would normally stimulate his middle-class counterpart. How can he have prepared himself for school? He does not recognize forms, shapes, sizes, contours, textures, etc. He is not deprived; in his case, again, this is a case of privation of selective stimuli.[12]

Nixon and Nixon described the disadvantaged child as having had less distinctive stimulation than the middle-class child. They stated that the middle-class mother has had more time to interact with her child with fewer distracting influences.[13]

Dechant listed the following characteristics of the disadvantaged child: 1) He lacks a proper self-image; 2) He has little academic drive and he has a weak sense of the future; 3) He is deficient in language development, has a limited vocabulary, uses short sentences, his sentence structure is faulty, and he makes many grammatical errors; 4) He masters public language, but can't deal with formal or school language; 5) He has perceptual difficulties, he knows fewer objects, and he learns less from what he hears; 6) He needs a physical and concrete approach to learning.[14]

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[12]Cynthia A. Kallan, "Privation or Deprivation: A Discussion on the Culturally Deprived Child," Journal of Learning Disabilities, 3:26-29, 1970.

[13]Ruth H. Nixon and Clifford L. Nixon, Introduction to Early Childhood Education (New York: Random House, 1970), p. 160.

[14]Emerald Dechant, Diagnosis and Remediation of Reading Disability (West Nyack, New York: Parker Publishing Company, Inc., 1968), pp. 166-67.

A lack of verbal learning is the major deficit of the disadvantaged child according to Bereiter and Engelmann. They pointed out that the disadvantaged child's speech seems not to consist of distinct words, but rather whole phrases or sentences that function like "giant words." These "giant word" units cannot be taken apart and recombined nor can they be transformed from statements to questions. They felt that the "giant word syndrome" helps to explain some of the beginning reading problems of these children.[15] As they encounter a new word, it becomes fused with other words and hence becomes unrecognizable as the same word.

Hess and Croft asserted that there can be no doubt of the disadvantaged child's ability to learn, because in short-term memory skills and rote learning tasks, lower-class children perform at the same rate as middle-class children. However, in the areas of vocabulary size and sentence length, the lower-class child scores well below his middle-class peer. What they apparently lack is the kind of language learning that is geared to the prior learning of middle-class children.[16] This is in complete agreement with Bereiter and Engelmann, who stated that

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[15]Bereiter and Engelmann, op. cit., pp. 34-37.

[16]Robert D. Hess and Doreen J. Croft, Teachers of Young Children (Boston: Houghton Mifflin Company, 1972), p. 180.

in the ability to master rote learning tasks and in immediate memory span the disadvantaged child shows little or no retardation. They also described the public schools of America as being geared to the middle-class culture. The disadvantaged child fails to master the cognitive use of language which is of primary importance in school.[17]

The disadvantaged child's language is described by Ausubel as deficient in range and precision. His grammar and language usage are shoddy, and he is impoverished in such language-related knowledge as number concepts, self-identity information, and understanding of the physical, geometric, and geographical environments.[18] Stevens found the language of the disadvantaged child restricted and rudimentary.[19] The disadvantaged child's use of socially acceptable language by middle-class standards is weak according to Wattenberg. He went on to state that their language is unwelcome in

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[17]Bereiter and Engelmann, op. cit., pp. 24-43.

[18]David P. Ausubel, "The Effects of Cultural Deprivation on Learning Patterns," Understanding the Educational Problems of the Disadvantaged Learner, Staten W. Webster, Editor (San Francisco, California: Chandler Publishing Company, 1966), p. 252.

[19]George L. Stevens, "Implications of Montessori for the War on Poverty," Montessori For the Disadvantaged, R.C. Orem, Editor (New York: Capricorn Books, 1967), p. 39.

school. Verbal fluency is often viewed with suspicion since their parents have on occasion been victimized by word manipulators, such as salesmen.[20] Beck and Saxe also described the disadvantaged child's language as "restricted." As a result, he is likely to have difficulty with the school's "elaborated form" of language. They also pointed out that their language style is an effective deterrent to communication and understanding between child and teacher.[21]

Venezky concisely stated the problem of the disadvantaged child in the following statement:

> The child whose language habits differ markedly from the socially acceptable patois of the school system faces both overt and covert discrimination in education. On the interpersonal level, he is an odd duckling --- his kinder-peers, conservative and conformist (as all children tend to be), view "different" as "inferior," with no exceptions given to what adults might class as prestige forms of speech; his teacher, as well-meaning as she might be, may not comprehend all that he says, and worse, will have difficulty viewing nonstandard as anything except substandard. On the less personal level the situation is potentially more harmful; the educational process and especially the reading programs are not for him.[22]

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[20]William W. Wattenberg, "Education for the Culturally Deprived," Children With Reading Problems, Gladys Natchez, Editor (New York: Basic Books Incorporated, Publishers, 1968), p. 174.

[21]John M. Beck and Richard W. Saxe, Teaching The Culturally Disadvantaged (Springfield, Illinois: Charles C. Thomas, Publisher, 1965), p. viii and p. 56.

[22]Richard Venezky, "Nonstandard Language and Reading," Elementary English, 47:334.

III. EDUCATIONAL NEEDS OF THE DISADVANTAGED CHILD

Kenneth Clark, social scientist and psychologist, whose research on the psychological effects of segregation helped to influence the 1954 Supreme Court's desegregation decision, is clearly impatient with the results of compensatory education. He stated that the deficiencies of the disadvantaged child are well-documented. He further contended that "everyone is talking about educating them, but no one is doing it." He summarized his views in the statement that "if human beings are taught, by and large they learn. If they are not taught, they do not learn."[23]

There is no question but that there is far more in the literature describing the disadvantaged child's deficiencies than there is about successful remediation. This is basically due to lack of longitudinal research.

A critical deficit area in the disadvantaged child's language development is auditory discrimination. Cynthia Deutsch found that auditory discrimination and poor recognition of speech sounds are contributory to the disadvantaged child's poor progress in beginning reading. She recommends the minimizing of stimuli to

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[23]Kenneth B. Clark, "The Cult of Cultural Deprivation," Children With Reading Problems, Gladys Natchez, Editor (New York: Basic Books Incorporated, Publishers, 1968), p. 179 and p. 189.

other modalities while maximizing the particular auditory stimuli which are being presented. The high noise level of the home environment and limited speech stimulation create the auditory disability.[24] Ausubel recommended repetitive practice with feedback.[25] Bereiter and Engelmann's language program is described in chapters six, seven and eight of Teaching Disadvantaged Children in the Preschool.[26]

Spicker stated that until there are modifications in the elementary school curriculum, pre-school programs must develop the fine motor, memory, and general language abilities of disadvantaged children. Research indicated that these are skills necessary to succeed in rural and inner-city schools.[27] Di Lorenzo, Salter, and Hayden found that in order to prepare children for reading, the kindergarten curriculum should include the following: 1) reading letters and numbers, 2) auditory discrimination, 3) figure and pattern copying, 4) auditory word

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[24]Cynthia P. Deutsch, "Auditory Discrimination and Learning," Merrill-Palmer Quarterly, 10:277-95, 1964.

[25]David P. Ausubel, op. cit., p. 257.

[26]Carl Bereiter and Siegfried Engelmann, op. cit., pp. 122-208.

[27]Howard H. Spicker, "Intellectual Development in Early Childhood Education," Exceptional Children, 37:629-40, May, 1971.

association, 5) auditory word picture discrimination, 6) figure and pattern matching, and 7) memory for visual design.[28] Calfee, Chapman, and Venezky found that the young child needs experience in memory for form, sound matching, and association of sounds and symbols.[29]

Witty reported research which stressed the importance of perceptual development by stimulating a child's environment with games, toys, and many objects for manipulation.[30] Ausubel also recommended the use of concrete manipulative objects for the disadvantaged child, to enable him to make a transition from the concrete to the abstract.[31]

Bond and Tinker recommended the following procedures to prepare the disadvantaged child for reading. These points are summarized as follows: 1) promote the child's health, physical growth, and motor development, 2) create a good atmosphere for learning, 3) help develop

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[28]Louis T. Di Lorenzo, Ruth Salter, and Robert Hayden, Empirical Basis For a Prekindergarten Curriculum For Disadvantaged Children, Paper presented at the 1968 annual convocation of the Educational Research Association of New York State, November 7, 1968.

[29]Robert C. Calfee, Robin S. Chapman and Richard Venezky, How A Child Needs To Think To Learn To Read, Madison, Wisconsin, Wisconsin Research and Development Center for Cognitive Learning, July, 1970.

[30]Paul A. Witty, "Studies of Early Learning--Their Nature and Significance," The Changing Child, Herman D. Behrens and Glenn Maynard, Editors (Glenview, Illinois: Scott Foresman and Company, 1972), p. 368.

[31]David P. Ausubel, op. cit., p. 256.

a good self-image and feeling of worth, 4) provide incentives to motivate children to share ideas and express themselves, 5) develop language through story telling, puppetry, role playing, and singing, 6) stimulate verbal activity through a variety of games, and 7) encourage cooperative play to aide in social development.[32]

Durrell stated that the two most important components in the kindergarten reading readiness curriculum are phoneme identification and letter name knowledge.[33]

Blank and Solomon theorized on the basis of their research that disadvantaged children do not simply need more and better words. They need to use language they already have, as well as any new words that they might learn, to structure and guide their thinking.[34]

Joan S. Bissell, in a study integrating the findings of three research projects on Early Childhood programs, found evidence in support of the following three conclusions:

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[32]Guy L. Bond and Miles A. Tinker, Reading Difficulties: Their Diagnosis and Treatment (New York: Appleton-Century-Crofts, 1967), pp. 486-487.

