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**A STUDY OF THE EFFECT OF DEVELOPMENTAL KINDERGARTEN
PLACEMENT ON STUDENT ACHIEVEMENT: ISSUES AND
OTHER ALTERNATIVES FOR THE "UNREADY" CHILD**

by

Sandra F. Earley

**A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Doctor of Education
Department of Educational Leadership**

**Western Michigan University
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April 1995**

A STUDY OF THE EFFECT OF DEVELOPMENTAL KINDERGARTEN
PLACEMENT ON STUDENT ACHIEVEMENT: ISSUES AND
OTHER ALTERNATIVES FOR THE "UNREADY" CHILD

Sandra F. Earley, Ed.D.

Western Michigan University, 1995

The purpose of this study was to determine the effect of developmental kindergarten placement beyond third grade and whether differences exist in levels of academic achievement between students who participated in developmental kindergarten and those who were recommended to attend but did not.

The target population of this study spanned 3 years and included 203 kindergarten eligible students in a suburban school district in mid-Michigan who were recommended to attend developmental kindergarten. The accessible population was 105 of the original 203 students.

The Michigan Educational Assessment Program (MEAP) reading and mathematics test mean scores were analyzed for both groups of students using the pooled-variance t test. Other measures of school success such as grade retention and rate of participation in specialized programs were analyzed for both groups using chi square.

The findings of this study indicated that there is no reason to believe that developmental kindergarten placement made a significant difference in student academic achievement and rates of participation in special education or Chapter 1 programs. However, a significant difference was found between groups when compared on grade retention.

Although findings of this study are not supportive of developmental kindergarten programs, there were no findings indicating that the developmental kindergarten program causes harm to students. It was recommended that a program evaluation be conducted and plans for ongoing assessment be developed. It was further recommended that a study of other program alternatives for meeting the diverse needs of children entering kindergarten be considered.

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Sandra F. Earley

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CHAPTER I

INTRODUCTION

Students who perform well in kindergarten seem to bring with them many of the prerequisite skills necessary for success in kindergarten and later school years. In contrast, some students entering kindergarten are "less mature" or "developmentally young" and find the rigors of formal schooling difficult. Often, these are the students who, in later years, are selected for remedial services and programs. However, for many years, transitional programs for developmentally young children entering kindergarten have been offered in an effort to avoid negative school experiences they may otherwise encounter. Transitional programs such as developmental kindergarten and pre-first grade are alternative programs aimed at meeting the diverse needs of young children. An attempt is made to provide an appropriate match between the educational program and the developmental and educational maturity level of the child.

In the state of Michigan, the only criterion for school entrance is a chronological age of 5 years old on or before December 1 of the school year of enrollment. However, in September 1983 legislation was introduced in the Michigan Legislature to address the issue of less mature children entering kindergarten. In response, the Superintendent's Early Childhood Study Group (1984) of Michigan recommended that the existing kindergarten programs be expanded to meet the developmental

needs of students and that alternative kindergarten programs be considered. This recommendation focused increased attention on developmental differences among young children in general and the varying rate at which they learn. As a result, developmental kindergarten programs in Michigan public schools emerged as a strategy to address the diverse needs of chronological 5-year-old children. Advocates for developmental kindergarten programs argue that developmental kindergarten offers children a chance to learn at their own rate of development, thereby avoiding a pattern of unsuccessful schooling and failure.

Although child development specialists advocate for quality early childhood programs that meet developmental needs of young children (Association for Childhood Education International, 1986; National Association for the Education of Young Children, 1986; National Association of Early Childhood Specialists, 1987), developmental kindergarten programs have created a great deal of controversy. Concerns include the validity of assessments for "readiness," the emphasis on lack of maturity as a reason to postpone school entry, the practice of retention, and the assumption that added time is the most effective intervention for the developmentally young child.

Typically, developmentally young students who participate in developmental kindergarten receive 14 years of schooling compared to 13 years of schooling received by students who meet the school entrance criterion to begin kindergarten. Developmental kindergarten programs usually provide a 2-year kindergarten experience for students. Generally, upon completion of developmental kindergarten, students spend the next school year in traditional kindergarten. This additional

year not only extends the number of years for students in school, but also is an extra expenditure for school districts.

Considering these concerns, the effectiveness of developmental kindergarten as a viable alternative to kindergarten placement merits investigation.

Background

In September of 1981, the Waverly (Michigan) Community Schools launched a pilot program for developmental kindergarten, known as Young Fives. The program was designed and implemented to address the special needs of entering kindergartners that had been identified over 2 years of testing using the Gesell School Readiness Test (Gesell Institute of Human Development, 1978). When the Young Fives program was implemented, it was believed that a program of this nature, when used with children who had been identified as being developmentally younger than 5 years in chronological age, could reduce future referrals to special services, assure a greater propensity to achieve at grade level, and guarantee good attendance patterns throughout the elementary years (Waverly Community School Board, 1986).

Five years after implementation, the Young Fives program was evaluated by the Ingham Intermediate School District Department of Planning and Evaluation. One component of the evaluation involved assessing the ongoing school success of the children who participated in the program. Data comparing groups of students who had participated in the Young Fives program presented "strong evidence to support the effectiveness of the program's placement of students" (Ingham

Intermediate School District Department of Planning and Evaluation [IISD-DPE], 1986, p. 8). All but one of the five variables analyzed indicated a positive program effect. More specifically, retention rates, identification rates to specialized services, and mathematics and reading achievement were more favorable for the Young Fives program participants than the comparison group (See Tables 1, 2, and 3).

Table 1
Retention Rates

Retention	Comparison group (<u>n</u> = 21)		Young Fives group (<u>n</u> = 21)	
	<u>n</u>	%	<u>n</u>	%
Yes	10	48	0	0
No	11	52	21	100

Note. Chi square = 13.12. Difference between groups significant at alpha = .05.

Table 2
Referral Rates

Referral	Comparison group (<u>n</u> = 21)		Young Fives group (<u>n</u> = 22)	
	<u>n</u>	%	<u>n</u>	%
Yes	9	43	3	14
No	12	57	19	86

Note. Chi square = 6.19. Difference between groups significant at alpha = .05.

Table 3
Reading and Mathematics Achievement

Low achievement level ^b	Reading achievement ^a			
	Comparison group (<u>n</u> = 17)		Young Fives group (<u>n</u> = 21)	
	<u>n</u>	%	<u>n</u>	%
Yes	5	29	0	0
No	12	71	21	100

Low achievement level ^b	Mathematics achievement ^c			
	Comparison group (<u>n</u> = 21)		Young Fives group (<u>n</u> = 21)	
	<u>n</u>	%	<u>n</u>	%
Yes	4	19	0	0
No	17	81	21	100

^aFor reading achievement, chi square = 6.55; difference between groups significant at alpha = .05. ^bYes indicates an achievement level of more than one year below grade level. ^cFor mathematics achievement, chi square = 4.42; difference between groups significant at alpha = .05.

Data on the fifth variable, absentee rates, revealed no difference between the experimental group and the comparison group (see Table 4).

The study concluded that youngsters who have been identified as less than 5 years old developmentally benefit from early school programs that focus on their special needs.

Table 4
Absence Rates 1983-84 to 1984-85

Group	Average days absent	
	Mean	<u>SD</u>
Comparison group (\underline{n} = 36)	5.90	6.39
Young Fives group (\underline{n} = 37)	5.18	6.20

Note. \underline{T} value = .49. Difference between groups not significant at α = .05.

Purpose of the Study

Although the Waverly Developmental Kindergarten Effectiveness Study (IISD-DPE, 1986) supported the existence of the program and placement of students in Young Fives, recent research indicates that any academic benefits attained as a result of participation in developmental kindergarten programs are short term and disappear by third grade (Shepard & Smith, 1986). Therefore, the purpose of this investigation was to determine the long-term academic effects of students who participated in the Waverly Community Schools Young Fives program through the examination of two comparable groups of students--those who as a result of the Gesell School Readiness Test were recommended for and attended Young Fives, and those who as a result of the Gesell School Readiness Test were recommended for Young Fives but because of parental preference, opted out of Young Fives and were waived to attend kindergarten. When the Young Fives program was studied in

1986, the study participants had completed Grades 2 and 3.

During the 1988-89 school year, Waverly School's Young Fives program was renamed Developmental Kindergarten in an effort to correct the thinking that chronologically young 5-year-olds (students with birthdays in September, October, and November) would automatically be identified for participation in the program. The Developmental Kindergarten continues to operate with the same philosophy and program design as Young Fives. All further discussion of Waverly's Young Fives program will be referred to as Developmental Kindergarten.

This study was undertaken not only to help clarify some of the findings of related research but also lead to recommendations that may impact future planning for kindergarten programs that will effectively meet the needs of all kindergarten eligible children. Within the context of that purpose, there was one specific objective: to determine the effect of developmental kindergarten placement beyond third grade and whether differences exist in levels of academic achievement between students who participated in the Developmental Kindergarten program and those who were recommended to participate but did not. Specifically, those differences were measured by the Michigan Educational Assessment Program (MEAP) reading and mathematics tests (Michigan State Board of Education, 1993), retention rates, and rates of identification for participation in special education and Chapter 1 programs.

