

THE EFFECTS OF A MULTI-AGE CLASSROOM SETTING ON
STUDENT ACHIEVEMENT AND ACADEMIC
SELF-CONCEPT

BY

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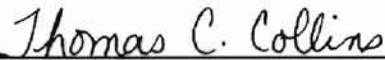
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CHAPTER I

INTRODUCTION TO THE STUDY

Education is an ongoing process that continues throughout a lifetime. The extent to which students pursue learning outside of the learning environment is thought to be determined early in their academic experiences. Some educators seek to make the overall educational experience a positive one for children, striving to provide optimum learning experiences that promote success for all students (Rogers, 1951; Silverman, 1993). Success for a learner builds strong perceptions of academic ability and establishes a foundation for learning.

In school settings, children need opportunities to grow affectively. Often educators rely heavily on measures of cognitive abilities when planning for optimal learning to occur. As a result, non-cognitive factors which include the physical, emotional and social domains are commonly overlooked (Silverman, 1993). Instrumentation for measuring achievement and ability is considered useful to assess students' cognitive needs, but provides little insight to affective needs. Understanding affective needs is necessary when planning appropriate curriculum to better meet developmental needs of learners.

Many researchers have identified self-concept as a key component in understanding human behavior (Coopersmith, 1967; Hamachek, 1978; Maslow, 1962; Rogers, 1951). Self concept plays an essential role in the development of the human personality (Lecky, 1945). Studies have explored aspects of self-concept in a variety

of educational settings and for a wide age range of students (Calsyn & Kenny, 1977; Shavelson & Bolus, 1982; Soares & Soares, 1969). Understanding how self-concept develops and changes enables educators to provide support for affective needs. The theoretical base for this study stems from the work of the theorists who established a framework for how self-concept is acquired, modified, and used to modify future experiences.

Achievement and self-concept have been clearly linked in numerous studies for elementary students (Craven, Debus, & Marsh, 1991; Hansford & Hattie, 1982; Wylie, 1979). Academic self-concept is formulated and related to achievement in complex ways by comparisons with other students, and with performance in other subject areas (Marsh, 1984; Williams & Montgomery, 1994). Fear of not measuring up to peers is damaging to a child's attitude toward himself as a learner (Kasten & Clarke, 1993). The learning environment must be structured in ways to enhance academic self-concept. The multi-age classroom is a structured learning environment that may greatly diminish fear of failure because the same expectation is not levied on every child (Kasten & Clarke, 1993). Diminishing this fear may positively contribute to an individual's academic self-concept.

Multi-age groupings can provide learners with developmentally appropriate educational experiences. Within these structures, uneven development is not viewed as a deficit, but is accepted as a normal part of human growth (Surbeck, 1992). Opportunity for success begins early for learners in a multi-age classroom. In contrast to a traditional classroom, a multi-age classroom is designed to allow teachers more flexibility in meeting students' developmental differences and individual needs. Multi-age classrooms de-emphasize age matched to grade mastery of concepts and emphasize

developmental growth. It is thought that children gain opportunities to grow affectively as well as cognitively when attention is given to development and the well being of the child. In such an environment, children are viewed as learners with academic, physical, social and emotional needs, producing a focus on the "whole" child, rather than limiting concern to only cognitive needs. According to Gaustad (1992), the nongraded model supports the integration of the "whole child".

Achievement is an important variable to consider when implementing multi-age learning environments. Educators and parents fear students may slow their academic accomplishments if group competition or external rewards are removed. Historically, studies support that students in multi-age classrooms and multi-grade classrooms show no differences in achievement from their traditionally grouped counterparts (Adair, 1978; Adams, 1953; Dreier, 1949; Harvey, 1974; Lincoln, 1981; MacDonald & Wurster, 1974; Way, 1969). In addition, studies show that multi-age grouping of students has positive effects on self-concept (Junell, 1970; Milburn, 1981; Pratt, 1986; & Schrankler, 1976). Within these studies, self-concept is viewed and measured globally. Little is known about the effects of multi-age grouping on academic self-concept. In addition, these findings support multi-age groupings as developmentally appropriate learning environments, which meet both cognitive and affective needs of learners. However, most of these studies are limited to primary grade students. The present study contributes to the literature by examining academic self-concept and achievement of upper elementary students in multi-age groupings.