[33]Donald D. Durrell, Interview by Sandra M. Brown, Editor, News Book In Reading Instruction: Series I (New York: Multimedia Education Incorporated, 1971), p. 81.

[34]Marion Blank and Frances Solomon, "A Tutorial Language Program To Develop Abstract Thinking," Readings in Child Psychology, Brian Sutton-Smith, Editor (New York: Appleton-Century-Crofts, 1973), pp. 266-273.

1. Preschool programs with general objectives of fostering cognitive growth, with specific emphasis on language development, and with teacher-directed strategies that provide highly structured experiences for disadvantaged children are more effective in producing cognitive gains than programs lacking these characteristics.

2. Preschool programs high on the dimension of quality control, having well-trained staff, a high degree of supervision, and a low pupil-teacher ratio, are the most highly effective programs in producing cognitive gains.

3. Directive, highly structured preschool programs tend to be more effective with the more disadvantaged of lower-class children or to be equally effective with all lower-class children. In contrast, nondirective, less structured programs tend to be more effective with the less disadvantaged of lower-class children.[35]

IV. PARENTAL INVOLVEMENT

It has become increasingly apparent that compensatory education must begin in the home. Burton L. White, director of the Pre-school Project, Laboratory of Human Development at Harvard University, stated that after fourteen years of study and research that all children are being "educated" in areas of profound importance during the first six years of life. This education takes place in the home, and far too many children are failing in this "course of study." He proposed a plan currently

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[35]Joan S. Bissell, "The Cognitive Effects of Preschool Programs For Disadvantaged Children," Revisiting Early Childhood Education, Joe L. Frost, Editor (New York: Holt, Reinhart and Winston, Inc., 1973), p. 238.

being implemented in Brookline, Massachusetts, that has the following major features:

1. Strengthen each family's capacity to rear young children through provision of parent education, professional consultation, and support and materials when needed.

2. Identification of educationally relevant handicaps as early as possible through a systematic medical and psychological diagnostic program administered continuously from before the child is born on through the pre-school years.

3. Treatment of identified handicaps such as sensory deficits, language acquisition and other learning difficulties, mental retardation, etc., beginning at birth.

4. A high likelihood of continuity with elementary educational experiences by virtue of the fact that the school system is the initiator and director of this experimental venture.[36]

Maya Pines reported, after interviewing Harvard researcher Jerome Kagan, lower-class mothers love their children no less than middle-class mothers. However, the lower-class mother either does not know how to play and interact with her small child, or she lacks the time, or both. Pines also reported Merle B. Karne's experiment of training lower-class mothers to make materials and work as nursery school assistants. The children of these mothers gained an average of seven and one-half I.Q. points in less than three months.[37]

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[36]Burton L. White, "When Should Schooling Begin?" Phi Delta Kappan, 53:611, June, 1972.

[37]Maya Pines, "Why Some Three-Year-Olds Get A's and Some Get C's," As The Twig Is Bent, Robert Anderson and Harold G. Shane, Editors (Boston: Houghton Mifflin Company, 1971), pp. 153-167.

Levenstein found in a series of studies that by demonstrating to lower-class mothers how to play with their child using toys and books, that the mothers became very effective teachers. I.Q. gains averaged about seventeen points over a two-year period. The first group in the study had finished first grade at the time of this report, and were up to grade level in reading, arithmetic, and spelling. Levenstein concluded that lower-income mothers' aspirations for their children were very similar to those of middle-income mothers'. They know that the first key to upward mobility is school. They were eager to give their pre-schoolers every experience that would prepare them for school.[38]

Clark listed the following criteria for an effective program based on a review of selected programs:

1. A sense of identification of parents with the objectives and expectations of high student achievement.

2. Parental participation in implementing these objectives, either within the context of a school or system that shares those objectives or from without the system if the system does not share these objectives.

3. Strong, assured, and competent leadership either from within the parent group or from surrogates who are committed to effective parental involvement as necessary to student achievement.

4. In the case of parents working within the system, the maintenance of a cooperative role.

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[38]Phyllis Levenstein, "Learning Through (and From) Mothers," Childhood Education, 48:130-134, December, 1971.

5. A system of organizational supports with effective educational and action components.

6. Involvement of parents at a policy-making level.

7. Some early observable evidence of actual positive changes in the status of parents and in the achievement of their children.[39]

Nixon and Nixon reported that the best way to help children is to help their parents. Parents are best helped by involving them in the program, not just talking with them.[40]

Hess and Croft stated that less advantaged mothers often see the school as the beginning of "advantage" for their children, even when they have little understanding of their own role as educators.[41]

Evans, after examining parental involvement programs in Head Start, listed its advantages. These advantages were: 1) Involvement often bridges a continuity gap which may exist between home and school; 2) Use of inexpensive materials and parental-applied techniques can encourage the practice of important cognitive skills lacking in many disadvantaged children; and 3) The meaningful contribution toward their child's development helps

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[39]Kenneth B. Clark, A Possible Reality (New York: The MARC Corporation, 1972), p. 153.

[40]Nixon and Nixon, op. cit., p. 239.

[41]Hess and Croft, op. cit., p. 76.

improve affectional relationships in the home.[42]

Eisenberg observed that children will be best served when we develop parallel educational programs for their parents. What they need is to understand how they can help their children to achieve the goals they long for but see as unattainable.[43] Beck and Saxe also concluded that the disadvantaged child will reach a higher degree of achievement if his parents understand the goals of the school and have some idea of how the instructional program is designed to reach them.[44]

A significant study reported by Hoke described reading progress made by children who were helped by their parents.

> The parents of the children in one school were given a series of lessons on how to help their children with reading and a set of rules and practices to follow for the reading program at home. Nothing was done with the parents in the other school.
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> Children in the first group gained 5.4 months in reading level in a five-month period, while those

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[42]Ellis D. Evans, Contemporary Influences In Early Childhood Education (New York: Holt, Reinhart and Winston, Inc., 1971), p. 79.

[43]Leon Eisenberg, "The Epidemiology of Reading Retardation And A Program for Preventive Intervention," The Disabled Reader, John Money, Editor (Baltimore, Maryland: The Johns Hopkins Press, 1966), p. 18.

[44]Beck and Saxe, op. cit., p. 141.

who had no help from their parents gained only 2.7 months.[45]

V. THE USE OF TOYS AS LEARNING MATERIALS

Because of the work-play dichotomy in our society, toys are frequently not regarded as learning materials. As a result, the literature on the toy as a learning tool is scant. The influence of Montessori's didactic material design has created self-correcting toys now produced by many toy manufacturers. Manufacturers are designing and producing toys that are suitable for specific ages and stages of development. These toys are the concrete objects upon which the child performs his operations.

Zimmerman and Galovini described a toy as follows:

> A toy is a learning material. Learning materials may be defined as those things which stimulate children to discover relationships. It is through toys that a child understands certain aspects of the physical world. A good toy is attractive and inviting, well-constructed and durable, safe, nontoxic, challenging, and fun. It also stimulates a child's curiosity and imagination, and lets him discover that which it was expected he would learn. Self-correcting toys---those that go together in one way only---allow a child to proceed at his own pace and in his own way without supervision.[46]

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[45]Gordon Hoke, "Involving Parents in Programs of Educational Reform," As The Twig Is Bent, Robert Anderson and Harold G. Shane, Editors (Boston: Houghton Mifflin Company, 1971), p. 366.

[46]Lyndall D. Zimmerman and Gloria Galovini, "Toys As Learning Materials For Preschool Children," Exceptional Children, 10:644, 1971.

Rosenau and Tuck, authors of the Parent/Child Toy Lending Library guide, developed certain criteria for toys as learning materials. They stated that toys and activities should help a child learn a cluster of important skills and concepts. The toys must be age appropriate, safe, durable, and concept oriented.[47]

Levenstein showed mothers how to increase and maintain verbal activity through the use of toys.[48]

SUMMARY

The literature revealed two basic approaches to "reading readiness." Those who were more developmental in nature favored a later start. The other point of view favored an earlier start and defined reading more in terms of decoding.

The disadvantaged child is described in the literature primarily in terms of his language deficit. Poor auditory discrimination, inadequate verbal facility, and an impoverished vocabulary are characteristics of the disadvantaged child's language. His social language is functional; what he lacks is facility with the school's more elaborated form of language.

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[47]Fred Rosenau and Betty Tuck, The Parent/Child Toy Lending Library (Washington, D.C.: Superintendent of Documents, U.S. Government Printing Office, 1972), p. 4-5.

[48]Levenstein, op. cit., p. 130.

Language related experiences were cited as the primary need of the disadvantaged child. In addition, he must have learning activities that are concrete and related to his experience. Visual and auditory perception and discrimination as well as fine motor development were additional skills that need attention. For the low-income child, a program that fosters cognitive growth with special emphasis on language appeared to be the most realistic.