Rationale

Early childhood education continues to receive nationwide and statewide attention from parents, professional educators, and policy

makers who pursue with vigor the issue of how to provide a quality early educational program that is challenging, enriching, and designed to meet the developmental needs of all kindergarten eligible students. Recognizing the value and need for quality early childhood education programs for children, the Michigan State Board of Education appointed the Michigan Early Childhood Ad Hoc Advisory Committee. The committee's task was to develop early childhood standards of quality for prekindergarten through second grade (Ages 4 through 8). Parents, professionals, and representatives from various agencies concerned with the education and development of young children were appointed to the committee. The committee's comprehensive efforts resulted in standards of quality that were presented to and adopted by the Michigan State Board of Education in December 1992. Included in the standards of quality document is an accountability component with specific indicators for quality early childhood programs (see Appendix A).

In direct opposition to the early childhood accountability standards of quality for prekindergarten and kindergarten programs is proposed legislation that promotes the testing of 4-year-old children for kindergarten readiness and the right of a school district to delay kindergarten entrance to a student until the student has a chronological age of 5.5 or 6. The proposed amendments also support extra-year kindergarten programs (Stanley & Fordell, 1993).

While transitional programs have provided alternatives for developmentally young children, some of the existing research on the outcome-effectiveness of developmental kindergarten programs report that developmental kindergarten is a minimally effective program

(Mantzicopoulos & Morrison, 1992). This study will add to the growing body of research of effects beyond the elementary school years.

A study of programs in operation may provide insight into future program planning that will meet the needs of all children who are chronologically 5 years old by the state-specified date and eligible for enrollment in public school kindergarten.

Definitions

Chronological age: A child's chronological age determined by birth.

Developmental age: The age at which a child is behaving as determined by the Gesell School Readiness Test (Gesell Institute of Human Development, 1978).

Developmentally appropriate: A learning environment designed to meet the developmental needs of all students by providing learning activities that are age and individually appropriate.

Developmental kindergarten (Young Fives): A learning environment for children who are chronologically 5 years old by a state established date but are not developmentally ready for kindergarten as measured by the Gesell School Readiness Test.

Developmentally young: When a child at any given chronological age demonstrates patterns of behavior that are characteristic of a child who is 6 months to 1.5 years younger.

Formal schooling: The educational cycle which begins with the kindergarten year; most children enter the kindergarten program when they have reached their 5th year of chronological age.

Grade retention: The practice of having students repeat the same grade.

Kindergarten: A learning environment for children who are chronologically 5 years old by a state established date as measured by chronological age and performance on the Gesell School Readiness Test.

Multigrade/multiage grouping. The practice of placing children who are at least a year apart in chronological age into the same classroom group.

Traditional kindergarten: A program designed to meet the needs of age-eligible kindergarten children who are developmentally ready for kindergarten as measured by the Gesell School Readiness Test.

School readiness: Ability to cope physically, socially, and emotionally in the school environment without undue stress and to sustain in that environment, measured by the Gesell School Readiness Test.

School success: Satisfactory student academic achievement, annual grade promotion, and ability to meet grade level outcomes without requiring the assistance of specialized services.

Student academic achievement: The achievement level in reading and mathematics as measured by the MEAP reading and mathematics tests.

Tracking (ability grouping): The one time assignment of students who have similar needs to a segregated class for instruction.

Transitional programs: Developmental kindergarten and pre-first-grade programs designed to meet the developmental needs of children.

Waived to kindergarten (WK): Students who through Gesell screening were recommended to attend developmental kindergarten but

whose parents decided not to place them in the program. They entered the traditional kindergarten program.

Overview of the Study

In this chapter, Chapter I, an introduction to the problem including the background, purpose of the study, rationale, and definitions has been presented. In Chapter II, a review of the literature is provided about: (a) the concept of school readiness, (b) chronological age differences, (c) developmental kindergarten, (d) other alternatives to meet the diverse needs of kindergarten age children, and (e) a conclusion. The design of the study presented in Chapter III provides the details of the subjects, the setting, data collection procedures, and the hypothesis. Data analysis and the findings of the study are reported in Chapter IV. A discussion on the findings and recommendations for further study are contained in Chapter V.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The purpose of this study was to determine the effect of developmental kindergarten placement beyond third grade and whether differences exist in levels of academic achievement between students who participated in developmental kindergarten and those who were recommended to attend but did not.

A review of the literature presents the following topics: (a) school readiness, (b) chronological age differences, (c) developmental kindergarten within the context of philosophy and program design, and (d) other alternatives for meeting the diverse needs of the chronological 5-year-old, more specifically, full-day kindergarten and multiage/multigrade classrooms.

School Readiness

All 50 states have statutes that determine the entrance age by which children may legally be enrolled in kindergarten, regardless of the fact that children differ tremendously in their developmental levels and readiness to begin formal schooling. The calendar date is typically one in which the child must have attained a chronological age of 5 years.

Age is the most common factor associated with school readiness, but the determination of specific age for school entrance has been a

longstanding unresolved issue. An English schoolmaster of the 16th century (cited in Cole, 1950) wrote:

One of the first questions is at what age children should be sent to school, for they should neither be delayed too long, so that time is lost, nor hastened on too soon, at the risk of their health. The rule, therefore, must be given according to the strength of their bodies and the quickness of their wits jointly. What the age should be I cannot say, for ripeness in children does not always come at the same time. (p. 770)

Readiness for school entrance is a concept at the root of many educational philosophies. Gesell's work on normative development has been extended to purport that not all children mature at the same rate; some children are simply immature and are not as ready as their chronological age peers to begin formal schooling (Ilg, Ames, Haines, & Gillespie, 1978). Gesell argued that each child has a developmental age and that a child's developmental age is more important than a child's chronological age. Gesell's work was based on a longitudinal study of hundreds of children, whose development from infancy to age 16 was observed and recorded. The recorded observations of the children's reactions to the same tasks became the basis for a method of assessing children.

Based on the premise that children mature at different rates, extra year kindergarten programs are offered to children who are considered developmentally young and not ready to begin traditional kindergarten. Advocates claim that extra year programs give children a "gift of time" that will ensure success in later years of school. According to Ilg et al. (1978), a child would be more successful in school if started and promoted on the basis of developmental age, the age at which the child is behaving as a total child--socially, emotionally, physically, and

intellectually. According to the Gesell Institute of Human Development (1980), behavior has a pattern and is a function of growth that is orderly, predictable, and measurable. The Gesell Institute (1980) presented a Developmental Placement Program designed to determine a child's developmental age by using the Gesell School Readiness Test; the developmental age then becomes the basis for school placement. The Gesell Institute purports that as many as 50% of school problems could be prevented or remedied if all children were placed in the grade appropriate for their developmental age. Such claims have attracted the interest and involvement of parents and educators in using developmental screening for entrance into kindergarten.

The Gesell School Readiness Test (GSRT, Ilg et al., 1978), also known as the Gesell Preschool Test (Haines, Ames, & Gillespie, 1980), is perhaps the most widely used test for developmental screening and readiness. The GSRT has become increasingly popular because of the belief that school failure can be reduced by appropriate placement in the right grade based on a behavioral age assessment.

The GSRT is based on the theory that behavior is the result of maturation, and that neither chronological age nor environmental conditions significantly affect that maturation. This assumption is contrary to numerous studies that have found positive effects of environment on change in behavior. More specifically is the High/Scope Preschool Study (Schweinhart & Weikart, 1980). The High/Scope Preschool study shows dramatic social and economic benefits of preschooling. Researchers found that students who participated in the High/Scope Preschool program were less likely to have been arrested, to have had children out of

wedlock, or to have received welfare. High/Scope participants also completed more years of schooling, earned more, and were more likely to own their own homes. Many educators would agree that it is not only the child's abilities or skills, but the quality of the school and home environment that determines the level of success a child achieves in school.

Critics of the Gesell School Readiness Test claim that the GSRT is being used inappropriately as a developmental screening test. Meisels (1987b) argued that the use of the GSRT is "based on a theory that is outmoded and unsubstantiated; tests with unknown validity and reliability; and an unverified notion of developmental age" (p. 69). It has been noted that the Gesell tests do not meet the standards of the American Psychological Association for validity, reliability, or normative information (N. L. Kaufman, 1985). The only study reporting a reliability coefficient for the GSRT had an error of measurement so large that a 4.5 developmental age score could not be reliably distinguished from a 5-year-old score, yet this is precisely the difference that is used to decide who should start kindergarten and who should not (A. S. Kaufman & Kaufman, 1972). Another study was undertaken to show that developmental age was a more effective predictor of success or failure in kindergarten than chronological age (Wood, Powell, & Knight, 1984). Although the test showed a creditable agreement rate with teacher judgments (78%), an analysis of the results of the study by Shepard and Smith (1986) showed predictive inaccuracy. According to Shepard and Smith, only one half of the children were accurately identified as potential school failures by the GSRT. Shepherd and Smith noted that

"for every potential failure accurately identified there was a successful child falsely identified" (p. 83). The attainment of normative information is yet another concern that surrounds the use of the GSRT. Although the norms were reestablished in 1980, they relied on 40 children who were all white, upper middle class, and lived in Connecticut. No effort was made to test for differences due to background or previous intervention, while proposing that all children must pass through normative developmental sequences, regardless of class or status (Stoiz, 1958).