Significance of the Study

Initial studies suggest that students in multi-age groupings are more likely to have positive global self-concepts, high self-esteem, and good attitudes toward school related activities than students in traditional groupings (Anderson & Pavan, 1993). However, few studies have explored academic self-concepts of students in multi-age groupings at the intermediate elementary level. Other studies have been conducted exploring the correlation of academic self-concept and student achievement in the traditional learning environment (Byrne, 1984; Craven, Debus, & Marsh, 1991; Shavelson & Bolus, 1982). Data reveal that a relationship exists between academic self-concept and academic achievement (Byrne, 1984; Shavelson & Bolus, 1982).

The correlation between global self-concept and multi-age grouping has been established (Junell, 1970; Milburn, 1981; Pratt, 1986; Schrankler, 1976). It seems imperative to further investigate academic self-concept of students grouped in a multi-age environment. While there are many studies at the primary level examining self-concept of multi-grade and multi-age students (Harvey, 1974; Way, 1981), such studies are scarce at the intermediate elementary level. The elementary years are a formative period for children to learn what factors contribute to school success as well as form self-identities based on their perceptions of academic abilities (Kurtz-Costes & Schneider, 1994). Thus, the elementary years are an important timeframe to explore the relationship between academic self-concept and multi-age grouping. The present study used measures for student perception of academic self-concept and group academic achievement to better understand the ways that a multi-age environment influences intermediate elementary school students.

Statement of the Problem

Prior studies have investigated the interaction of student preferences for learning and achievement (Davis & Frank, 1979; Farr, 1971; Packer & Bain, 1978; Saracho & Spodek, 1981; Trautman, 1979). Other studies have explored the relationship between student perception of the traditional learning environment and achievement (Boulanger, 1980; Fraser & Fisher, 1982; Haertel, Walberg, & Haertel, 1981; Talmage & Walberg, 1978). Further studies show the effects of self-concept on learning (Finn & Cox, 1992; Winne, Woodlands & Wong, 1982). Achievement, self-esteem and self-concept were shown to be higher for students in a mixed-age grouping when compared to the traditional classroom (Pavan, 1992). The present study focused on academic self-concept rather than a global self-concept, and studied achievement of upper elementary students in multi-age groupings and students grouped traditionally. Progress has been made in the study of perceptions of psychosocial aspects of the classroom environment, yet a limited number of published studies have been conducted at the elementary school level (Fraser & O'Brien, 1985). The purpose of the present study was to examine differences in the perception of academic self-concept as measured by the Me Scale and differences in achievement as measured by the Iowa Test of Basic Skills (ITBS) between students who are placed in a multi-age classroom and students who are placed in a traditional age group classroom.

Research Questions

1. In what ways do students in multi-age groupings differ in academic self-concept from students in traditional age groupings?

2. In what ways do students in multi-age groupings differ in achievement from students in traditional age groupings?

3. In what ways do third, fourth and fifth grade students in multi-age groupings differ in academic self-concept from third, fourth and fifth grade students in traditional groupings?

4. In what ways do third, fourth and fifth grade students in multi-age groupings differ in achievement from third, fourth and fifth grade students in traditional groupings?

Definition of Terms

The following terms provide a common language for the communication of the important ideas used in this study.

Academic self-concept. A characteristic which describes one's perception of self in terms of academic abilities, strengths and weaknesses which have an effect on the way one views and interacts with the learning environment as measured by the Me Scale.

Intermediate elementary. Upper elementary including grades three through five.

Multi-age grouping. / nongradedness. The practice of teaching children of different ages and ability levels together, without dividing them (or the curriculum) into steps by labeled grade designation (Gaustad, 1992).

Multi-grade class. The classroom organization that groups students from two grades in which students retain a specific grade assignment.

Normal curve equivalency (NCE). An equal-interval standard score ranging from 1 to 99, with a mean of 50 and a standard deviation of 21.06.

Primary elementary. Lower elementary grades including kindergarten through second grade.

Traditional age grouping. Classroom organization that groups students of the same chronological age at only one grade or level for instruction.

CHAPTER II

REVIEW OF THE LITERATURE

The purpose of this chapter is to review the studies that are related to self-concept, academic self-concept, multi-age grouping, and student achievement in alternative learning environments. There are two major bodies of literature to consider to understand the effects of an alternative learning environment on student achievement and academic self-concept. The first part of this review of the literature focuses on self-concept. Thereafter, the review examines multi-age groupings. Finally, student achievement in alternative learning environments is explored.