The active involvement of parents in the learning process was emphasized. The literature revealed that in most cases parents desire to help their children but are insecure about procedure.

Toys as learning materials were described as an important facet of the pre-school experience. However, because the use of toys as learning materials is a relatively new concept, the literature is scant.

From this review it was found that no studies have been conducted which attempted to provide the disadvantaged kindergarten child with supportive materials to be used in the home---sequenced materials that would reinforce the school curriculum, and provide the parents with materials to enable them to be active participants in their child's education.

CHAPTER III

DESIGN AND PROCEDURES

The purpose of this study, as stated in chapter I, was to determine whether there were significant differences in the reading readiness test results between a group of educationally disadvantaged kindergarten children who used the Kindergarten Home Learning Kits, and a group of educationally disadvantaged kindergarten children who did not.

A review of the literature, which was summarized in chapter II, disclosed the specific educational needs of the disadvantaged child. The review further revealed no kindergarten model that provided disadvantaged kindergarten children with supportive and reinforcing toys and materials to be used in the home. However, the literature did strongly indicate a need for more parental involvement in the compensatory early childhood curriculum.

Chapter III is concerned with the experimental design, tests used in the study, measurement procedures, and treatment techniques.

I. THE DESIGN OF THE STUDY

In order to obtain data for this study, the

experimental treatment was applied to a group of twenty-seven children in order to test the null hypotheses as stated in chapter I. The number was subsequently reduced to twenty-five as two children moved out of the district.

The sample. The children who comprised the sample were selected from the Sapulpa Public Schools District I-33, Sapulpa, Oklahoma, Allen-Bowden Dependent District, Tulsa, Oklahoma, and Lone Star Dependent District, Sapulpa, Oklahoma.

The Sapulpa system in 1972-73 had 4,200 students, 375 of which were in kindergarten. Thirty-three percent of the total enrollment came from economically deprived areas. Minority group students comprised fifteen percent of the total student population (ten percent Black and five percent Indian).

In October, 1972, twenty-seven children were selected as the experimental group to receive the treatment. These children were transported by bus to another school within the district. The previous year the all-Black school had been closed, thus creating an excessive number of students in the already existing neighborhood school. Therefore, transporting the kindergarten to a less crowded facility was deemed by the administration as the most practical solution. This group was in session for two and one-half hours each morning. They were all taught by the same teacher.

The control group was selected from the balance of the educationally disadvantaged kindergarten population. They were matched on the variables of sex, race, and readiness scores. Female was matched with female, male was matched with male, Black was matched with Black, and white was matched with white. Entry level Metropolitan Readiness scores were matched as closely as possible. The control group also attended two and one-half hour kindergarten sessions. The in-school curriculum was essentially the same for both groups of children since all of the teachers had had intensive in-service training during the summer preceding the 1972-73 school year under discussion. The kindergarten curriculum for both groups is discussed in greater detail in the latter part of this chapter.

The design. The experimenter selected the Non-equivalent Control Group Design. It is described by Campbell and Stanley as follows:

> One of the most widespread experimental designs in educational research involves an experimental group and a control group both given a pretest and a post-test, but in which the control group and the experimental group do not have pre-experimental sampling equivalence. Rather the groups constitute assembled collectives such as classrooms, as similar as availability permits but yet not so similar that one can dispense with the pretest. The assignment of X to one group or the other is assumed to be random and under the experimenter's control.
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> $$\begin{array}{ccc} O & X & O \\ \hline O & & O \end{array}$$ [1]

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[1] Donald T. Campbell and Julian C. Stanley, Experimental and Quasi-Experimental Designs for Research (Chicago: Rand McNally and Company, 1963), p. 47.

No attempt was made to equate the teachers in this study since all had received the same in-service training, materials, and equipment. Therefore, the instructional environment of each class was assumed to be similar.

II. TESTS USED IN THE STUDY

During April of 1972 all of the children in the Sapulpa, Lone Star, and Allen-Bowden communities who would be five years old on or before November 1, 1972, were administered the Vane Kindergarten Test, and the Purdue Perceptual-Motor Survey. The screening instruments were administered by an educational consultant, a psychometrist, and a group of graduate students who were qualified to administer the screening instruments. They were assisted by teacher aides who had been trained by the school psychometrist. Because of the size of the group, the screening required several sessions. Parents of eligible children were notified through the mass media. Children who were not seen during the April testing period were examined during the first two weeks of school by the school psychometrist. During the second week in September, the Metropolitan Readiness Tests were administered to all of the children by their respective teachers.

A description of the tests used is as follows:

The 1968 edition of the Vane Kindergarten Test

(VKT) is described by Julia Vane as follows:

> The VKT consists of three parts: a perceptual motor subtest, a man subtest, and a vocabulary subtest. The first two parts are given to the children as a group, after which the vocabulary is administered to each child individually. When each child finishes the vocabulary test, the examiner should make sure that his behavior with respect to attention, ability to follow directions, self-control, cooperation, hand dominance, and speech has been noted on the test blank.[2]

Basically the test measures intellectual and academic potential and behavior adjustment of young children.

The Purdue Perceptual-Motor Survey is described in the following statement by its authors, Eugene G. Roach and Newell C. Kephart:

> The Perceptual-Motor Survey was originally developed to isolate areas of difficulty manifested by non-achievers in the classroom. A considerable amount of data have been accumulated using this scale with non-achievers. It was felt that significant information regarding "normal" perceptual-motor development could be obtained if the Perceptual-Motor Survey was administered to a wide range of achieving children in the early elementary grades. If it could be demonstrated that a relationship exists between perceptual-motor ability and academic, then what might be found in a normative study could well be introduced to the curriculum designers for consideration in future curriculum planning. Again it should be stressed that the survey is not a test, but a device to be used for detecting problem areas. The probable level of measurement is ordinal.[3]

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[2]Julia R. Vane, "The Vane Kindergarten Test," Clinical Psychology, 24:1, 1968.

[3]Eugene G. Roach and Newell C. Kephart, The Purdue Perceptual-Motor Survey (Columbus, Ohio: Charles E. Merrill Publishing Company, 1966), p. 13.

The final test, which was used as the pre-test/post-test instrument, is the Metropolitan Readiness Tests.

It is described by its authors Gertrude H. Hildreth, Nellie L. Griffiths, and Mary E. McGauvran as follows:

> Metropolitan Readiness Tests were devised to measure the extent to which school beginners have developed in the several skills and abilities that contribute to readiness for first-grade instruction. Designed for testing pupils at the end of the kindergarten year or the beginning of the first grade, these tests provide a quick, convenient, and dependable basis for early classification of pupils, thus helping teachers manage the instructional effort more efficiently.[4]

The Metropolitan Tests were selected as the pre-test/post-test instrument because of its universality. After inspection of the literature, it was found to be by far the most frequently used instrument to measure school readiness.

The other test scores were utilized by the experimenter in making decisions relative to specific materials that were incorporated in the Kindergarten Home Learning Kits.

III. MEASUREMENT PROCEDURES

During April of 1972 all children eligible for

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[4]Gertrude H. Hildreth, Nellie L. Griffiths, and Mary E. McGauvran, Manual of Directions, Metropolitan Readiness Tests, Forms A and B (New York: Harcourt, Brace and World, Inc., 1969), p. 2.

kindergarten during the 1972-73 school year were administered the Vane Kindergarten Test and the Purdue Perceptual-Motor Survey. In September of 1972 the same children were administered the Metropolitan Readiness Tests, Form A. The purpose of the tests was:

(1) to measure the child's intellectual and academic potential (The Vane Kindergarten Test).

(2) to measure the child's psycho-motor development (The Purdue Perceptual-Motor Survey).

(3) to measure the child's school readiness (The Metropolitan Readiness Tests, Form A).

The post-tests were the same tests used in the pre-test situation except for the Metropolitan Readiness Tests. Form B of the Metropolitan Readiness Tests were used for the post-test, and were given to all kindergarten children in the district.

The study included fifty of the disadvantaged kindergarten children in the elementary schools of Sapulpa, Oklahoma, twenty-five in the treatment group and twenty-five who served as controls.

Post-tests were administered in May, 1973, at the conclusion of the school year. The Vane Kindergarten Test and the Purdue Perceptual-Motor Survey were administered under the direction of the school psychometrist. The Metropolitan Readiness Tests were administered by the

teachers. Since the study was designed to determine the effect the treatment afforded the experimental group on the Metropolitan Readiness Tests, a t-test for the difference between the means of the Metropolitan subtests was selected as an appropriate statistic. The statistical data were processed on an Underwood-Olivetti 101 Programma at Central State University, Edmond, Oklahoma.

IV. TREATMENT TECHNIQUES

The within-school curriculum for both groups of children, experimental and control, was the same. After careful inspection of the twelve Early Childhood Models represented in the office of Child Development's planned variation programs, an eclectic approach was developed. The major goal of the program was to develop a maximally effective kindergarten curriculum that would allow 90% of all the children to enter grade one achieving minimal entry level behavior on the standardized instruments already described, in the psycho-motor, cognitive, and affective domains.

The general daily curriculum included perceptual-motor development, language development, math and science experiences, social studies, music, and art. In order to provide for optimal balance between structure and flexibility, planning was done every step of the way with the teachers. Emphasis was placed upon individualization.