In an article in Young Children, "The Gesell Institute Responds" (Gesell Institute, 1987), it is stated that "these assessments are designed to assess a child's developmental functioning, using tasks most closely associated with maturationally-related aspects of school readiness" (p. 7). School readiness, as defined by the Gesell Institute, is the capacity to simultaneously learn and cope with the school environment. The article cites the results of a longitudinal study by Ames and Ilg which "established a positive relationship between predictions for kindergarten readiness and school performance in the 6th grade" (p. 7). Also in this article, the Gesell Institute stated that additional statistical data pertaining to the Gesell assessment will soon be available. In response, Meisels (1987a) commented that "past experience casts doubt on the likelihood that . . . validity data can or will appear. The Gesell Institute has promised statistical data for generations, as they do yet again" (p. 8).

Meisels (1987) cited other studies that expressed concerns about the Gesell instrument. For example, A. S. Kaufman (1971) reported that

the factor structure of the Readiness Tests suggests that the tests measure intelligence and experience as well as maturity. Shepard and Smith (1985) have shown that the Gesell tests lack discriminate validity from IQ tests. Naglieri (1985) also noted that despite the fact that the test authors suggest that the Gesell Preschool Test is a behavioral evaluation and not an intelligence test, the test items on the Preschool Test "are very similar and in some cases identical to those found in current IQ tests" (p. 608).

The National Association for the Education of Young Children (1986) has taken the position that "accurate testing can only be achieved with reliable, valid instruments and such instruments developed for use with young children are extremely rare. In the absence of valid instruments, testing is not valuable" (p. 15-16). Instead, observations as an alternative to readiness tests are promoted.

The state of Michigan's Early Childhood Standards of Quality for Prekindergarten Through Second Grade (Michigan State Board of Education, 1992) states that entrances into school should be based upon chronological age: Children should not be excluded from school or placed in extra year programs on the basis of special needs; delayed cognitive, gross, or fine motor; home language; or social and emotional development assessment. When placement of children is necessary, varied developmentally appropriate methods and techniques for comprehensive screening and diagnostic assessment are to be used. In addition, the procedures used are to reflect the ethnic, cultural, and linguistic differences of the school population.

Chronological Age Differences

A number of research studies show that when children youngest in their grade are compared with their older classmates, they are nearly always less successful (Beattie, 1970; Carroll, 1963; Green & Simmons, 1962; R. V. Hall, 1963; Kinard & Reinherz, 1986; King, 1955). Forester (1955), in a study of 500 K-12 students in Montclair, New Jersey, reported that the very bright but very young students at the time of school entrance did not realize their potential. They tended to be physically immature or emotionally unstable, or they would cry easily. From junior high on, 50% of them earned only C grades. On the other hand, generally the very bright late school entrance group excelled throughout their school career.

A longitudinal study in Wapakoneta, Ohio, compared summer children (those with birthdays that fall between June and September) who had started school when first eligible with those whose parents delayed their start by one year. Gilmore (1984), using 4 to 7 years of data clearly showed how grade level equivalent scores on the Iowa Test of Basic Skills favored the older more mature students. Gilmore also examined all teacher assigned grades, which often included cooperation, attitude, and effort as a factor. Again, the results favored the older pupils who were ready for school when they started.

However, upon closer examination of children youngest in grade studies, Shepard and Smith (1986) pointed out three significant findings: (1) The achievement difference is very slight, (2) the difference exists only for low-ability children, and (3) the difference usually disappears by

the end of third grade.

When reviewing the findings by Davis, Trimble, and Vincent (1980), it was found that achievement testing placed 6-year-olds only 9 percentile points ahead of their 5-year-old peers upon entrance to first grade. In addition to the smallness of differences in achievement, further studies by Shepard and Smith (1986) have revealed that the differences only exist in those students who score below the 25th percentile in academic ability. Students who scored above the 50th or 75th percentile showed no differences in achievement. These data suggest that the difficulty experienced by some younger students may depend on a combination of youngness and low ability. The third finding from examining the achievement studies revealed that the differences in performance based upon within-grade age seemed to disappear as the children progressed through school. These findings support an earlier study in which two groups of children entering kindergarten were compared--the older and younger students. Comparisons were made of academic and behavioral measures from kindergarten through Grade 10. The older group began with slightly higher grades and achievement scores in most subjects than did the younger group. However, these differences diminished after eighth grade (Baer, 1958).

To determine the effects of beginning school age and gender on later school achievement and retention in grade, Deitz and Wilson (1985) studied 117 students who began kindergarten in the school year 1978-79. The authors found results consistent with those obtained by other investigations (Gredler, 1980; Langer, Kalk, & Searls, 1984) and suggested that there is little or no effect on academic achievement that can

be attributed to the birthday of a student.

The trend toward requiring children to be chronologically older upon entrance to school has emerged as a response to developmental age differences. Many states are advancing their deadline date for kindergarten entrance to help make children "ready" for school. Wolf and Kessler (1987) conducted a follow-up to their 1983 survey of state policies for school entrance age. Each state that had reported a change in entrance date to September or August was contacted to determine if changing the date for entering school was based on research prior to the change or whether follow-up investigation had been conducted to assess the impact of changing the entrance date. Strikingly, not a single state agency reported using research findings to support the change in entrance date. Conversely, the Illinois State Board of Education (cited in Gray, 1985) completed an extensive review of research when investigating issues related to proposed changes in the entrance age of 5 before November 1 in Illinois. The author of the Illinois study concluded that research does not support the raising of school entry age (Gray, 1985). DeLemos (1981) reported similar findings that research does not support arguments for raising the age of entry to school.

The English schoolmaster noted earlier would probably be amazed and perhaps even disheartened to know that four centuries after he recorded his own puzzlement, educators are still struggling with the same problem of when to start children in school.

The Michigan State Board of Education (1992) has taken the position that early childhood education programs need to be ready for the children, rather than expecting the children to be ready for the

program. It is time for schools to focus attention on the curriculum and the need to serve the diverse needs of all kindergarten eligible children.

The Developmental Kindergarten Program

Young children differ markedly in their rates of development and cumulative experiences upon entry to kindergarten. Transitional programs such as developmental kindergarten is a response to this student diversity. Developmental kindergarten is an alternative program for children who are screened prior to the kindergarten year and as a result of the screening appear to be "not ready" for the traditional kindergarten program. These children are identified as "developmentally young."

School readiness screening assessments, such as the Gesell School Readiness Test, are used to determine a child's overall behavioral readiness for kindergarten. Such assessments are broken down into subtests that define a child's physical growth, language development, personal-social behavior, and overall adaptive behavior (Ilg et al., 1978). All of these areas then yield a developmental cluster age that is based upon a comparison of the student's performance on a set of tasks with age-based norms. Children who are age-eligible to begin kindergarten and have a developmental cluster age of at least 5 are considered ready for kindergarten. Children who are age-eligible for kindergarten but have a developmental cluster age at a much younger stage of development (4.0-4.5 or younger) may become candidates for the developmental kindergarten program (Gesell Institute, 1980).

Placement in Waverly's Developmental Kindergarten program is based on many facets of behavior, some of which include: attention

span; level of fatigue; willingness to attempt new experiences; ability to relate to others in group situations; large body movements, coordination, and balance; small motor control and eye-hand coordination; speech and language development; ability to remember things seen and heard; and frustration level (Waverly Community School Board, 1986).

The intent of the Waverly Developmental Kindergarten program is to help students become physically, socially, and emotionally ready to achieve in school (K-12) to their fullest potential. Developmental kindergarten provides individualized and small group instruction based upon the philosophy that children develop at different rates. Developmental kindergarten places students in a 2-year route to first grade giving students an "extra year" to become developmentally ready for traditional schooling.

The Waverly Developmental Kindergarten curriculum is a "hands-on" curriculum that provides concrete learning experiences through the manipulation of a variety of objects and materials. Developmental kindergarten children are exposed to a variety of child-centered experience-based activities that promote social/emotional development, language development, physical development (gross motor and fine motor coordination), self-help skills, prereading, premath, and science and social studies concepts. In addition, the developmental kindergarten program provides activities that allow children to practice prosocial skills, problem solving skills, and decision-making skills. Cognitive learning is presented in thematic units and extended activities for parent involvement at home are also provided.

Transitional programs such as developmental kindergarten and pre-first grade have come under increasing scrutiny. Shepherd and Smith (1986) reviewed the evidence on extra-year kindergarten programs and concluded that whether students are placed on the basis of preacademic difficulties or developmental immaturity, there is no achievement benefit in retaining a child in kindergarten or first grade; and regardless of how well the extra year is presented to the child, the child still pays an emotional cost. Findings conclude that any positive effects detected at the end of the second year of kindergarten disappear by third grade.

In longitudinal studies of the academic effects of developmental kindergarten, Benerji (1990) found significant positive differences favoring the developmental group on measures of academic achievement. However, these effects vanished the second and third years. Likewise, Mantzicopoulos and Morrison (1991) found significant effects on reading in same-grade comparisons at the end of the second year of kindergarten, but the effects faded out at the end of Grades 1 and 2. It was concluded that 2-year programs were not effective.