Self-Concept

Many in education, psychology, sociology, and related fields have identified the significant relationship that exists between self-concept and school achievement (Hansford & Hattie, 1982), particularly in the upper elementary grades (Kurtz-Costes & Schneider, 1994). Self-concept has become a major part of various human personality and behavior theories. Among the most in-depth reviews of how self-concept is acquired, changed and effects future experiences are those of Coopersmith (1967), Hamachek (1978), Maslow (1962), and Rogers (1951). These researchers established a framework for how self-concept is acquired, modified, and how it modifies future experiences. They provided evidence for the influence self-concept has on human personality and behavior.

Self-concept plays an essential role in the development of the human personality. Self-concept is believed to originate in the early months of infancy. Rogers (1951) explains that the structure of self is formed as a result of interaction with the environment, and particularly as a result of evaluational interaction with others. According to his theory, gradually as the infant develops, an awareness of "me", "I", and "myself" surfaces. An infant's interaction with the environment builds nonverbal concepts about himself or herself. Rogers explains that as an infant develops, he or she becomes aware of "I" statements and begins to value those positive experiences, placing negative value on those experiences seen as threats. Evaluation of self and behavior by others becomes a significant part of the infant's perception. When children perceive themselves as loved by parents, then they also perceive themselves as lovable, worthy of love, and having an affectionate relationship with parents. Rogers believed that as the child gains in experiences, each experience is valued either positively or negatively.

Before the age of six, a child's ability to evaluate failure as it relates to ability is not fully crystallized. Children are faced with experiences which further influence the self-concept, gradually altering it by strengthening or weakening perceptions of self. Satisfying needs for self-esteem leads to feelings of self-confidence, worth, strength, capability, and adequacy, while deprivation of these needs produces feelings of inferiority, of weakness, and of helplessness (Maslow, 1962). The continuing foundation of success for children is important if the human psyche is to be strong (Hamachek, 1990).

Academic Self-Concept

The self-concept changes through the addition of perception of self as a learner. Because of the large percentage of time spent in school, academic experiences greatly

impact a child's self-concept as a learner. Positive self-concepts and high levels of self-esteem are based on one's past experiences as a learner (Anderson & Pavan, 1993). The elementary years are a formative period in which children learn what factors contribute to success, and construct identities of self based on individual perceptions of academic abilities (Kurtz-Costes & Schneider, 1994). A child's self-concept will either be firmly established in experiences of success, accomplishment, and intrinsic pride or dominated with self-doubt, failure and feelings of worthlessness (Hamachek, 1990). Hamachek believes that self-concept is attributed to elementary-aged children having an incomplete and impressionable self-esteem, immature defenses, and being in the "industry versus inferiority" stage as described by Erikson (1963).

Recent work by Anderson and Pavan (1993) points out how most children come to school eager to learn and believe that they are capable of learning based on prior successful experiences. These authors believe that schools should allow children to learn in an environment that is free of anxiety and failure. In addition, they feel that schools should create ways for students to learn at an individual pace and gain self-confidence in individual learning abilities. Each person develops a consolidated framework which consists of individual beliefs about how oneself is established. As a result, when children are highly motivated the hope of success can turn into productive tension, which leads to sustained efforts on a task. The study further defined how a child's fear of failure may lead to avoidance of the task, especially when public failure may lead to rejection by others. Success may raise self-esteem and increase willingness to work which may result in increases in achievement.

Learning tasks should be planned so that children experience success. Bloom (1981) attributes repeated successes in learning to improvements in the student's self-

concept as a learner. He acknowledges that learning is difficult for everyone at times. Further, he points out that students who think they have inadequate abilities are unlikely to demonstrate perseverance or patience very long; whereas, students with increased confidence are able to secure the necessary energy and motivation to find solutions. Achievement outcomes are influenced by students' cognitive abilities as well as individual perceptions of those abilities (Bloom, 1981). School success can result in both external and intrinsic rewards for the learner (Bloom, 1981).