The experimental group were the recipients of an additional curricula in the home. This was the Kindergarten Home Learning Kit. There were eight separate kits. Each kit contained a total of ten activities. In order to achieve a balance, part of the materials were learning toys, and the other activities were designed to help develop fine motor skills. The tasks were sequenced throughout the kits. Most of the activities were self-correcting in order that the child would benefit from independent play.

After meeting with the parents on November 2, 1972, for the purpose of explaining the materials, the children took home their first Kindergarten Home Learning Kit. Every three weeks there was a parents' meeting which was followed by a new Kindergarten Home Learning Kit. The bag was emptied of its used contents and was then refilled with new and different materials.

Every effort was made to involve the parents. The literature revealed a variety of parent involvement designs currently in operation. Change in parent behavior as a goal is described in the following statement by Margaret Lay:

> A program for young children that does not have some provision for either receiving guidance from parents about their concerns or for enlisting parental support for the concerns of the school is likely to be missing out on a component of the total curriculum

> of the young child. The findings by the evaluators of Sesame Street, that children whose parents watched the program with them gained more than those who watched it by themselves, is simply another confirmation of the value of parental participation.
>
> The assumption of public responsibility for some aspects of the young child's experience should not be thought of as parental abdication of responsibility, but rather as the sharing of responsibility among the child's parents, siblings, other relatives, community, and school. The special equipment and experiences facilitating learning are finding their way into homes through television (Sesame Street style), educational toy lending libraries, mobile pre-school units, program "take-homes," and home educator visits. The distinctions between home learning and school learning are gradually fading at early childhood levels.[5]

The experimenter attempted to meet both criteria as set forth in the previous statement: 1) helping parents to work with their children, and 2) incorporating suggestions from the parents into the curriculum design. At each parent meeting the new materials were displayed. The experimenter demonstrated their function and purpose. The parents freely entered into discussions of the material. Many ideas were generated within the group as to how a particular task could be used. The parents were then invited to share their experiences with the materials that were in the previous Kindergarten Home Learning Kit. It was found that some activities elicited better

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[5]Margaret Z. Lay, "Early Childhood and Elementary Education," Curriculum Handbook For School Executives (Arlington, Virginia: American Association of School Administrators, 1973), p. 88.

response from the children than others. The parents also reported what activities were avoided and what activities were favored among their individual children. It could be assumed that the child who avoided the paper-pencil, cutting, and coloring materials had not yet achieved a degree of readiness commensurate with that activity. At the same time, some of the children (especially the girls) preferred the paper-pencil, cutting, and coloring tasks to the more concrete manipulative materials. Their parents reported that they liked to "play school" with the materials. As a result of the parent "feedback," the experimenter attempted to balance the activities in each of the subsequent kits. Through the year the preference of some of the less mature children underwent a metamorphosis.

In addition, each Kindergarten Home Learning Kit contained an instructional sheet for the parents to read on the various ways to use the materials. It was hoped that the instructions would help the parents who did not come to the meetings. The instructional sheet was written at no more than a fourth grade reading level as measured by the Gunning-Fog Index of Readability.

An extensive survey of the materials literature was undertaken in regard to making decisions upon the contents of each kit. The goal was to simulate as closely and as efficiently as possible the quality of pre-

school "learning-play" experiences enjoyed by the middle-class child---the type of experiences that induce school readiness. In addition, cost had to be considered since the funds for the Kindergarten Home Learning Kits were limited. The following general areas were ultimately considered by the experimenter to be the most relevant:

1. Classification: Based upon Piaget's theoretical structure of learning, Constance K. Kamii gives the following definition of classification and its sequence:

> Classification is the coordination of qualitative and quantitative aspects of the objects being grouped. Teaching goals should be set according to the following developmental stages: 1) graphic collections, 2) nongraphic collections, and 3) classifications.[6]

Kamii goes on to state that Piaget believes that logical knowledge comes neither from people nor from language, but from the internal consistency of the system that the child himself has constructed.

Therefore, activities that required and stimulated classification were included in the Kindergarten Home Learning Kit.

2. Seriation: Kamii defines seriation as follows:

> Seriation is the coordination of transitive relationships. Teaching goals should be set according to the

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[6]Constance K. Kamii, "Evaluation of Learning in Preschool Education: Socio-emotional, Perceptual-motor, and Cognitive Development," in Handbook on Formative and Summative Evaluation of Student Learning, by Benjamin S. Bloom, J. Thomas Hastings and George F. Madaus (New York: McGraw-Hill Book Company, 1971), p. 299.

> following developmental stages: 1) uncoordinated small series of three or four, 2) perceptual seriation, and 3) operational seriation.[7]

This would include polar concepts and size discrimination.

An activity requiring serial ordering was included in the first five kits.

3. Spatio-temporal operations: Spatio-temporal operations are defined by Kamii in the following statement:

> Topological notions develop before euclidean ones. The preoperational child's space is static. Space is reconstructed on the representational plane several years after the structuring of the same organization on the sensory-motor level. Temporal sequence develops out of causal and means-ends relationships. These relationships require representation.[8]

The Kindergarten Home Learning Kit contained activities to help the child develop spatio-temporal sequencing. Since space is structured from the child's own body to environmental objects, activities were included to help develop body concept, object recognition, object manipulation, and temporal and spacial sequencing.

4. Representation: Kamii defines representation as being non-verbal at the "index" and "symbol" levels, particularly imitation, which strengthens representation at the language level.[9] Kamii goes on to illustrate the

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[8]Ibid., p. 300.

[9]Ibid., p. 300.

importance to reading of the four preceding cognitive areas.

> Reading first of all requires representation, i.e., the evocation of vivid mental images. From the mechanical point of view it requires a well-structured space to discriminate letters and to conceive directions. The letters are grouped into words and sentences which require a classificatory scheme. Letters are also arranged linearly (for example, saw vs. was) ... As far as content is concerned, the child must have not only the mental images of static, unrelated objects, but also the mobility of thought to coordinate the relationships among objects in space, time, and logic.[10]

5. Visual Perception: Marianne Frostig pointed out that a visual perceptual lag is indeed a handicap. The child with such a lag perceives the visual symbols in a distorted and confused fashion. He has difficulty in recognizing objects and their relationship to each other in space.[11]

Because visual perception can contribute to reading disability, especially among disadvantaged children, activities to develop visual perception were incorporated into each Kindergarten Home Learning Kit.

The benefits of visual perceptual training were demonstrated by David Elkind and Jo Ann Deblinger in a study of inner-city Black children. The children given

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[10] Ibid., p. 301.

[11] Marianne Frostig, The Developmental Program in Visual Perception (Chicago: Follett Educational Corporation, 1966), p. 10.

training demonstrated significant gains in word and word form recognition over the children who received no training.[12]

6. Auditory Discrimination: Chapter II (The Review of the Literature) cited a few pertinent studies from the vast amount of research that has strongly delineated auditory discrimination as a major deficit area among disadvantaged children. The experimenter attempted to include as many tasks and activities in the Kindergarten Home Learning Kits as was practical. In addition, it was explained to the parents how very important it was for them to help their children in this area.

7. Alphabet Recognition: Jeanne Chall analyzed seventeen studies, seven of which were predictional, to discern the value of alphabet knowledge to future reading. Her findings are as follows:

> We see that a child's ability to identify letters by name (letter knowledge) in kindergarten or the beginning of grade 1 is an important predictor of his reading achievement at various points in the first and second grades (r's from .3 to .9). In fact, letter knowledge has a generally higher association with early reading success than mental ability as measured by various intelligence tests and other tests of language and verbal ability (r's from .2 to .7).

She goes on to state that a child's ability to

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[12]David Elkind and Jo Ann Deblinger, "Perceptual Training and Reading Achievement in Disadvantaged Children," Child Development, 40:11-20, 1969.

give sounds for the letters before learning to read is also related to his early success in reading.[13]

Additional evidence to support the value of familiarity with the alphabet comes from the writings of David Elkind who states that a child must come to terms with two related phenomena. The first is that more than one sound can be represented by one letter (such as the letter "a"), and that different letters can represent the same sound (such as "k" and "c"). The second phenomena occurs in the problem of learning the equivalence of capital and lower-case letters. A like problem of equivalence occurs again when the child encounters cursive writing.[14]

Because of the evidence that letter knowledge is important, some activity involving one or more of the following were included in each Kindergarten Home Learning Kit: 1) letter perception, 2) matching of the capital to its equivalent lower-case letter, and 3) phoneme-grapheme correspondence.

8. Fine Motor Development: Virtually every activity in the Kindergarten Home Learning Kit involved

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[13]Jeanne Chall, Learning To Read--The Great Debate (New York: McGraw-Hill Book Company, 1967), pp. 141-149.

[14]David Elkind, "Piaget's Theory of Perceptual Development: Its Application to Reading and Special Education," Journal of Special Education, 1:357-361, 1967.

some form of fine motor training. This was considered important for two reasons: 1) children enjoy "learning by doing," and 2) according to Newell C. Kephart, the normal activities of the classroom make greater demands upon the child for fine motor coordination than for any other activity of the organism.[15] Coloring, cutting, drawing, painting, writing, and fine manipulative tasks were all included in the Kindergarten Home Learning Kits.