There is agreement that repeating a grade for strictly academic reasons is counterproductive in terms of children's academic and social growth. Jackson (1975) summarized available studies and concluded that no reliable body of evidence exists to indicate that grade retention is more beneficial than grade promotion for students with serious academic or adjustment difficulties. Reinforcing this conclusion, Holmes and Matthews (1984) used meta-analysis to integrate the findings from 44 controlled studies. Nonpromotion had a uniformly negative effect. In

other words, children who repeated a grade were worse off than their socially promoted counterparts by about one third of a standard deviation ($ES = -.37$). Children who were candidates for retention but did not repeat were better off on both academic and social-emotional measures. However, some authors have stated the opinion that repeating a grade may be beneficial under certain conditions and for children with certain characteristics. Repeating a grade or providing time through extra-year programs based on individual rates of development have been shown to be effective (Finlayson, 1975; Sandoval & Fitzgerald, 1985). The Gesell Institute purports that studies show children are best able to benefit from extra time in school if their placement (a) is based on maturity rather than low achievement (Chase, 1968; Finlayson, 1975; Jackson, 1975; Rose, Medway, Cantrell, & Marcus, 1983), (b) occurs early in the child's school career (Rose et al., 1983; Sandoval & Fitzgerald, 1985), and reflects an appropriate adjustment in programs where curriculum more suitably matches the developmental behavior of these children (Byrnes & Yamamoto, 1986; F. Hall & Wallace, 1986).

Another issue related to developmental kindergarten is the homogeneous grouping of children or the one-time assignment of students to a segregated class for the purpose of instruction. There are basically four assumptions that lend support to the belief that homogeneous grouping or tracking is an effective practice. The first assumption is the notion that children learn better when they are grouped with those who learn at the same rate. Another assumption is that slower students develop more positive attitudes about themselves and school when they are not placed in groups with others who are far more capable. A third

assumption is that the placement processes used to separate students into groups both accurately and fairly reflect student's abilities. A fourth assumption is that it is easier for teachers to accommodate individual differences in homogeneous groups.

The controversy of tracking or ability grouping is a frequently raised issue in educational psychology. In a review of research studies on ability grouping that spanned a 60-year period, Slavin (1986) found little evidence to support the claim that tracking or grouping by ability produces higher overall achievement than heterogeneous grouping. He reasoned that some forms of subject-specific grouping--particularly within-class grouping for math and cross-grade grouping for reading tend to have positive effects on overall achievement. Each subject provides a closer fit between student learning and instruction than does a one-time assignment to separate classes on the basis of ability. Other than this exception, Slavin argued that ability grouping has no effects on either productivity or inequality; grouped and ungrouped schools produce about the same level of achievement, and neither high nor low nor average groups obtain any special benefit or suffer a particular loss due to grouping.

In an article in Educational Leadership, "Ending Ability Grouping Is a Moral Imperative," Hastings (1992) stated that the answer to the debate on ability grouping is not to be found in new research. He further stated:

There exists a body of philosophic absolutes that should include this statement: The ability grouping of students for educational opportunities in a democratic society is ethically unacceptable. We need not justify this with research, for it

is a statement of principle, not of science. It should become a moral imperative. (p. 14)

Hastings pointed out that our individualism defines people's membership in society; it should not exclude them. Instead, society must accept and celebrate diversity because all are different.

Critics of developmental kindergarten programs argue that the only legal and defensible criterion for school entry is the legal chronological age of entry set by the state. The argument is made for kindergarten classrooms to reflect quality standards that have been developed by experts calling for more developmentally appropriate practices for young children (Bredekamp, 1990; Cohen, 1990; Uphoff, 1990). The standards require investments in staff training, classroom equipment, developmental instruction, and management strategies to allow teachers to accommodate a wide range of abilities among young children within classrooms.

Other Program Alternatives for 5-Year-Olds

The Full-Day Kindergarten

Full-day kindergartens have been advocated as a viable option to address the diverse needs of children entering kindergarten. Thirty-four (66%) of the 50 states now have authorization to offer full-day kindergarten programs (Wolf & Kessler, 1987).

The kindergarten concept began with Friedrich Froebel in Germany in 1837 and was transplanted in the American public schools as half-day class sessions in 1873. While the majority of American kindergarten classes remain half-day sessions for children, there is a definite trend

toward full-day kindergarten programs. Nearly a third of the 5-year-olds enrolled in preschool and kindergarten programs in 1983 were enrolled in full-day programs, and 30% of these programs were kindergarten programs. The change is significant when one considers that in 1970 only 11% of enrolled 5-year-olds were in full-day programs ("The Statistical Trends," 1985).

The need for full-day kindergarten has been fueled by interests of parents and educators. As a result of changes in the work force, more women and more mothers of young children are working outside the home. The effects on kindergarten education include fewer school volunteers and the need for quality child care. Today, one-half of pre-school-age children have mothers employed outside the home. By the year 2000, that figure will rise to nearly 7 in 10 (Children's Defense Fund, 1990).

Increased work force participation of mothers means an increase in family needs for quality child care. In response, increasing attention is being focused on the role public schools might play in providing both education and care.

As one considers the full-day kindergarten program many advantages emerge. One major advantage is more instructional time for children. Advocates for full-day kindergarten argue that such programs provide the time needed to balance increasing curriculum expectations and the social and emotional needs of young children.

Advocates further argue that full-day kindergarten programs serve as an effective tool for children who are at risk for school failure. Although there is a list of indicators educators refer to when discussing

children at risk for school failure, poverty is a well-known and accepted indicator. The Children's Defense Fund (1990) reported that between 1979 and 1988 the proportion of American children living in poverty grew by 23%. Young children, particularly children under age 6 and of minority status are considered to be particularly vulnerable.

Studies have shown that full-day kindergartens, when compared with half-day programs, produce students with better readiness scores upon entry to first grade (Anderson, 1989; Humphrey, 1984; Puleo, 1986; Stinard, 1982). McConnell and Tesch (1986) found no significant differences in children's achievement, behavior, study habits, and social skills when studying half-day and alternate-day programs; however, when they compared half-day and full-day programs, the results highly favored full-day programs.

Proponents of full-day kindergartens note other advantages such as: (a) more time for teachers to observe and assess children for potential learning problems, (b) an opportunity to extend the curriculum to include more information in a more relaxed and unhurried school day, (c) ongoing individual evaluation and program planning which enables teachers to offer each child a variety of developmentally appropriate experiential learning opportunities, (d) less anxiety displayed by working parents, and (e) savings on transportation costs (Murray, cited in Day, 1988; Warger, 1988b). In addition both teacher and parent reaction to full-day kindergarten is overwhelmingly positive (Terens, 1984).

Much of the controversy with full-day programs tends to be centered around the issues of "education versus care" and "academic versus developmental focus." Caldwell (1986) noted that education and

care are essentially inseparable and that "in order for either service to be relevant to the needs of children and families, both components must be present" (p. 38). The issue of academic versus developmental programs implies that developmental goals focus on the whole child (social/emotional, physical, and cognitive development), and academic programs focus only on cognitive and academic skills. Realistically, regardless of the stated purpose or focus of a kindergarten program, the children involved learn and develop in many areas through impact of the kindergarten experience and learning environment.

Research supports full-day kindergarten as a viable way to increase the academic readiness of students; however, to establish such a program brings a substantial increase in cost.

The Multigrade/Multiage Classroom

Multigrade, multiage, mixedage, nongraded, and continuous progress are terms that have been used to describe programs that serve children with a chronological age variation of more than the traditional one year. The concept of continuous progress is based on a philosophical position which mandates that children should neither move on to new challenges before they have learned prerequisite learning nor should they repeat learning already mastered. An assumption that children differ in rate of development is the norm which underlies this approach.

Around the mid 1800s, when the new idea of mass public school education emerged, a more or less uniform age of school entry was established. It became regular practice to progress students through a rigid graded system on the basis of age (Pratt, 1983). According to

Angus, Mirel, and Vinovski (1988), age-grading served as a catalyst for a variety of educational practices, including "efficiency-oriented practices as child accounting, intelligence testing, ability grouping and tracking" (p. 232).

Katz, Evangelou, and Hartman (1990) stated that the problem with graded classrooms is the assumption that if children are placed in the same age group, all of them can be taught the same thing, in the same way, and at the same time regardless of the varying rate and degree in which young children learn.

While it has been an administrative necessity to group multiple grades together in many small and rural districts, an increased interest in multigrade early childhood programs has emerged from concern to effectively meet the diverse needs of young children. Advocates for multigrade classrooms accept the developmental point of view that allows children to develop at their own pace, in a setting where they can help each other along the way.

In 1959, the publication of Goodlad and Anderson's The Non-Graded Elementary School stimulated extensive research and the implementation of thousands of multigrade programs across the country. Goodlad and Anderson argued for the superiority of multigrade over graded classrooms. They argued that grouping children homogeneously on the basis of a single criterion, such as age, does not reliably produce a group that is homogeneous on other criteria relevant to teaching and learning.

Goodlad and Anderson's (1987) revised edition of the Nongraded Elementary School presented achievement data demonstrating that

children entering first grade can vary in mental age by up to 4 years, that the amount of variation increases as students progress through subsequent grades, and that achievement patterns of individual children differ greatly among subject areas.

A key element of multigrade education is multiage grouping, "placing children who are at least a year apart in age into the same classroom groups" (Katz et al., 1990, p. 1). For example, the Montessori program has traditionally included children of different ages. The rationale being that children not only learn from their own age peers but also younger children could learn much from the models provided to them by older children.

Research findings support multiage grouping, indicating social and intellectual benefits for students. Twenty-seven empirical studies reported between 1948 and 1981 looked at the academic and social outcomes of multiage grouping in elementary schools. Primarily, the research suggested that multiage grouping in the primary schools offers advantages over age-graded grouping for both academic achievement and social development outcomes (Pratt, 1983).