Heuristics for Self-Concept

Four differing models which have been used to describe self-concept include the nomothetic, taxonomic, hierarchical, and compensatory models (Byrne, 1984). The oldest and most traditional view of self-concept is the nomothetic model (Soares & Soares, 1983). Self-concept is viewed as "a unidimensional, overarching construct in which global positive or negative views of one's self pervasively affects one's behaviors in a wide variety of situations" (Soares & Soares, 1983). The nomothetic model views self-concept more simplistically, recognizing academic self-concept along with other individual perceptions, within the global definition (Strein, 1993). The model implies that changes in global self-concept would have generalizable effects on changes in a variety of domains, including academic self-concept (Strein, 1993). Though fewer studies establish self-concept as a unitary model, support for this model is still found in the literature (Rosenberg, 1965).

The hierarchical model, based on the work of Shavelson and Bolus (1982), and Shavelson, Hubner, and Stanton (1976) views self-concept multidimensionally. The model is described as a pyramid with general self-concept at the apex, several

intermediate level self-concepts including academic self-concept at the next level, followed by specific self-concepts on the bottom level. As a child's age increases, the hierarchical structure weakens, allowing specific self-concepts to become more independent of each other (Byrne & Shavelson, 1986). The model rests on a solid base of research findings established through factor analyses of self-concept scales (Byrne, 1988). A consistent finding within the hierarchical model is that academic grades in specific subject areas are more highly related to self-concept in these respective areas than they are to other self-concept areas.

The taxonomic model also describes self-concept multidimensionally, with academic self-concept as one of many components. However, the self-concept components would be expected to be only weakly interrelated, if at all (Soares & Soares, 1983). Several studies have established self-concept within this framework as weakly related constructs which are relatively independent of one another (Marx & Winne, 1980; Soares & Soares, 1983; Strang, Smith & Rogers, 1978; Winne, Marx & Taylor, 1977; Winne, Woodlands & Wong, 1982). The taxonomic model differs from the hierarchical model in that it suggests that a change in any given self-concept domain would not lead to even minor changes in any other domain (Strein, 1993).

The compensatory model is multi-faceted, but allows for compensatory relationships between the facets (Winne & Marx, 1981; Winne, Woodlands & Wong, 1982). The model differs from the hierarchical and taxonomic models in that it suggests that the specific facets are inversely related, rather than proportionally or independently (Byrne, 1984). The model maintains that a lowered self-concept in one area is compensated for by an enhanced view of self in an unrelated area (Winne, Woodlands & Wong, 1982). Support for this model has been based on observational

studies of low achieving students who report lower academic self-concepts than average students, but seldom differ in non-academic self-concepts (Strein, 1993). According to Strein, the model is weak in three areas. First, the idea that children with learning difficulties are unaffected in other self-concept areas is not supported uniformly. Second, the notion of a compensatory mechanism operating within individuals implies that the self-concept components will be related to each other inversely; however, no negative correlations between components have been reported in the literature. Finally, there is a tendency for people to underrate their own relative weaknesses as a part of the frame of reference theory.

Similar to the compensatory model described by Byrne (1984) and by Winne and Marx (1981), is the internal/external frame of reference model. This model suggests that student academic self-concepts are determined with consideration to both internal and external comparisons. According to this model, students' math and verbal self-concepts are formed in relation to both external and internal comparisons. Internally, students compare their individual academic achievements across subject areas, and externally compare their overall ability relative to others within their learning environment.

Many have suggested a significant relationship between academic self-concept and achievement (Hansford & Hattie, 1982; Kurtz-Costes & Schneider, 1994; Wigfield, 1991). Academic self-concept has been frequently posited as an important predictor of achievement, motivation and school performance (Kurtz-Costes & Schneider, 1994). In an important meta-analysis of 128 studies, Hansford and Hattie (1982) found the relationship between academic self-concept and academic achievement to be significant (.42). Several conclusions were drawn after extensively examining children in upper

elementary school through high school to determine how children's perceptions of competence and achievement values relate to their academic performance and choice of achievement tasks (Wigfield & Karpathian, 1991). They found that children's perceptions of ability and expectancies for success are the strongest predictors for grades in mathematics and English. Additionally they reported that children's perceived achievement values are the strongest predictors of their intentions to keep taking mathematics and actual decisions to do so.

The present research study supports the hierarchical model of self-concept. This study recognizes self-concept multidimensionally, with academic self-concept as one of several intermediate-level self-concepts subsumed from the general self-concept. Yet, the study will be limited to the academic self-concept strand, without consideration to more specific self-concepts which include specific facets such as math and English.