For a description of the specific tasks in each of the eight Kindergarten Home Learning Kits see appendix A.

SUMMARY

The design of this investigation utilized a population of fifty kindergarten children divided into two groups, one experimental and one control.

The treatment for the experimental group was the Kindergarten Home Learning Kit. Both groups, experimental and control, received the same "in-school" treatment.

The tests used in this study were designed for young children, kindergarten and first grade. The test chosen to measure the reading readiness achievement of

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[15]Newell C. Kephart, The Slow Learner in The Classroom (Columbus, Ohio: Charles E. Merrill Publishing Company, 1971), p. 241.

both groups was the Metropolitan Readiness Test.

Students were pre-tested at the beginning of the study with Form A and post-tested at the end of the study with Form B.

The data for this study were treated with a t-test for the difference between the means.

The results of the data gathering and analysis are reported in chapter IV.

CHAPTER IV

FINDINGS

The purpose of this study was to determine whether there were significant differences in test results among disadvantaged kindergarten children using the Kindergarten Home Learning Kits and disadvantaged kindergarten children who did not.

The experimental design of this investigation utilized a population of fifty disadvantaged kindergarten children divided into two groups, one experimental and one control. The treatment for the experimental group was the Kindergarten Home Learning Kit. Both groups, experimental and control, received the same "in-school" treatment. The students were pre-tested at the beginning of the 1972-73 school year with Form A of the Metropolitan Readiness Tests, and post-tested at the end of the same school year with Form B. The data for this study were treated with a t-test for the difference between the means.

The concernment of the balance of chapter IV is limited to the presentation of a statistical analysis of the collected data. Included will be limited interpretation of the results of the performance of the two

groups on the subtests of the Metropolitan Readiness Tests.

I. STATISTICAL ANALYSIS OF THE INDEPENDENT t-TEST BETWEEN THE MEANS

The first null hypothesis tested in this study was stated as follows:

There are no significant differences in the vocabulary scores between the disadvantaged children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home Learning Kits.

The means and standard deviation were computed from the raw scores of the pre-test and post-test scores of the experimental group, and the pre-test and post-test scores of the control group.

An examination of table I reveals a pre-test mean score of 5.76 for the experimental group, and 5.00 for the control group. The pre-test comparison between the groups yielded a t-ratio of 1.27. The t-test of independent means with 48 degrees of freedom requires a t-value of 2.01 to achieve significance at the .05 level. The post-test comparison revealed a mean of 7.76 for the experimental group and a mean of 6.44 for the control group. The t-ratio between the post-test means of the two groups was 2.41. A t-ratio of 2.01 was needed to

yield significance at the .05 level.

Individual Word Meaning subtest scores are listed in appendix B.

TABLE I

PRE AND POST-TEST t-RATIOS OF THE WORD MEANING SUBTEST OF THE METROPOLITAN READINESS TESTS

	Experimental	Control
Pre-test t-ratio = 1.27	Number = 25 Mean = 5.76 Standard deviation = 2.21	Number = 25 Mean = 5.00 Standard deviation = 1.92
Post-test t-ratio = 2.41*	Number = 25 Mean = 7.76 Standard deviation = 1.86	Number = 25 Mean = 6.44 Standard deviation = 1.92

Pre-test t-ratios indicate the equivalence of the two groups. The post-test t-ratio reports the treatment effect.

*Indicates a level of significance beyond the .05 level.

The second null hypothesis tested in this study was stated as follows:

There are no significant differences in the listening comprehension scores between the disadvantaged children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home Learning Kits.

The means and standard deviation were computed from the raw scores of the pre-test and post-test scores of the experimental group, and the pre-test and post-test scores of the control group.

An examination of table II reveals a pre-test mean score of 7.24 for the experimental group, and 7.12 for the control group. The pre-test comparison between the groups yielded a t-ratio of 0.18. The post-test comparison between the groups revealed a mean of 8.84 for the experimental group, and a mean of 7.44 for the control group. The t-ratio between the post-test means of the two groups yielded a t-ratio of 2.29.

Individual scores on the Listening subtest are found in appendix B.

TABLE II

PRE AND POST-TEST t-RATIOS OF THE LISTENING SUBTEST OF THE METROPOLITAN READINESS TESTS

	Experimental	Control
Pre-test t-ratio = 0.18	Number = 25 Mean = 7.24 Standard deviation = 2.14	Number = 25 Mean = 7.12 Standard deviation = 2.41
Post-test t-ratio = 2.29*	Number = 25 Mean = 8.84 Standard deviation = 1.87	Number = 25 Mean = 7.44 Standard deviation = 2.33

Pre-test t-ratios indicate the equivalence of the two groups. The post-test t-ratio reports the treatment effect.

*Indicates a level of significance beyond the .05 level.

The third null hypothesis tested in this study was stated as follows:

There are no significant differences in the visual perceptual matching scores between the disadvantaged children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home Learning Kits.

An inspection of table III reveals the computed means and standard deviation of the pre-test and post-test scores of the experimental group, and the pre-test

and post-test scores of the control group.

The pre-test comparison between the groups yielded a mean of 3.72 for the experimental group, and a mean of 4.88 for the control group. The t-test of independent means between the two groups produced a t-ratio of 1.81. The post-test mean of the experimental group was 8.64, and the post-test mean of the control group was 6.16 which yielded a t-ratio of 3.57.

Individual Matching subtest scores are found in appendix B.

TABLE III

PRE AND POST-TEST t-RATIOS OF THE MATCHING SUBTEST OF THE METROPOLITAN READINESS TESTS

	Experimental	Control
Pre-test t-ratio = 1.81	Number = 25 Mean = 3.72 Standard deviation = 2.32	Number = 25 Mean = 4.88 Standard deviation = 2.12
Post-test t-ratio = 3.57*	Number = 25 Mean = 8.64 Standard deviation = 2.54	Number = 25 Mean = 6.16 Standard deviation = 2.26

Pre-test t-ratios indicate the equivalence of the two groups. The post-test t-ratio reports the treatment effect.

*Indicates a level of significance beyond the .05 level.

The fourth null hypothesis tested in this study was stated as follows:

There are no significant differences in the alphabet recognition scores between the disadvantaged children using the Kindergarten Home Learning Kit and the disadvantaged children not using the Kindergarten Home Learning Kit.

An examination of table IV reveals the computed pre-test and post-test data of the experimental and control groups. On the pre-test, the experimental group mean was 3.24, and the control group mean was 4.64. The pre-test comparison yielded a t-ratio of 1.36. The post-test comparison yielded a mean of 10.36 for the experimental group, and 8.60 for the control group. The computed t-ratio on the post-test was 1.62.

Individual scores on the Alphabet subtest are found in appendix B.

TABLE IV

PRE AND POST-TEST t-RATIOS OF THE ALPHABET SUBTEST OF THE METROPOLITAN READINESS TESTS

	Experimental	Control
Pre-test t-ratio = 1.36	Number = 25 Mean = 3.24 Standard deviation = 3.77	Number = 25 Mean = 4.64 Standard deviation = 3.33
Post-test t-ratio = 1.62	Number = 25 Mean = 10.36 Standard deviation = 3.76	Number = 25 Mean = 8.60 Standard deviation = 3.75

Pre-test t-ratios indicate the equivalence of the two groups. The post-test t-ratio reports the treatment effect.

The fifth null hypothesis tested in this investigation was stated as follows:

There are no significant differences in the numerical and quantitative reasoning scores between the disadvantaged children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home Learning Kits.

Inspection of table V will reveal a pre-test mean score of 6.00 for the experimental group, and 5.96 for the control group. The pre-test comparison between the

groups yielded a t-ratio of 0.04. The post-test comparison revealed a mean of 11.92 for the experimental group, and a mean of 7.76 for the control group. The t-ratio between the post-test means of the two groups was 3.54.

Individual subtest scores are found in appendix B.

TABLE V

PRE AND POST-TEST t-RATIOS OF THE NUMBERS SUBTEST OF THE METROPOLITAN READINESS TESTS

	Experimental	Control
Pre-test t-ratio = 0.04	Number = 25 Mean = 6.00 Standard deviation = 3.66	Number = 25 Mean = 5.96 Standard deviation = 2.66
Post-test t-ratio = 3.54*	Number = 25 Mean = 11.92 Standard deviation = 5.06	Number = 25 Mean = 7.76 Standard deviation = 2.73

Pre-test t-ratios indicate the equivalence of the two groups. The post-test t-ratio reports the treatment effect.

*Indicates significance beyond the .05 level of significance.

The sixth and last null hypothesis tested in this study was stated as follows:

There are no significant differences in the copying scores between the disadvantaged children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home Learning Kits.

An examination of table VI reveals the computed pre-test and post-test data of the experimental and control groups. On the pre-test, the experimental group mean was 1.20, and the control group mean was 1.92. The pre-test t-ratio was 0.91. The post-test comparison yielded a mean of 6.00 for the experimental group, and 5.24 for the control group. The computed t-ratio on the post-test was 0.94.

Individual scores on the Copying subtest are found in appendix B.