In other studies related to social effects of multiage grouping, French (1984) asked groups of first and third graders to assign various role labels to photographs of same-age, younger, and older peers. They were asked to specify the peer with whom they preferred to enter into various types of relationships. She found both older and younger children associated specific expectations with each age group; that is, younger children assigned instructive, leadership, helpful, and sympathizing roles to older children and older children perceived younger ones as

requiring more help and instruction. Brody, Stoneman, and MacKinnon (1982), in their investigation of interaction among school-age children, found that in each dyad the older children assumed the dominant role when playing with a younger child. When older children played with a best friend, an egalitarian role was demonstrated. In the case of triads, older children assumed a less dominant and more facilitative role. These studies seem to support same age and cross age peer interaction and suggest that multiage groups benefit from positive affect from social perceptions and friendship.

French, Waas, Stright, and Baker (1986) studied children's leadership roles in mixed and same-age groups as they participated in a decision-making process related to classroom activities. The children were observed and interviewed. The researchers collected data on verbal interaction, time on task, and similar classroom behaviors. The findings were: (a) Older children were more likely to exhibit leadership behaviors than were younger children; (b) the leadership behaviors primarily used were those that facilitated group processes, such as the solicitation of children's opinions; and (c) there was less opinion giving among older children in the multiage group than in the same-age group. A follow-up study to take a closer look at leadership behavior in groups of children was conducted by Stright and French (cited in Katz et al., 1990). The researchers observed children in the process of reaching consensus on the appropriate order of a set of pictures. The observations showed that in the presence of younger children, 9-year-olds demonstrated more organizing statements, solicitations of preferences/ group choice suggestions, less following behavior than when they were

with older children. According to Stright and French, the older children in the multiage groups facilitated and organized the participation of younger children "and did not utilize simple dominance to control the decision" (p. 513). Stright and French commented further that "many children do not possess the skills and characteristics that enable them to emerge as a leader in a group of peers. With sufficient age disparity, however, any child can attain leadership status with younger children" (p. 513). Therefore, multiage groups can provide appropriate contexts in which children can practice leadership skills.

The multiage classroom is theoretically linked to a concept advanced by Vygotsky (1978), who suggested that there are two developmental levels at which children learn. At one level, children can do things on their own; at the other level, they need guidance. Between these levels is what Vygotsky called the "zone of proximal development" (p. 84), where children who receive assistance can stretch their learning beyond what they are able to do alone. Studies related to multiage grouping and cognitive development suggests that cognitive conflict in a child arises from his or her interaction with children of different levels of cognitive maturity. It is assumed that optimal cognitive conflict stimulates cognitive growth by challenging participants to assimilate and accommodate to the new information represented by their differences in understanding (Katz et al., 1990). A child can learn effectively from another only when the less informed child already has a partial grasp of the concept in question. The concepts being learned must exist between the points of the child's actual and potential ability for cognitive conflict to be effective. Vygotsky (1978) maintained that internalization

of new concepts takes place when children interact within the zone of proximal development, "the distance between the actual developmental level as determined by independent problem solving and the level of potential developmental level as determined through problem solving under adult guidance or in collaboration with more capable peers" (p. 86).

Slavin (1987) pointed out that the discrepancy between what an individual can do with and without assistance can be the basis for cooperative efforts that can result in cognitive gains, and that children in collaborating groups behave more advanced when they perform as an individual. Slavin's work in cooperative learning supports the view that many of the differences between members of learning groups can be used for social and cognitive goals.

Ideally, in multigrade primaries the emphasis is on developmentally appropriateness. Teachers use techniques such as cooperative learning and hands-on activities to help children construct meaning for themselves.

Kentucky became the first state to fully embrace multigraded primaries when it incorporated a statewide mandate for a K-3 unit as part of its landmark Education Reform Act of 1990 (Rath, Katz, & Fanning, 1992).

Conclusion

The literature review for this study has focused on three basic areas: (1) the concept of school readiness and a discussion about the validity of assessment for readiness; (2) issues surrounding

developmental kindergarten programs, such as, students youngest in grade and the effects of grade retention and ability grouping on achievement; and (3) other alternatives to meet the diverse needs of kindergarten eligible children, more specifically, full-day kindergarten and multigrade/multiage classrooms.

The literature clearly shows a debate over the age at which children are ready to enter school and the most appropriate educational program for children upon school entrance. A major problem in determining the appropriate entrance age and the appropriate educational program is the lack of valid and reliable instruments to measure developmental age. Some researchers have asserted that many tests in use by school systems for screening purposes are marginally appropriate and are not designed to determine school readiness (Joiner, 1977; Superintendent's Early Childhood Study Group, 1984). In a review of tests and procedures used by schools to determine school readiness, Meisels (1987b) found only 10% of the test being used to be appropriate in terms of the age of the group and purpose. The most commonly used screening test, the Gesell School Readiness Test, has been criticized for its underlying assumptions, its validity, norms used, and its value for predicting children's success in school.

From the review of literature, the five major findings are:

1. The results of existing research do not show long-term benefits for kindergarten eligible children judged not ready and placed in developmental kindergarten programs. Several of the studies reviewed found no significant difference in achievement between students who were placed in developmental kindergarten and those of like ability who

were placed in kindergarten. In some studies, slight differences in achievement were noted between groups but those differences disappeared by third grade. Critics of extra-year programs such as developmental kindergarten cite evidence that the methods used to identify children for these programs have questionable predictive validity.

2. Some research studies indicate that students who repeat a grade do no better than children of like ability who are promoted. Other studies suggest that repeating a grade may benefit "immature" students, and that if practiced at all, should be practiced as early as possible.

3. Little evidence was found to support the claim that tracking or ability grouping produces higher overall achievement than heterogeneous grouping.

4. Studies have shown that full-day kindergartens, when compared with half-day programs, produce better readiness scores for entering first grade.

5. Multigrade/multiage classrooms provide continuous progress for all students and significantly diminish the issues of retention and tracking in early childhood programs. Multigrade/multiage classrooms also provide equal access to kindergarten for all age eligible children. Specific details for implementing the multigrade/multiage concept are not clear as little research exists regarding teacher strategies for delivering instruction to two or more grades of students at the same time. However, in multigrade/multiage classrooms, teachers use developmentally appropriate curricula and practices. Based on these findings, hypotheses presented in Chapter III were developed for study.

CHAPTER III

DESIGN AND METHODOLOGY

Introduction

The purpose of this study was to determine the effect of developmental kindergarten placement beyond third grade and whether differences exist in levels of academic achievement between students who participated in developmental kindergarten and those who were recommended to attend but were waived to kindergarten. There are seven sections in this chapter: (1) introduction, (2) hypotheses, (3) subjects, (4) the district setting, (5) measurement instrument, (6) data collection procedures, and (7) data analysis.

Hypotheses

The conceptual hypothesis for the study was that there is no relationship between developmental kindergarten placement and later school success.

The operational hypotheses include the following:

1. There will be no significant difference between the mean scores of developmental kindergarten (DK) and waived to kindergarten (WK) students in reading and mathematics achievement.
2. There will be no significant difference between the percentages of DK and WK students in grade retentions after kindergarten.

3. There will be no significant difference between the percentages of DK and WK students in receiving specialized services, that is, special education and Chapter 1.

The independent variable is developmental kindergarten placement. The dependent variable, school success, was measured by the seventh grade Michigan Educational Assessment Program (MEAP) reading and mathematics tests, annual grade promotion, and attainment of grade level outcomes without the support of specialized services.

Subjects

There were three sets of subjects for which data were collected and analyzed. The three sets of subjects spanned three developmental kindergarten program years at Waverly Community Schools, 1983-84, 1984-85, and 1985-86. Students who were recommended to attend DK during these years comprised the subjects for this study. Each set of students from the three years consisted of two groups--one group of students that were recommended for and attended DK and one group of students that were recommended for DK but were waived to attend the traditional kindergarten program.

Approximately 25% of the total kindergarten eligible population participated in developmental kindergarten during the three program years under study.

During the 1983-84 school year, a total of 229 kindergarten eligible students were enrolled for kindergarten. As a result of the kindergarten screening process, 52 students attended DK. One hundred and seventy-seven students were enrolled in the traditional kindergarten

program.

During the 1984-85 school year, a total of 238 kindergarten eligible students were enrolled for kindergarten. As a result of the kindergarten screening process, 54 attended DK. One hundred and eighty-four students were enrolled in the traditional kindergarten program.

During the 1985-86 school year, a total of 278 kindergarten eligible students were enrolled. As a result of the kindergarten screening process, 66 attended DK. Two hundred and twelve students enrolled in the traditional kindergarten program.

The accessible population of subjects for this study was 105 students in Grades 7-10 who were recommended to attend Waverly Community Schools Developmental Kindergarten program during the school years 1983-86. Students who were recommended to attend developmental kindergarten during program years 1983-86 but were waived to attend traditional kindergarten participated as the comparable group.

To participate in the Waverly Community Schools Developmental Kindergarten program, kindergarten enrollees must: (a) be 5 years old on or before December 1, (b) participate in the kindergarten screening process and receive a developmental age score of 4.0 to 4.5 years (or younger) as measured by the Gesell School Readiness Test, and (c) be signed into the program by a parent or legal guardian.

The Gesell School Readiness Test is administered to three groups of children entering kindergarten: (1) children for whom a prekindergarten screening indicates a need for more information to make an appropriate placement recommendation (DK or K), (2) kindergarten eligible

children who enroll during the summer months, and (3) kindergarten eligible children of parents who request testing.