Multi-Age Groupings

The multi-age classroom has the greatest impact on student performance in the affective domain as concluded by measures of self-concept and social/emotional development (Ford, 1977; Junell, 1970; Milburn, 1981; Pratt, 1986). The Kentucky Education Association (1991) found freedom from failure to be one of the most compelling benefits of schools without grade levels. This study provided evidence for the measurement of student attitude toward school compared across a range of schools and geographic areas. Results generally favored the multi-age classroom.

Two schools of similar size (enrollments of approximately 350 each) were examined by Milburn (1981) over a five year period to determine what children gained

from being educated in a multi-age classroom. The experimental school had five multi-age classes with an average of twenty-five students in each class. One class of children ranged in ages from 6 to 8, one from 7 to 9, one from 8 to 10, and two from 9 to 11. The control school assigned students to specific, sequential grade levels, emphasizing an orderly progression in curriculum. The two schools were located in similar socioeconomic areas in the inner suburbs of two cities approximately 30 miles apart. Both schools had cooperative parent associations and a relaxed staff. Neither school had major problems of any kind. Both schools were considered pleasant places to visit.

The Piers-Harris Children's Self-Concept Scale and the National Foundation for Educational Research (NFER) Attitude Survey were given to both groups to examine academic self-concept/attitude toward school. Results indicated that children of all ages in the experimental school had more positive attitudes than did their counterparts in traditional grade-level groups. Data from the NFER Attitude survey supported this finding.

Milburn (1981) reported sixty-one percent of the children in multi-age classrooms disagreed or strongly disagreed with the statement, "I dislike schoolwork," which compared with nine percent of the students in the traditional setting. Twenty percent of multi-age grouped students agreed or strongly agreed that they disliked schoolwork, compared with eighty-one percent of the students in the traditional setting. Forty-six percent of the students in multi-age groupings strongly disagreed with the statement "I think school is boring", as compared with two percent of the students in the traditional grade level groups. On the other hand, sixty-eight percent of students in grade level groups strongly agreed that school is boring compared with only eight percent of students in the multi-age classes.

Milburn (1981) expressed the difficulty in discounting the teacher/student relationship as a variable when attempting to explain these differences. Among these various affective variables, self-concept has been studied globally. As a result, insight is needed on academic self-concept of multi-age groupings of students.

In a review of thirty experimental research studies which examined self-concept of students in elementary multi-age and multi-grade groupings, Pratt (1986) concluded that these groupings tended to be associated with better self-concept than traditional grade grouping. It is important to note that Pratt indicated many of the studies suffered from imperfect control of differences between teachers and schools which elected or rejected multi-age grouping.

An important meta-analysis conducted by Miller (1990) reviewed studies of graded and non-graded programs on measures of self-concept and related measures of self-perception. Three studies (Junell, 1970; Milburn, 1981; Schrankler, 1976) indicated that multi-grade students had better self-concepts than single-grade students. According to the analysis, the Schrankler study found that multi-age students had significantly higher self-concept scores than students in single grades. Using different measures of self-concept, the Milburn study and the Junell study found that multi-age students out-performed single grade students, but not at a statistically significant level. These results were with students who ranged in age from kindergarten to sixth grade.

Five different measures of attitude toward school were used to see how multi-age students felt about school and themselves, and to determine if they felt differently about their fellow classmates than single grade students. Four of the five studies favored the multi-age students. Three of these five studies favored the multi-age students at a significant level, and one study indicated no difference.

Other affective traits have been studied for students in multi-age classrooms. Papay, Costello, and Spielberger (1975) researched anxiety levels, measured by the State-Trait Anxiety Inventory, and compared multi-age and single-grade students. The multi-age students had significantly less anxiety than single grade students. Anderson and Pavan (1992) reviewed sixty-four research studies published between 1968 and 1990 and found that multi-age grouping was most frequently favored on standardized measures of academic achievement and mental health surveys. In the area of school anxiety and other attitudes toward school, self-esteem, and self-concept, fifty-two percent of the studies indicated multi-age schools were better for students, forty-three percent similar, and only five percent worse. They found that in a multi-age program, boys, underachievers, and students of lower socioeconomic status were more likely to perform better and to feel more positive toward themselves and their schools. Students in multi-age schools scored higher than graded students on both the Piers Harris Children's Self-Concept Scale and the Coopersmith Self-Esteem Inventory in all but one study which indicated no significant differences. It is important to note that these studies examined self-concept globally, rather than multidimensionally.