TABLE VI

PRE AND POST-TEST t-RATIOS OF THE COPYING SUBTEST OF THE METROPOLITAN READINESS TESTS

	Experimental	Control
Pre-test t-ratio = 0.91	Number = 25 Mean = 1.20 Standard deviation = 1.62	Number = 25 Mean = 1.92 Standard deviation = 3.50
Post-test t-ratio = 0.94	Number = 25 Mean = 6.00 Standard deviation = 2.64	Number = 25 Mean = 5.24 Standard deviation = 2.93

Pre-test t-ratios indicate the equivalence of the two groups. The post-test t-ratio reports the treatment effect.

II. SUMMARY

Upon inspection of tables I through VI, it can be determined that the experimental and control groups began the study as essentially equivalent. The pre-test scores all fell below the .05 level of significance. The t-test of independent means with 48 degrees of freedom requires a t-value of 2.01 to achieve significance at the .05 level. A summary of the insignificant t-ratios is as follows:

Table I -- Word Meaning subtest - Pre-test t-ratio=1.27

Table II -- Listening subtest - Pre-test t-ratio = 0.18

Table III-- Matching subtest - Pre-test t-ratio = 1.81

Table IV -- Alphabet subtest - Pre-test t-ratio = 1.36

Table V -- Numbers subtest - Pre-test t-ratio = 0.04

Table VI -- Copying subtest - Pre-test t-ratio = 0.91

On the post-tests, no significant statistical differences were found between the two groups on subtests IV--Alphabet and VI--Copying. However, on the remaining four subtests, I--Word Meaning, II--Listening, III--Matching, and V--Numbers, there were significant statistical differences in favor of the experimental group.

The study concludes with chapter V which contains three major sections: summary, conclusions, and recommendations.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter consists of a summary of the study, the conclusions, and recommendations. The summary deals with the specific intent of the investigation and its results. The conclusions include inferences and assumptions drawn from the findings. The recommendations are related to future implications and means to implement the efficiency of the Kindergarten Home Learning Kit.

I. SUMMARY

The main objective of this investigation was to determine the effect of Home Learning Kits on the reading readiness of educationally disadvantaged kindergarten children. The specific null hypotheses tested in this investigation were:

1. There are no significant differences in the vocabulary scores between the disadvantaged children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home Learning Kits.

2. There are no significant differences in the listening comprehension scores between the disadvantaged

children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home Learning Kits.

3. There are no significant differences in the visual perceptual matching scores between the disadvantaged children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home Learning Kits.

4. There are no significant differences in the alphabet recognition scores between the disadvantaged children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home Learning Kits.

5. There are no significant differences in the numerical and quantitative reasoning scores between the disadvantaged children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home Learning Kits.

6. There are no significant differences in the copying scores between the disadvantaged children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home Learning Kits.

In order to obtain data to test these null hypotheses, a class of twenty-five educationally disadvantaged kindergarten children from the Sapulpa Independent School District, Sapulpa, Oklahoma, were selected as an experimental

group. A control group was selected from the balance of the kindergarten population which consisted of a total of 375 children. The children comprising the control group were matched with the experimental group on the variables of sex, race, and entry scores on the Metropolitan Readiness Tests. The treatment consisted of a series of eight Kindergarten Home Learning Kits which were used by the experimental group. The kits contained materials designed to accelerate the reading readiness level of disadvantaged children. The kits were used in the home and were returned to school only for refilling of new materials every three weeks. The study began in November of 1972 and was completed in May, 1973.

The Metropolitan Readiness Tests were used to provide data for the study. The results from Form A served as the pre-test for the study, and the results from Form B served as the post-test for the study.

The collected data for this study were treated with a t-test for the difference between the means. The data were processed on an Underwood-Olivetti 101 Programma at Central State University, Edmond, Oklahoma.

No statistical differences were found between the two groups on the pre-test. The post-test data revealed statistical significance in favor of the experimental group in the areas of vocabulary, listening, matching, and numbers. There was no statistical significance

between the groups in the areas of alphabet knowledge and copying.

II. CONCLUSIONS

For each specific null hypothesis tested are the general findings, which are followed by a statement of general conclusions.

VOCABULARY ACHIEVEMENT

The specific null hypothesis tested. There are no significant differences in the vocabulary scores between the disadvantaged children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home Learning Kits.

The findings. The computed t-ratio between the post-test means of the two groups was a significant 2.41, thus the experimental group achieved the greatest gain. The t-test of independent means with 48 degrees of freedom requires a t-value of 2.01 to achieve significance at the .05 level. Thus the null hypothesis was rejected.

The conclusions. The activities in the Kindergarten Home Learning Kits that involved labeling and vocabulary development could have ameliorated the experimental group's performance.

LISTENING COMPREHENSION ACHIEVEMENT

The specific null hypothesis tested. There are no significant differences in the listening comprehension scores between the disadvantaged children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home Learning Kits.

The findings. The computed t-ratio between the post-test means of the two groups was a significant 2.29, the experimental group achieving the greater gain. The t-test of independent means with 48 degrees of freedom requires a t-value of 2.01 to achieve significance at the .05 level. Thus the null hypothesis was rejected.

The conclusions. The Kindergarten Home Learning Kits provided the experimental group with appropriate materials with which to work in the home. This could have improved their attention span and helped them to become more task oriented, hence improved listening. In addition, the activities designed to enhance their vocabularies could have made the language of school instruction more comprehensible.

VISUAL MATCHING ACHIEVEMENT

The specific null hypothesis tested. There are no significant differences in the visual perceptual matching scores between the disadvantaged children using

the Kindergarten Home Learning Kit and the disadvantaged children not using the Kindergarten Home Learning Kit.

The findings. The computed t-ratio between the post-test means of the two groups yielded a significant 3.57 t-value in favor of the experimental group. The t-test of independent means with 48 degrees of freedom requires a t-value of 2.01 to achieve significance at the .05 level. Thus the null hypothesis was rejected.

The conclusions. Each Kindergarten Home Learning Kit contained several activities that would enhance the child's visual awareness, discrimination, and perception. Therefore, this finding could be easily reconciled.

ALPHABET RECOGNITION ACHIEVEMENT

The specific null hypothesis tested. There are no significant differences in the alphabet recognition scores between the disadvantaged children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home Learning Kits.

The findings. A positive gain was achieved by both groups in alphabet recognition. The experimental group's mean gain score was greater than was the control group's. However, the difference was not great enough to achieve significance. The computed t-ratio between the post-test means of the two groups was a non-significant 1.62. The t-test of independent means with 48

degrees of freedom requires a t-value of 2.01 to achieve significance at the .05 level. Thus the null hypothesis was accepted.

The conclusions. Even though there were many alphabet activities in the Kindergarten Home Learning Kits, it was apparent that the "within school" curriculum was most effective, thus explaining the improvement in both groups. The alphabet activities in the Kindergarten Home Learning Kits would have amounted to little more than matching exercises without teacher or parent feedback.

NUMBER ACHIEVEMENT

The specific null hypothesis tested. There are no significant differences in the numerical and quantitative reasoning scores between the disadvantaged children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home Learning Kits.

The findings. The computed t-ratio between the post-test means of the two groups was a significant 3.54 in favor of the experimental group. The t-test of independent means with 48 degrees of freedom requires a t-value of 2.01 to achieve significance at the .05 level. Thus the null hypothesis was rejected.

The conclusions. There were many toys and materials

in the Kindergarten Home Learning Kits to develop classification, seriation, temporal and spacial concepts. Thus the scores on the number subtest may have reflected these experiences. These are some of the same concepts that should enhance comprehension in reading.

COPYING ACHIEVEMENT

The specific null hypothesis tested. There are no significant differences in the copying scores between the disadvantaged children using the Kindergarten Home Learning Kits and the disadvantaged children not using the Kindergarten Home Learning Kits.

The findings. The computed t-ratio between the post-test means of the two groups yielded a non-significant t-value of 0.94. To achieve significance at the .05 level, the t-test of independent means with 48 degrees of freedom requires a t-ratio of 2.01. Thus the null hypothesis was accepted.

The conclusions. The achievement for both groups was about equal. This could have been because there were very few paper-pencil tasks in the Kindergarten Home Learning Kits; therefore, the experimental group did not have an appreciable amount of additional experience in this area. The investigator felt that the development level of the children was not commensurate with paper-pencil tasks. These children needed additional

experience with manipulative toys and materials in order to develop cognitive and fine motor skills. Paper-pencil tasks were cognitively too abstract, and motorically too difficult for their developmental level.

It could be concluded, from the evidence provided by this study, that environmental intervention in the form of packaged educational materials and toys to be used in the home might be an effective extension of the public school kindergarten curriculum.

III. RECOMMENDATIONS

It is recommended that:

1. A longitudinal study be made to determine whether or not the experimental group maintained their achievement level. This could be done through a comparison of post-test achievement scores at the end of first, second and third grades.
2. Other school districts could possibly enhance their kindergarten programs through the implementation of the Kindergarten Home Learning Kit. The kindergarten year is not as costly as subsequent school years. Therefore, at an approximate cost of $150 per child, per year, the cumulative deficit of the disadvantaged child might in some measure be reduced.

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APPENDICES

APPENDIX A

KINDERGARTEN HOME LEARNING KIT 1

1. Shape Box

   This activity was to develop perception of form and visual-motor coordination.