Students who had transferred out of the school district and wished not to participate in the study were excluded. Each student in the study received a subject number and a code to specify developmental kindergarten or kindergarten placement.

The District Setting

Waverly Community Schools consists of four elementary schools, one intermediate school (Grades 5-6), one middle school (Grades 7-8), and one high school housing approximately 3,500 students. The current student population reflects 81% white, 11.2% African American, 4.9% Hispanic American, 2.3% Asian American, and 0.3% American Indian.

Instrumentation

The Michigan Educational Assessment Program (MEAP) reading and mathematics tests were the source of data collection for academic achievement. The MEAP reading and mathematics tests were selected because they assess the essential student learnings that have been approved and adopted by the Michigan State Board of Education. The MEAP reading and mathematics tests are administered to all 4th, 7th, and 10th grade students. The MEAP tests are designed for the following purposes: (a) to assess individual student learning and (b) to diagnose strengths and weaknesses of a group and determine curriculum effectiveness. The Kuder-Richardson 20 (K-R 20) reliabilities are greater than .92 for the 1991, 1992, and 1993 MEAP mathematics test and the

Kuder-Richardson (K-R 20) reliabilities are greater than .82 for the 1991, 1992, and 1993 MEAP reading tests (Michigan Department of Education, MEAP Office, 1994).

Data Collection Procedures

This was an ex post facto study. The grade placement of students in DK or WK and the academic measures of school success were obtained from student records.

Data Organization

The data gathered were organized for three sets of K and DK students who spanned three program years (1983-86). Group identification, number of subjects, group percentages for Chapter 1 and special education participation, and group mean scores for reading and mathematics achievement were organized in simple tabular presentations. The t test was used to determine whether the groups differed significantly in MEAP reading and mathematics performance. A chi-square test with an alpha limit of .05 was used to determine whether the groups differed significantly in grade retentions and placement in Chapter 1 and special education programs.

Data Analysis

Data of the DK and WK students over three program years were analyzed to compare their reading and mathematics achievement. Other group comparisons were made for grade retention and participation in Chapter 1 and special education programs.

In this chapter several topics relative to the actual study were reviewed. The type of research conducted and the hypotheses tested were defined. The subjects, the data relevant to these subjects, and the instrument employed to produce the data were explained in detail.

Chapter IV, Data Analysis and Findings, provides an in-depth interpretation of the data analysis and the subsequent findings relative to the study.

CHAPTER IV

DATA ANALYSIS AND FINDINGS

The purpose of this study was to determine the effect of developmental kindergarten placement beyond third grade and whether differences exist in levels of academic achievement between students who participated in developmental kindergarten and those who were recommended to participate but at parent request were waived to kindergarten. In this chapter the data are interpreted and compared to the expectations of the study in narrative and table form. Selections presented in this chapter include data interpretation for student academic achievement, grade retention, and participation in specialized programs. A summary that contains a review of the hypotheses in relation to the statistical analysis and interpretation are also presented.

Academic Achievement

The null hypothesis is that there will be no significant difference between the mean scores of developmental kindergarten (DK) and waived to kindergarten (WK) students in reading and mathematics achievement.

A descriptive comparison of the two student groups placed in developmental kindergarten (DK) or waived to kindergarten (WK) is presented in each table. In Table 5 the program year and gender of the two groups are presented.

Table 5
Program Year and Sex for Each Group

Group	1983-84				1984-85				1985-86				
	Male		Female		Male		Female		Male		Female		
	n	%	n	%	n	%	n	%	n	%	n	%	
DK	79	14	67	7	33	13	45	16	55	16	55	13	45
WK	26	4	50	4	50	2	29	5	71	8	73	3	27
Total	105	18	59	11	42	15	37	21	63	24	64	16	36

Students in both groups were recommended to attend DK. Represented is the study population of DK and WK students during three program years--1983-84, 1984-85, and 1985-86. Of this population during the 1983-84 school year, 21 students were DK and 8 students were WK. In 1984-85, 29 students were DK and 7 were WK. In 1985-86, 29 students were DK and 11 were WK. The total DK population for this study was 79, 56% male and 44% female. The total WK population for this study was 26, 51% male and 49% female.

The mean scores and standard deviations for the seventh grade Michigan Educational Assessment Program (MEAP) mathematics and reading tests are presented in Table 6. The mean scores and standard deviations represent each group's combined scores from all three program years. Students in the DK program years 1983-84, 1984-85, and 1985-86 took the seventh grade MEAP tests in 1991, 1992, and 1993, respectively.

Seventh grade MEAP mathematics test scores were not available for 10 study participants (6 DK and 4WK). Seventh grade MEAP reading test scores were not available for 6 study participants (5 DK and 1 WK).

In mathematics, the DK student group had a higher mean score. The mean score for the DK group was 516.67 compared to a mean score of 511.41 for the WK group. Standard deviations were 25.34 for DK and 24.36 for WK. The total group had a mean score of 514.04 and a standard deviation of 24.85.

In narrative (story) reading, the WK student group had a higher mean score. The mean score for the WK group was 310.04 compared to the DK group mean score of 302.20. Standard deviations were

Table 6
Mean Scores and Standard Deviations on MEAP
Mathematics and Reading Tests

Group	<u>n</u>	Mean	<u>SD</u>
Mathematics			
DK	73	515.67	25.34
WK	22	511.41	24.36
Total	95 ^a	514.04	24.85
Reading narrative (story)			
DK	74	302.20	17.66
WK	25	310.04	19.41
Total	99 ^a	306.12	18.54
Reading expository (information)			
DK	74	294.80	24.17
WK	25	291.80	25.28
Total	99 ^a	293.30	24.73

^aIndicates fewer students than total study population.

19.41 for WK and 17.66 for DK. The total group had a mean score of 306.12 and a standard deviation of 18.54.

In expository reading (reading for information), the DK student

group had a higher mean score. The mean score for the DK group was 294.79 compared to a mean score of 291.80 for the WK group. Standard deviations were 24.17 for DK and 25.28 for WK. The total group had a mean score of 293.30 and a standard deviation of 24.73. A pooled-variance estimate t test was conducted to determine if the differences between the groups were statistically significant in testing the hypothesis.

The observed significance of the F test was large (1.08), thus the pooled-variance t test was appropriate to use. The pooled variance estimate t test of MEAP mathematics is presented in Table 7. This analysis indicated that the t value did not exceed the critical value at the .05 level of significance. The hypothesis that there will be no significant difference between the mean scores of DK and WK students for MEAP mathematics was confirmed.

Table 7
Pooled-Variance Estimate t Test of
MEAP Mathematics Scores

Variable	t value	df	2-tail probability
Mathematics	0.86	93	.391

* $p < .05$, $cv = 2.0$.

The observed significance of the F tests were large (1.21 for narrative and 1.09 for expository) and thus the pooled-variance t tests were appropriate to use. The pooled-variance estimate t tests of MEAP

reading--narrative and expository--are presented in Tables 8 and 9. This analysis indicated that the pooled-variance t values did not exceed the critical value at the .05 level of significance. The hypothesis that there will be no significant difference between the mean scores of DK and WK for MEAP reading was confirmed.

Table 8
Pooled-Variance Estimate t Test of Reading--Narrative

Variable	t value	<u>df</u>	2-tail probability
Reading-- narrative	-1.87	97	.064

* $p < .05$, $cv = 2.0$.

Table 9
Pooled-Variance Estimate t Test of Reading--Expository

Variable	t value	<u>df</u>	2-tail probability
Reading-- expository	0.53	97	.597

* $p < .05$, $cv = 2.0$.

Grade Retention

The second hypothesis which was related to grade retention stated that there will be no significant difference between the percentages of DK and WK students in grade retention after kindergarten. This

hypothesis was rejected. The difference in program comparison of grade retention was measured by chi square Fisher's exact test because of differences in population sizes and the expectation that one of the four cell values would be less than 5. Fisher's exact test value of .04077 exceeded the critical value at the .05 level of significance. The WK student group had a higher percentage (26.9%) of students retained than the DK group (10.1%). In Table 10 the comparison of grade retention by program is presented.

Table 10
Comparison of Grade Retention by Program

Retention	DK group (<u>n</u> = 79)		WK group (<u>n</u> = 26)	
	<u>n</u>	%	<u>n</u>	%
No	71	89.9	19	73.1
Yes	8	10.1	7	26.9

Note. Chi square = .04077. Difference between groups significant at alpha = .05.

Specialized Programs

In Table 11 the comparison of student participation in special education by program is presented. The relationship between participation of students in special education by program was measured by chi-square continuity correction. Comparison of percentage of student participation by program indicated that the continuity correction value of 1.989 did

Table 11
Comparison of Student Participation in
Special Education by Program

Special education	DK group (<u>n</u> = 79)		WK group (<u>n</u> = 26)	
	<u>n</u>	%	<u>n</u>	%
No	50	63.3	21	80.8
Yes	29	36.7	5	19.2

Note. Chi square = 1.98936. Difference between groups not significant at alpha = .05.

not exceed the critical value of 3.841 at the .05 level of significance.

In Table 12 the comparison of student participation in Chapter 1 by program is presented. The relationship between student participation in Chapter 1 by program was measured by chi-square continuity correction. The continuity correction value of 0.035 did not exceed the critical value of 3.841.

The above comparisons indicated that the percentage of students receiving special education and Chapter 1 services did not exceed critical values at the .05 level of significance. The third operational hypothesis, which stated that there will be no significant difference between the percentages of DK and WK students in receiving specialized services--special education and Chapter 1, was confirmed.