A review of research studies conducted by Pavan (1992) published after 1967 examined a mental health component, school anxiety, attitudes toward school, self-esteem, and self-concept. Results showed that students who had spent their entire elementary years in the same multi-age school felt more positive or the same as those who spent their entire elementary years in the same traditional school.

Of the studies reviewed comparing multi-age grouping with traditional grouping, few address self-concept multidimensionally. In other words, academic self-concept was not often studied as a part of the general self-concept. Most offer data collected on

student attitude toward school and general self-concept. The present study offers specific information which addresses academic self-concept which is needed to better understand the effects that a multi-age grouping may have on students.

Student Achievement in Alternative Learning Environments

Studies have found that a reduction of age ranges and student abilities does not increase overall achievement (Pratt, 1986; Raschke, 1988; Veenman, 1987; Way, 1981). Thirty studies conducted at the elementary level were reviewed by Pratt (1986). No consistent difference was found between multi-age and conventional classrooms in terms of academic achievement. It is important to note that the researcher indicated many of these studies suffer from imperfect control of differences between teachers and schools which elected or rejected multi-age grouping.

Learning environments which focus on diversity in age and ability groups offer an alternative solution to the traditional age-graded organization. The effects of multi-age grouping on achievement were examined by Way (1981). Specific areas of achievement which include reading, mathematics, language arts, and study skills were measured by the Stanford Achievement Tests. No significant differences were found in achievement between multi-age groups and single-grade classrooms.

In Miller's (1990) review of quantitative studies to describe how multi-age students perform academically when compared with their single grade counterparts, no differences in student achievement were found in eight of the studies (Adair, 1978; Adams, 1953; Dreier, 1949; Harvey, 1974; Lincoln, 1981; MacDonald & Wurster, 1974; Way, 1969). In a multi-age grouping of students in grades three, four, and five, Chace (1961) found multi-age students performed consistently higher in mathematics,

reading and language as measured by subscales of the Stanford Achievement Test than did single grade students. He concluded that multi-age affected achievement positively, although not significantly, in grades three through six.

Yerry (1964) found significant differences in achievement for first graders grouped in a multi-age class. Achievement was measured by the California Achievement Test (CAT) and favored multi-age classes in arithmetic, language and total achievement (Yerry, 1964). In addition, significant differences favoring the multi-age classes in reading, arithmetic and total achievement were found for grade five. This study resulted in no differences in achievement gains between students in multi-grade classes of first/second grades, fourth/fifth grades, and fifth/sixth grades. In the second/third multi-grade class, achievement gains were significantly different. Significant differences in vocabulary favored multi-age students when analyzed by age at lower levels, although little or no differences were found at the upper levels (Milburn, 1981).

In a study to determine if differences existed between the achievement of rural children from graded and ungraded elementary schools as measured by reading, language arithmetic, and spelling tests at the sixth grade level, Dreier (1949) found that sixth grade students did not differ significantly on reading or mathematics. A similar study which found no significant differences in achievement between multi-grade students and single grade students was conducted by Adams (1953). Nineteen multi-grade and nineteen single grade classes were the focus of the study. One-hundred fifty fifth grade students who had been placed in a multi-grade class were matched with one-hundred fifty students in regular fifth grade classes. Performance on the Progressive Achievement Test resulted in mean gains in reading, arithmetic, and language, but no

statistically significant differences between the combination classes and single grade classes.

Rule (1983) examined 3,360 students in grades three through six who represented one of three groups: multi-grade classes, single grade classes in schools with multi-grade classes, single grade classes in schools without multi-grade classes. Achievement was measured using data collected from the California Achievement Tests for the 1980-81 and 1981-82 school years. Students were grouped and compared according to high, medium to high, and average achievement in reading and mathematics performance. The results were mixed. Multi-grade students scored higher in reading when compared with single grade students. However, four of the five analyses in math for the single grade were significantly higher than those of multi-grade. One significant difference was found for mathematics within the multi-grade classes with the lower grade scores higher than the upper grade. High performing fourth grade students from multi-grade classrooms had better scores than high performing students from single grade classrooms. Of the eight studies conducted, four favored the multi-grade students and eight favored the single grade students. Rule (1983) concluded that students in multi-grade classes may enhance achievement for average to high achieving students, but may negatively affect mathematics achievement, especially for grade three. This study examined students similar in age to the students in the present study. However, the present study examines achievement globally, rather than looking at specific subject areas.