2. Dittoed Sheets to Accompany Shape Box

   This activity was provided to accompany the shape box. The child was to match the shapes in the box to the outlined shapes on the ditto sheet. He then colored the shapes on the ditto sheet to match the shapes in the box. The two activities took the child from the three dimensional form to the two dimensional symbol. It also gave him experience in matching color.

3. Barrel of Monkeys

   The barrel contained twelve small plastic monkeys with oversized arms. The child was to hold one monkey and hook its arm into the arm of another monkey. The purpose of the game was to see how many monkeys could be hooked together in a continuous chain. This activity provided additional visual-motor experience.

4. Nursery Rhyme Book

   This book was included to aid auditory memory, and to develop rhyming skills, so necessary to the perception of medial and final sounds.

5. Object Lotto

   This game included pictures of objects belonging to familiar classes. The child was to match and verbally label the pictures. This activity was included to increase vocabulary and classification skill.

6. Fun Box

   This activity required the child to select and insert the proper letter into the space provided on each card. The intent of this activity was to begin to familiarize the child with letter forms, as well as provide additional visual-motor practice.

7. The Three Bears Book

This activity utilized an old familiar story that reinforced both temporal and spacial concepts. In addition, it helped to develop one-to-one correspondence. The book had pages containing gummed punch-out pictures for the child to place on matching outlines throughout the book. This activity would help the child discriminate form.

8. Name Card and Play-doh

The child's name was written in four-inch letters on a heavy cardboard. The child was to model his name with the play-doh using the letters on the cardboard as a guide.

9. Chalkboard and Chalk

Each kit contained a small chalkboard for the child to use in dramatic play, and for the purpose of creating his own symbols and pictures.

10. Sesame Street Finger Puppets

This activity was included to encourage creative expressive language.

KINDERGARTEN HOME LEARNING KIT 2

1. Pick Pairs Matching Game

   This game was to give the child experience in matching identical forms and pictures.

2. Book of Objects

   This book contained pictures of familiar objects that were gummed. They could be punched out and placed on matching outlines in the book. This was another experience designed to develop perception of form, and classification.

3. Pegboard Numerals and Letters

   The pegged letters and numbers were included to increase the child's familiarity with letters and numerals. In addition, the placing of the small peg in the board would improve fine motor dexterity. Words and number sequences were included for the child to reproduce with the pegged letters and numerals.

4. Ping Pong Game

   This little toy consisted of controlling two ping pong players by coordinating the movement of the index fingers. A great deal of manual dexterity was required in order to keep the ball moving. Practice in eye tracking was an additional benefit derived from this activity.

5. Rhyming Magic Cards

   Each kit contained four magic cards with five sets of rhyming pictures on each card. The child was to draw a line with a crayon connecting the rhyming pictures. The crayon mark could be wiped off with a cloth or tissue, thereby rendering the card reusable. This activity was included to develop auditory perception of medial and final sounds.

6. Lacing Card

   The child was to lace together the parts of an animal, thus providing additional fine visual-motor coordination.

7. Concept of Big and Little

   There were in the kit several pictures of identical objects, one of which was big and one of which was little. The child was to verbally label the picture by size. The picture could then be colored.

8. Pictures to Trace

   The child was provided with five simple pictures and a supply of onion skin paper to be used to trace the pictures. This was another visual-motor activity.

9. Play-doh

   A can of play-doh was included in the kit for the child to use creatively.

10. Newsprint and Crayons

    The child could create and color his own pictures.

KINDERGARTEN HOME LEARNING KIT 3

1. Nested Cups

2. Nested Barrels

3. Seriated Rings on a Pole

   All three of these toys were included in the kit to help the child to perceive serial order in a variety of forms. He could also order all three simultaneously.

4. Spacial Relation Cards

   Each card in the deck depicted a spacial concept. This activity could be played as a game by parent and child.

5. Go Together Lotto

   This lotto game was designed to aid the child in making logical associations.

6. Thinking Skills Magic Cards

   Four large cards were included in each kit. The child could draw a line from a picture on the left to a related picture on the right. This activity also would reinforce left-to-right and top-to-bottom directionality, in addition to providing more experience in making associations.

7. Dittoed Nursery Rhymes and Pictures

   Five familiar nursery rhymes were included to continue auditory perception of rhyme.

8. Weaving Mats

   Each kit contained four mats and twelve colored sticks. Weaving develops the concepts of over and under as well as providing additional visual-motor experience.

9. Bead Pattern Beads and String

   The child was to string the beads in the same sequence as the pattern. This activity was to develop sequence, matching, and fine motor skill.

10. Large Letters and Play-doh

The entire alphabet in capital and lower case letters was printed on cards in four-inch letters. The child was to model the letters with play-doh. The purpose of this activity was to teach the shapes of the letters and associate the capital letter with its lower case counterpart.

KINDERGARTEN HOME LEARNING KIT 4

1. Shapes

Shapes (triangle, circle, and square) of varying sizes were printed on colored construction paper. The child was to cut out the shapes for visual-motor training. He was then to classify the shapes by color or shape. This activity was to provide experience in classification and form constancy.

2. Letter Wheel and Lettered Clothespins

The capital letters were printed around the edges of a cardboard circle. The capital letter was printed on one side of the clothespin, and the lower case letter on the other side of the clothespin. The child was to match capital letter to capital letter by affixing the clothespin to the wheel. He was to also clip the lower case side of the clothespin to the corresponding capital letter on the wheel. Experience was hereby provided in matching, and in the association of capital letter to lower case letter. Learning to control the clothespin reinforced hand dominance and prehension.

3. Pictures to Paint with Water

This kit included the pictures and a paintbrush. This was a highly motivating visual-motor activity.

4. Pegboard, Pegs, and Patterns

Directionality, visual spacial relations, and fine motor control were the objectives of this activity.

5. Seriated Rubber Inset Board

This activity provided additional seriation experience, which was directed and self-correcting.

6. Alphabet Dot-to-Dot Lacing Cards

A letter of the alphabet was printed by each hole. When completed, the child would have laced the complete alphabet in sequence.

7. Alphabet Dot-to-Dot Pictures

   The child connected the dots following the sequence of the alphabet.

8. Figure Ground Pictures to Color

   Two large pictures of common objects were superimposed, one on top of the other. The child was to color only one of the figures.

9. Whole-Part Puzzles

   Each two-piece puzzle had a picture of an object with a missing part on one piece and the missing part on the other piece. This puzzle provided experience in visual closure and establishing whole-part relationships.

10. Newsprint and Crayons

    The child could create and color his own pictures.

KINDERGARTEN HOME LEARNING KIT 5

1. Magnetic Board and Letters

   Each kit contained both capital and lower case magnetic letters. The intent of this toy was to provide the child with additional experience in matching capital to lower case letter. Since magnetic materials are highly motivating to young children, the child would play with the letters thus enhancing his alphabet knowledge.

2. Contact Letters

   Capital and lower case letters were dittoed on white contact paper. The letters were enclosed in small squares and were out of sequence. The child was to cut out the squares containing the letters, peel off the back of the paper, and then place the corresponding letters together in sequence. This material provided for fine motor practice in cutting and peeling off the back. It also reduced the letter to the symbolic level.

3. Sound-Symbol Magic Cards

   Five cards were included in each kit. The child was to draw a line for an object on the left to its initial consonant sound on the right. The cards could be wiped off and reused.

4. Sound-Symbol Ditto Sheets

   The ditto sheets used the same sounds as the magic cards, thus reinforcing the previous activity at a more symbolic level.

5. Magnetic Seriated Shapes

6. Contact Seriated Shapes

   Both of these activities were included to further develop the concept of serial order without the controls which existed in previous kits.

7. Number Dot-to-Dot Lacing Cards

   A number was printed beside each hole. As the child laced the card he followed the number sequence to ten.

8. Number Dot-to-Dot Pictures

   The child connected the dots in sequence with a crayon. When the dots were connected, he had a completed picture.

9. Numbers to Model

   The numbers were printed on cardboard for the child to model with play-doh. This experience would help the child learn the shape and direction of each symbol.

10. Pictures Containing Hidden Figures

    The child was to find and color the hidden figures in each picture. This was to further develop figure-ground discrimination.

KINDERGARTEN HOME LEARNING KIT 6

1. Template Objects and Paper

   Each kit contained eight cardboard templates of familiar objects. Tracing within the template would improve visual-motor coordination and strengthen hand dominance.

2. Cards to Cut, Punch, and Lace

   Large simple pictures were printed on lightweight oak tag. The child was to cut out the picture, punch holes with a hole punch on the dots indicated, and then lace the card. Additional cutting and lacing practice was provided with this activity. In addition, use of the hole punch which was provided in the kit would strengthen the dominant hand.

3. Sequence Cards

   Each set of four cards tells a simple story that requires temporal sequencing. Each kit contained six sets of cards and four clothespins numbered from one to four. The child was to affix the appropriate clothespin to each card.

4. Alphabet Dot-to-Dot

   Each letter of the alphabet was to be drawn by connecting the dots which were numbered in sequence. This activity reinforced the letter shapes and provided additional number sequencing experience.

5. Number Cards, Beads, and Lace

   Each of the cards had a numeral written on it and a hole punched in the top of the card. The child was to string the card and the number of beads indicated on the card. There was an adequate number of beads for the child to string beads and cards from zero to ten. This activity was included to reinforce fine motor control and rational counting.