Table 12
Comparison of Student Participation in
Chapter 1 by Program

Chapter 1	DK group (<u>n</u> = 79)		WK group (<u>n</u> = 26)	
	<u>n</u>	%	<u>n</u>	%
No	48	60.8	17	65.4
Yes	31	39.2	9	34.6

Note. Chi square = 0.03551. Difference between groups not significant at alpha = .05.

Summary

Three operational hypotheses were tested in this study. Of the three hypotheses, Hypotheses 1 and 3 were confirmed. Hypothesis 1 stated that there will be no significant difference between the mean scores of developmental kindergarten (DK) and waived to kindergarten (WK) students in reading and mathematics achievement. Hypothesis 3 stated that there will be no significant difference between the percentages of DK and WK students in receiving specialized services--special education and Chapter 1. Hypothesis 2, which stated there will be no significant difference in the percentages of DK and WK students in grade retention after kindergarten, was rejected. The percentage for the WK students referred to in this hypothesis was found to be significantly higher than the percentage for the DK students.

Overall, based on the findings of this study there is no reason to

believe that developmental kindergarten placement made a significant difference in student academic achievement and rate of participation in special education or Chapter 1 programs.

In Chapter V, Conclusions and Recommendations, the research hypotheses are restated and reviewed. The remainder of the sections contain discussion of the findings as they relate to the expectations for the study and suggestions for the next steps for further research.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

The purpose of the study was to determine effect of developmental kindergarten placement beyond third grade and whether differences exist in levels of academic achievement between students who participated in developmental kindergarten (DK) and those who were recommended to participate but at parent request were waived to kindergarten (WK).

Research Hypotheses

The placement groups consisted of students placed in developmental kindergarten (DK) or waived to kindergarten (WK) by parent request. A total of three hypotheses were studied. One hypothesis was studied for the two variables, mathematics and reading achievement. The hypothesis stated that there will be no significant difference between the mean scores of the DK and WK students. This hypothesis was confirmed. There were no significant differences between mean scores of students in the DK and WK groups in either mathematics or reading. In other words, there was no significant difference in student academic achievement for students who had an extra-year of school in DK when compared to those students who did not have the extra-year program.

The t test was the statistic used to determine whether there were statistically significant differences in Michigan Educational Assessment Program (MEAP) mathematics and reading scores between groups. The confirmation that a statistically significant difference did not exist between groups was based upon the t values for mathematics and reading.

The second hypothesis that there will be no significant difference between the percentages of DK and WK students in grade retention after kindergarten was rejected. The percentage for the WK student group was significantly higher than the percentage for the DK group as measured by chi square.

The third hypothesis that there will be no significant difference between the DK group and the WK group in percentage of student participation in specialized services was tested by chi square and confirmed.

Discussion

As indicated in the preceding section, the data collected and analyzed for this study confirmed two of the three operational null hypotheses presented. A statistically significant difference between the DK student group and the WK student group rejected the hypothesis that there will be no significant difference in percentage between DK and WK students retained in grade after kindergarten. The WK group had a higher percentage of students retained when compared to the DK group. This suggests that there is a positive relationship between a student being identified "developmentally young" and spending an extra year in grade during the early years in school.

There were no significant differences between the DK group of students and the WK group in MEAP mathematics and reading. The inference made is that WK students performed as well as DK students in mathematics and reading even though DK students were placed in an extra-year program. Also, there were no significant differences between the percentage of the DK student group and the WK group when compared on the rate of participation in special education and Chapter 1 programs. DK students were as likely to be referred to special education and Chapter 1 programs as WK students. Although, upon implementation of the developmental kindergarten program (Young Fives) in Waverly, it was believed that a program of this nature, when used with children who had been identified as being developmentally younger than 5 years in chronological age, could assure a greater propensity to achieve at grade level and reduce future referrals to special education and Chapter 1 programs. It is important to keep in mind that the accessible population of the WK group was significantly smaller than the DK group. However, this discrepancy was addressed through careful selection of appropriate test statistics.

The findings of this study are not supportive of DK programs. The conclusion that developmental kindergarten placement is of minimal academic benefit suggests the rationale for recommendations of critics who propose the elimination of developmental programs (Bredekamp, 1990; Michigan State Board of Education, 1992). Finding no statistical significance in reading and mathematics scores between DK and WK groups is similar to findings by other researchers (May & Welch, 1984; Shepard & Smith, 1987). The question must continue to be raised

whether DK programs do what their proponents claim.

The absence of more statistically significant findings in favor of the developmental kindergarten student group raises concerns about the contributions of the extra-year program.

Disseminating the findings of this study will include: (a) presentation to the superintendent and curriculum director at Waverly Community Schools to influence the current strategic planning in regards to restructuring early childhood programs, curriculum, and delivery of services for "at-risk" children; (b) sharing of information with the Michigan Department of Education Office of Early Childhood for policy implications; and (c) presentations to share findings and recommendations at state conferences such as Michigan Elementary and Middle School Principals Association, Michigan Association for the Education of Young Children, and the Michigan Association for Supervision and Curriculum Development.

Recommendations

Based in part on the findings of this study and other issues reviewed, the following recommendations are made regarding program evaluation, program alternatives, and staff development:

1. Conduct periodic evaluations of the district's early childhood programs to assess ongoing effectiveness. "Evaluation process, procedures, and implementation should become a required component to educational program design, development, and implementation" (Mohr, 1990, p. 62). Planning and implementation of evaluation processes and procedures is necessary to determine program effectiveness. The early childhood standards of quality (Michigan State Board of Education,

1992) is an excellent resource for information.

2. Investigate and study other school readiness assessments and adopt one that is more reliable for screening incoming kindergartners to plan for appropriate classroom experiences. As previously discussed in the review of literature, the Gesell School Readiness Test (GSRT, Ilg et al., 1978) does not have sufficient reliability or predictive validity for making decisions to place students in a 2-year program. Use of the GSRT should be discontinued.

3. Maintain ongoing data about the kindergarten screening process to assess the outcomes of students. Student data should be disaggregated by race, sex, and socioeconomic status.

4. Develop a plan to phase out developmental kindergarten and design and implement a continuous progress program that would be more responsive to the diverse needs of all kindergarten eligible children. For example, multigrade/multiage classrooms would provide opportunity for individualized learning and continuous student progress while diminishing the issue of retention and tracking. All-day kindergarten may provide another alternative to meet the diverse needs of children entering kindergarten) please see Chapter II, Review of Literature--Other Program Alternatives for 5-Year-Olds).

5. Provide continuous staff development opportunities for developmentally appropriate curricula and practices of the kind exemplified by the recommendations issued by the National Association for the Education of Young Children (Bredekamp, 1987).

Despite the findings of other studies cited in the review of literature and the findings of this study, school districts that offer the DK

program are not in error. There were no findings indicating the DK program causes harm to students. The choice of whether or not a school district provides a DK program is a choice of how one plans to effectively meet the needs of all kindergarten age children upon entry to school.

Appendix A
Early Childhood Standards of Quality

EARLY CHILDHOOD STANDARDS OF QUALITY

**FOR PREKINDERGARTEN
THROUGH SECOND GRADE**

**Michigan State Board of Education
Early Childhood Education, Parenting,
and Comprehensive School Health Unit**

December 15, 1992

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INTRODUCTION

This document is designed to assist administrators, teachers, and parents in developing high quality early childhood education programs for children ages four through eight years old.

ON NOVEMBER 5, 1986, the Michigan State Board of Education approved the document, *Standards of Quality and Curriculum Guidelines for Preschool Programs for Four Year Olds*. The purpose of this document was to provide the framework for design and implementation of high quality programs that meet the specific and different needs of children in preschool programs.

Since that time, the entire nation, including Michigan, has been in the midst of profound educational reform. Major efforts are being undertaken to improve the quality of teaching and learning in classrooms and to enhance the contribution of education to economic growth and social welfare. Simultaneously, the early childhood community has developed a comprehensive vision for educating young children, including the development and delivery of programs that address the continuum of development from birth through eight years of age, rather than a single age within this period.

In an effort to better serve Michigan's children and families, the State Board of Education has approved several initiatives over the past six years to implement, expand, or improve the quality of early childhood education programs and school reform projects through school improvement and restructuring. The early childhood initiatives have included a philosophy statement for early childhood education: *The Standards of Quality and Curriculum Guidelines For Preschool Programs for Four Year Olds*; *Curriculum Resource Book for Preschool Programs*; an Evaluation Report For Preschool Programs For Four Year Old Children At Risk; *Developmentally Appropriate Assessment of Young Children*; and a position paper: "Michigan's Response to the National Association of State Boards of Education *Right From the Start*."

Recognizing the value and need for quality early childhood education programs for children four through eight years old, the Michigan State Board of Education appointed an Ad Hoc Advisory Committee for Early Childhood Standards of Quality in April 1991. Parents, professionals, and representatives of various agencies, organizations, and school districts concerned with the education and development of young children were commissioned to develop *Early Childhood Standards of Quality for Prekindergarten Through Second Grade*. The committee began its work in June 1991 and concluded its assignment in April 1992. The committee's volunteer hours to accomplish this task totalled 2,500 hours. The committee's comprehensive efforts resulted in a draft of the contents that follow.