Pavan (1992) reviewed fifty-seven research studies which examined achievement of elementary age students. The studies reviewed were those which were at least one academic year, involved students in the United States and Canada, and published

between January 1968 and December 1990. She found that multi-age grouping was most frequently favored on standardized measures of academic achievement (Pavan, 1992). Ninety-one percent indicated that for all comparisons, the nongraded groups performed better (fifty-eight percent) or as well as (thirty-three percent) the graded groups on measures of academic achievement. In only nine percent of the studies did nongraded students do worse than graded students.

Learning Styles

Students of all ages and intellectual capacities learn in ways that differ dramatically (Dunn & Dunn, 1979). In addition, certain students achieve only through selected methods. According to observations, interviews, and experimental studies conducted since 1967, Dunn and Dunn found that regardless of age, ability, socioeconomic status or achievement levels, one responds uniquely to one's environment. Dunn and Dunn identified that some students need sound to learn, while other require absolute silence when learning.

Dunn and Dunn (1979) identified environmental elements which contribute to individual learning styles. For example, some students may choose to listen to music, or be tolerant of a high degree of noise while concentrating. On the other hand, some students may find it challenging to block out sound while trying to concentrate. Learners also respond differently to temperature. Some learners need a cool area to concentrate, while others need to feel warm to be productive. Low lighting has an effect on some learners, allowing them to think better, while some learners need bright illumination to think. Some learners need a more flexible, informal learning environment to work best. For example, these students may work best sitting on a bed,

in a beanbag, lying on the carpet, or sitting on pillows. Other students achieve better in a more traditional environment, where they may work more productively sitting at a desk.

Summary

In order to make learning a positive experience for students, educators seek alternatives to meet academic and self-concept needs. These needs must be met to establish academically confident learners. It is important for educators to search for new ways to provide appropriate instruction and learning environments conducive to promoting successful learners with a strong academic self-concept. One option may be to group students by multi-age, allowing teachers to meet the diverse needs of students through appropriate learning activities as an alternative to the traditional classroom where the same expectations are levied upon all students. Researchers have investigated self-concept in the primary elementary multi-age programs with promising results; however, little is known about students' academic self-concept in intermediate elementary multi-age programs. This research will contribute to the literature addressing academic self-concept and academic achievement in multi-age programs for upper elementary students.

CHAPTER III

METHOD

The purpose of the present study was to investigate the effects of multi-age grouping on student academic self-concept and achievement. Academic achievement and academic self-concept measures were used to compare third through fifth grade students placed in a multi-age group and third through fifth grade students placed in traditional grades according to age.

Subjects

Students eligible for the study were third through fifth grade students (N=472) who attended an elementary school in a large suburban public school district in Oklahoma which offered a multi-age program for students in grades three through five. Students (n=60) were selected for the multi-age program through a voluntary parental application process which included input from the parent, teacher and child regarding learning style needs. Applicants were chosen based on specific global learning characteristics measured by the Learning Styles Inventory (LSI) which included a need for high mobility, a preference for an informal learning environment, a tolerance for sound while working, need for food intake while learning, an enjoyment for working in pairs or with others, and the desire to work simultaneously on projects. It is important to note that a large percentage of the applicants chosen were boys. This was attributed to the large number of boys who applied for the multi-age program.

Students for the multi-age program were selected to be academically representative of the general population in terms of ability. Ability was measured by the Iowa Test of Basic Skills (ITBS) conducted in April, 1994. This multi-age population represented achievement levels measured by ITBS Normal Curve Equivalent scores which ranged from 5 to 99. An attempt was made to select an equal number of students from each of the three grade levels (n=20). Both ethnic and socioeconomic backgrounds were representative of the general school population. The ethnic makeup of the school was 86% Caucasian, 7% Native American, 3% African American, 2% Hispanic, and 2% Asian. The ethnic make-up of the multi-age group resulted in 93% Caucasian, 5% Native American, 0% African American, 0% Hispanic, and 1% Asian.