6. Number Wheel and Numbered Clothespins

   The wheel was divided into sections. Each section contained pictures arranged into sets of objects from one to ten. The child was to affix the appropriately numbered clothespin to the card. This activity followed the bead activity at a more symbolic level.

7. Number Words on Cards and Clothespins

   On one side of the card and clothespin was the numeral; on the other side of each was the number word. The child was to match numeral to numeral, word to word, and numeral to word. This would begin the process of reading the number words as well as providing an additional matching experience.

8. Puzzle

   The puzzle contained fewer than twenty large pieces. Puzzles are excellent for visual perception.

9. Sound-Symbol Magic Cards

10. Sound-Symbol Ditto Sheets

    This kit contained five more of both cards and ditto pages as described in Kit 5.

KINDERGARTEN HOME LEARNING KIT 7

1. Sound Cylinders

   Each kit contained five pairs of sound cylinders in the form of plastic Easter eggs. Each pair was filled with identical pieces of candy. One pair contained one jelly bean each, another pair contained two M&M's each, another pair contained a miniature marshmallow each, another pair contained three red hots each, and the other pair contained four M&M's each. The child was to match the eggs by sound. When the task was completed, he could eat the contents and then refill with his Easter candy for further discrimination practice. An additional benefit hopefully was the discovery of equivalence, thus reinforcing that particular concept.

2. Plastic Objects

   Plastic objects in familiar shapes were provided. The child was to trace around and then color these objects to reinforce visual-motor control and color matching.

3. Cards, Hole Punch, and Lace

   The child was to take the cards, punch holes with his hole punch, and lace the cards. The cards were of a heavier cardboard than those used for the hole punch activity in Kit 6, thereby requiring more strength and greater dexterity.

4. Magic Slate

   This was included as another medium for drawing and possibly writing. The child was to use it as he wished.

5. Puzzle

   The puzzle in this kit contained twenty-five pieces.

6. Color Wheel and Clothespins

7. Color Words and Clothespins

The wheel was made from a round piece of cardboard divided into eight equal segments. On one side of the wheel was the color, on the reverse side in the same place was the color word. The clothespins had the color on one side and the word on the reverse side. The child was to match color to color, word to word, and word to color. This activity was provided to make the child conscious of the color words.

8. Easter Eggs to Color and Cut

Each kit contained three dittoed pages of Easter eggs. In the center of each egg was a color word. The child was to color the egg that color, and then cut out the egg. This activity presented the color words at the symbolic level, which required matching or reading of the words.

9. Sound-Symbol Magic Cards

10. Sound-Symbol Ditto Sheets

This kit contained five more of both cards and ditto pages as described in Kit 5.

KINDERGARTEN HOME LEARNING KIT 8

1. Sound-Symbol Three-Part Puzzle

   These puzzles included the letter and two items that began with that letter. The three combined to make a puzzle. This activity was included to reinforce the child's awareness of initial consonant sounds. There were six such puzzles.

2. Word Fun Box

   Each card in the box came in three pieces. On each piece was a picture and a letter. When correctly assembled, the child had constructed a picture with the word at the bottom. This activity would give the child an awareness of the reading process.

3. Sesame Street Word Wheel

   There were three word wheels. Each was built around a common phonogram. As the child positioned an initial consonant in front of a phonogram, he constructed a word. Beside the word was a little window which when opened revealed a picture of the constructed word. This activity reinforced the reading process by combining the word and the picture.

4. Sesame Street Word Puzzle

   This puzzle used the same words as the word wheel but in strip puzzle form.

5. Word Puzzles

   These two-piece puzzles contained a picture and a word that labels the picture.

6. Parquetry Blocks

   Nine parquetry blocks were in the kit for the child to use to create his own designs.

7. Paper for Parquetry Design

   Dittoed papers with blocks of nine square inches were provided for the child to use to copy and color his own designs. This would help the child perceive the spacial position of the blocks.

8. Sound-Symbol Magic Cards

9. Sound-Symbol Ditto Sheets

   This kit contained the remaining six cards and ditto pages as described in Kit 5.

10. Newsprint and Crayons

APPENDIX B

TABLE VII

TOTAL CORRECT RESPONSES OF EXPERIMENTAL AND CONTROL GROUPS ON THE WORD MEANING SUBTEST OF THE METROPOLITAN READINESS TESTS, FORM B

Experimental		Control	
Student	Post-test	Student	Post-test
1	9	1	2
2	9	2	6
3	6	3	5
4	9	4	6
5	3	5	7
6	10	6	7
7	10	7	7
8	11	8	6
9	8	9	4
10	9	10	9
11	9	11	9
12	9	12	8
13	10	13	6
14	8	14	7
15	6	15	9
16	8	16	3
17	6	17	4
18	7	18	8
19	7	19	8
20	8	20	8
21	5	21	7
22	5	22	3
23	6	23	7
24	8	24	7
25	8	25	8
Mean	7.76		6.44
Standard Deviation	1.86		1.92

TABLE VIII

TOTAL CORRECT RESPONSES OF EXPERIMENTAL AND CONTROL GROUPS ON THE LISTENING SUBTEST OF THE METROPOLITAN READINESS TESTS, FORM B

Experimental		Control	
Student	Post-test	Student	Post-test
1	13	1	7
2	7	2	5
3	7	3	5
4	9	4	6
5	9	5	6
6	9	6	10
7	9	7	7
8	11	8	10
9	10	9	6
10	10	10	12
11	8	11	9
12	7	12	11
13	9	13	5
14	7	14	6
15	11	15	11
16	8	16	3
17	8	17	5
18	13	18	11
19	5	19	7
20	8	20	9
21	9	21	6
22	7	22	7
23	8	23	6
24	8	24	7
25	11	25	9
Mean	8.84		7.44
Standard Deviation	1.87		2.33

TABLE IX

TOTAL CORRECT RESPONSES OF EXPERIMENTAL AND CONTROL GROUPS ON THE MATCHING SUBTEST OF THE METROPOLITAN READINESS TESTS, FORM B

Experimental		Control	
Student	Post-test	Student	Post-test
1	13	1	5
2	5	2	8
3	3	3	6
4	8	4	0
5	8	5	4
6	9	6	8
7	6	7	6
8	12	8	4
9	8	9	8
10	11	10	9
11	7	11	9
12	10	12	4
13	7	13	3
14	8	14	7
15	11	15	5
16	6	16	10
17	6	17	5
18	14	18	6
19	10	19	7
20	8	20	7
21	10	21	7
22	12	22	9
23	8	23	8
24	8	24	5
25	8	25	4
Mean	8.64		6.16
Standard Deviation	2.54		2.26

TABLE X

TOTAL CORRECT RESPONSES OF EXPERIMENTAL AND CONTROL GROUPS ON THE ALPHABET SUBTEST OF THE METROPOLITAN READINESS TESTS, FORM B

Experimental		Control	
Student	Post-test	Student	Post-test
1	16	1	8
2	15	2	4
3	4	3	2
4	5	4	12
5	11	5	10
6	11	6	13
7	5	7	5
8	16	8	13
9	8	9	11
10	15	10	8
11	6	11	8
12	9	12	9
13	9	13	14
14	12	14	5
15	15	15	16
16	9	16	3
17	7	17	10
18	16	18	12
19	13	19	4
20	8	20	8
21	7	21	6
22	12	22	13
23	8	23	7
24	8	24	4
25	14	25	10
Mean	10.36		8.60
Standard Deviation	3.76		3.75

TABLE XI

TOTAL CORRECT RESPONSES OF EXPERIMENTAL AND CONTROL GROUPS ON THE NUMBERS SUBTEST OF THE METROPOLITAN READINESS TESTS, FORM B

Experimental		Control	
Student	Post-test	Student	Post-test
1	19	1	6
2	6	2	10
3	7	3	5
4	12	4	4
5	19	5	3
6	12	6	10
7	4	7	5
8	19	8	11
9	12	9	10
10	16	10	12
11	13	11	8
12	9	12	11
13	9	13	6
14	8	14	8
15	19	15	12
16	8	16	7
17	7	17	5
18	23	18	9
19	8	19	7
20	14	20	6
21	12	21	8
22	12	22	12
23	7	23	7
24	6	24	3
25	17	25	9
Mean	11.92		7.76
Standard Deviation	5.06		2.73

TABLE XII

TOTAL CORRECT RESPONSES OF EXPERIMENTAL AND CONTROL GROUPS ON THE COPYING SUBTEST OF THE METROPOLITAN READINESS TESTS, FORM B

Experimental		Control	
Student	Post-test	Student	Post-test
1	10	1	11
2	3	2	2
3	1	3	4
4	4	4	3
5	6	5	3
6	5	6	7
7	6	7	5
8	7	8	11
9	6	9	5
10	11	10	6
11	8	11	9
12	4	12	2
13	2	13	3
14	4	14	4
15	9	15	3
16	10	16	3
17	6	17	7
18	11	18	10
19	6	19	6
20	4	20	0
21	5	21	8
22	5	22	2
23	5	23	5
24	4	24	4
25	8	25	8
Mean	6.00		5.24
Standard Deviation	2.64		2.93