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INTRODUCTION

This document is designed to assist administrators, teachers, and parents in developing high quality early childhood education programs for children ages four through eight years old. The ideas presented are based on research concerning the individual needs of young children, the areas and sequence of development, and the atmosphere and conditions under which children learn best. This document will assist local administrators in their efforts to implement the State Board of Education mandates for the Core Curriculum. The outcomes recommended in this document elaborate on the *Model Core Curriculum Outcomes* with specific emphasis on early childhood developmentally-appropriate practices. A set of critical components is included: philosophy, accountability, coordination, cooperation and program support, family and community collaboration, child development, curriculum, and assessment and evaluation. These components are presented as distinct areas for which standards have been established. They are used to define quality and recognized as determinants of expected program outcomes.

These standards are offered by the Michigan State Board of Education as measures for identifying and comparing the qualitative and quantitative value of early childhood programs from prekindergarten through second grade. In developing the standards, the committee included information and direction that would comply with Public Act 116, the day care licensing regulations for all child care programs. These rules set forth the minimum standards for the care and protection of children ages four through eight years old attending Michigan's child care centers and public school sponsored preschools and before- and after-school child care centers.

Taken together, these rules and the document standards articulate what is expected or considered to be appropriate goals, objectives, and activities for the learning and development of our children four through eight years.

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STATEMENT OF PHILOSOPHY

Early childhood education programs are to be appropriate, relevant, and nurturing, thus enabling children to pursue life-long learning.

THE MICHIGAN STATE Board of Education is committed to supporting high-quality early childhood education programs for children through eight years of age. These programs recognize each child as a whole person, whose growth occurs in developmental stages that are sequential and continuous. The early childhood programs recognize and value families in their cultural, linguistic, and social diversity as active partners within the school community.

Components of a high quality early childhood education program are to include

- A qualified and nurturing staff
- A warm, stimulating, and multi-sensory environment
- Developmentally appropriate materials
- A curriculum that supports children's individual rates of development
- Teaching practices that reflect developmentally appropriate practices
- A continuous evaluation system that regularly assesses and reviews program goals and learner outcomes
- A cooperative venture between home and school
- Collaboration with the community
- Continuous staff development.

Family members, teachers, community members, agencies and administrators are to work cooperatively in the development and implementation of a learning environment which enhances the child's social, emotional, physical, and intellectual development.

Children's learning environments are to reflect the current standards on how children learn (e.g., National Association for the Education of Young Children and the National Association of State Boards of Education). Early childhood education programs are to be appropriate, relevant, and nurturing, thus enabling children to pursue life-long learning.

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STANDARDS OF QUALITY: PHILOSOPHY

Standard A.1:

A written philosophy for the early childhood education program is developed and utilized as the basis for making program decisions and establishing program goals and objectives.

ALL QUALITY early childhood programs are guided by an underlying theory or statement of fundamental beliefs which establishes a framework for program decisions and provides direction for goal setting and program implementation, the foundation upon which all activities are based. The program's philosophy reflects the input of staff and parents and their understanding of how children develop physically, socio-emotionally, and intellectually. It provides the rationale for the early childhood education program's activities and is applied to its total operation.

Criterion A.1.1

The philosophy is developed with input from early childhood staff, administrators, parents/guardians, and community representatives, and adopted by the local board of education.

Quality Indicators:

- The philosophy is developed by incorporating suggestions from the early childhood education staff, administrators, parents/guardians, and community representatives.
- The philosophy is revised every five years by staff, parents/guardians, and community representatives.
- Revisions reflect input from staff, parents/guardians, and community representatives; new legislation; research findings or other significant factors which impact early childhood education; and is recommended for adoption by the local board of education.

Criterion A.1.2

The philosophy states the rationale for the early childhood education program serving children four through eight years of age.

Quality Indicators:

- The philosophy is correlated with state and local goals, standards, and guidelines for an early childhood education program.
- The philosophy is consistent with other educational philosophies that affect the early childhood education program.
- The philosophy reflects the current legislative intent for the early childhood education program.

PHILOSOPHY

- The social, economic, cultural, linguistic, and familial needs of the society as well as the community are reflected in the philosophy.
- Research findings or theories referenced as resources are identified in the philosophy.

Criterion A.1.3

The philosophy is applied to all components and facets of the program.

Quality Indicators:

- A copy of the philosophy is available to all interested persons.
- The philosophy is distributed to early childhood education staff, administrators, governing board members, parents, and guardians.

Criterion A.1.4

The philosophy is utilized in the early childhood education program.

Quality Indicators:

- The philosophy is used in identification of program goals and objectives.
- The philosophy is visible in the program plan, development, and implementation.
- The philosophy is utilized in the development of staff job descriptions.
- The philosophy is visible in the evaluation and revision of the program.
- The philosophy is utilized in the development of staff development activities.

STANDARDS OF QUALITY: ACCOUNTABILITY

Standard B.1:

Quality early childhood education programs are accountable for their policies and practices.

EARLY CHILDHOOD education programs are regularly assessed as a basis for expanding on successes and correcting shortcomings. Plans for improvement are formulated, implemented, and reviewed regularly to continuously improve all aspects of the program. Those evaluating the program are to adhere to the following general principles:

- All children are to have equal access to the program. Screening, if needed, is used for planning instruction and special services, not for exclusion from the program or placement in extra year programs.
- Student progress is evaluated frequently and the results are used for planning individualized educational activities.
- Many sources of information are used for making decisions regarding children's placement in intervention programs. Decisions are never based on a single test score.

Criterion B.1.1:

Early childhood education programs are ready for the children, rather than expecting the children to be ready for the program.

Quality Indicators:

- Entrances into school are based upon chronological age; children should not be excluded from school or placed in extra year programs on the basis of special needs, delayed cognitive, gross or fine motor, home language, social and emotional development assessment.
- Screening procedures, if done at entry, are used to plan appropriate classroom experiences for children or to recommend further evaluation for intervention or special services.
- When placements of children are necessary, varied developmentally appropriate methods and techniques for comprehensive screening and diagnostic assessment are to be utilized. These procedures are to incorporate the ethnic, cultural, and linguistic differences of the school population.
- Decisions for intervention and retention are made by appropriately identifying and assessing the child's functioning level based upon the normative developmental range for the child's age group.

ACCOUNTABILITY**Criterion B.1.2:**

Approaches to student assessment are consonant with developmental philosophy, curriculum, and positions taken by professional associations concerned with the appropriate testing of young children.

Quality Indicators:

- Letter grades are not used to report student progress. Rather, the staff shares information derived from recorded observations, interviews, samples of student work, and other indicators.
- Decisions on student progress are based primarily on individual growth and development and secondarily by guidelines which are age appropriate and are never defined by an arbitrary set of criteria.
- Major decisions regarding a child's progress, intervention, or placement are not made on the basis of a single test score or achievement in one content area such as reading, math, etc.
- Decisions for intervention and retention are made by appropriately identifying and assessing the child's functioning level based upon normative developmental range for the child's age group.

Criterion B.1.3:

Early childhood education programs' policies and procedures open the door to participation from the entire community in all its diversity.

Quality Indicators:

- Programs do not limit participation by students on the basis of race, color, national origin, gender, language background, religion, handicapping condition, or socio-economic status.
- The goals, policies, and procedures of programs are published in clear, easy-to-understand form, and made available to all prospective participants. If needed, the program's goals and policies are translated or interpreted for language minorities, the hearing impaired, and the visually impaired.
- if there are problems or circumstances such as

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ACCOUNTABILITY

homelessness or migrant status that hinder a family from placing an eligible child in programs, the institutions involved will help search for a solution.

Criterion B.1.4:

Retentions are rarely considered as appropriate options in a developmental program.

Quality Indicators:

- Children whose growth and development falls outside age-appropriate guidelines are provided with diagnoses by specialists and subsequent intervention when necessary.
- If retentions or other interventive actions are considered, they are never based on a single factor but a wide variety of considerations including observations by the program administrator, the teacher, the support staff, and the parents.
- Precautions are taken to filter out cultural habits, ethnic and gender characteristics, language differences, and socioeconomic factors from consideration as developmental deficiencies that justify retention, extra year classes, or other interventive action.

Criterion B.1.5:

Early childhood programs are to provide support services to meet the specialized needs of their students.

Quality Indicators:

- Support services are provided for children with limited proficiency in English.
- Readers and interpreters are provided for hearing impaired and visually impaired children.
- Access to special education services is provided through referral of children with suspected handicapping conditions.
- Social services, public health, mental health, and volunteer agencies collaborate to better coordinate services to children and their families.
- There is a plan for the transition of young children from preprimary impaired programs into regular kindergarten and primary grades.

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Appendix B
Approval Letter From Human Subjects
Institutional Review Board



WESTERN MICHIGAN UNIVERSITY

Date: Sept 6, 1994

To: Sandra Earley

From: Christine M. Bahr, Acting Chair

for C Bahr

Re: HSIRB Project Number 94-07-12

This letter will serve as confirmation that your research project entitled "The effect of developmental kindergarten placement on student achievement: Issues and other alternatives for 'unready' children" has been approved under the expedited category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application. The following changes are recommended by the HSIRB but not required for approval:

1. On the consent letter change VP of HSIRB to VP of Research.
2. On the consent letter, just above where parents will be providing their signatures, change the sentence to read "I give permission to school personnel to release the information requested above to Ms. Sandra Early".

You must seek reapproval for any changes in this design. You must also seek reapproval if the project extends beyond the termination date.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: Sept 6, 1995

xc: Cowden EDLE

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