Permission was given to the researcher from the district to have third party access to permanent records for collecting the testing data for the population of third, fourth and fifth grade students (n=472) not identified by name (See Appendix A). Third, fourth, and fifth grade students are given the instrument used in this study to measure achievement routinely by district personnel. The instrument used to measure academic self-concept is used routinely by the teachers in the multi-age program. Results were used by coded identification known to the researcher only for the duration of the study. Appropriate human subjects approval for this research was obtained with the Oklahoma State University Institutional Review Board (See Appendix B).

Instruments

The researcher conducted a records review of each student from the experimental group and each matched student from the control group. The data were recorded on a Records Review Sheet (See Appendix C). The Records Review Sheet included a pre- and

post-test measure of academic self-concept as well as a pre-and post-test measure of achievement. The records review sheet included student identification number, gender, grade assignment, group assignment (traditional or multi-age), and a group identification for either subject or matched subject.

The Me Scale (Feldhusen & Kolloff, 1981) (See Appendix D) which measures academic self-concept was the instrument used to examine academic self-concept of the students in the study. The ME Scale is a 40 item paper and pencil assessment which requires children to agree or disagree with self-descriptors related to learning. The items focus on children's talents and abilities and associated or related behaviors. The Me Scale measures academic self-concept globally, without itemized question analysis.

The Me scale was validated with a sample of 912 high ability third through tenth grade students. The over-all reliability yielded using KR-20 was .79. The reliability coefficients in this validation study were calculated, and concurrent validity was estimated by correlation of the ME Scale score with those on the Piers-Harris Self-Concept Scale (1969). The correlation coefficient obtained was .65 (Feldhusen and Kolloff, 1981).

The Me Scale was chosen for this study because of its validated use with upper elementary students. Another reason for the selection was its global measurement of academic self-concept, without limiting learning characteristics to a specific content area.

The instrument chosen by the district for assessing achievement of all third, fourth and fifth grade students was the Iowa Test of Basic Skills. Different levels of the test were administered to different grade levels, but the normal curve equivalencies allowed for using different levels of the test for analysis. NCE composite scores which

comprise subtests of language skills, work study skills, and mathematic skills were analyzed in the study.

Procedures

Each student from the multi-age group (N=46) was assigned a subject coded number and then matched with a subject coded student from the traditional group (N=412). The subjects were first matched according to gender. Secondly, the subjects were matched according to grade level. From this subset, ITBS data were used to match students by ability.

To assure the protection of human subjects, the Oklahoma State University Institutional Review Board (IRB) and the local school district reviewed the proposal. The school personnel routinely test all third through fifth grade students using the ITBS. The Me Scale was selected and used routinely by teachers in the multi-age program to measure students' academic self-concept. All students were tested on the same days for each test. The ME Scale was administered by the district at the beginning of the school year and again at the end of the school year by school personnel. The ITBS was administered by school personnel in the Spring of 1994 and was administered again in the Spring of 1995. These data were posted in each student's permanent record housed in the administrative office.

A set of procedures was carefully followed by district personnel. Students were told that the Me Scale was not a test, and that the questions were to describe how one thinks and feels about oneself as a learner. Students were instructed to read each statement and agree or disagree, and indicate this by writing an "A" or "D" on the line next to the sentence. Students were asked to answer all questions. Students were assured there were no wrong answers. Students were assured of the anonymity of their answers.

The researcher conducted an initial records review in the Fall of 1994 and again in the Spring of 1995. The first review the researcher conducted was to obtain pre-achievement data from April, 1994 ITBS composite NCE scores and pre-test data from the ME Scale. The purpose of the second review was to obtain achievement data from the Spring of 1995 ITBS NCE scores and post-test data for the ME Scale.

All students (n=472) were assigned a subject coded number to assure anonymity. Students (identified by number code) in the multi-age group (n=46) were first matched according to gender. Students were then matched according to grade level. From this subset, the researcher used ITBS data collected by the district in April 1994 to match students by achievement. The researcher matched by first looking at subject codes sorted by gender. Secondly, subjects were sorted and matched according to grade level (third, fourth, and fifth). From this subset, subjects were matched using data collected from the ITBS. This matching procedure resulted in a multi-age group (n=46) and a traditional comparison group (n=46).

Design

The purpose of this study was to determine what effect multi-age grouping has on academic self-concept and academic achievement. Two groups of students were compared: third, fourth and fifth grade students (N=46) placed in a multi-age grouping and third, fourth, and fifth grade students (N=46) placed in a traditional grouping. The treatment for the experimental group included placement in a multi-age program made up of third, fourth, and fifth grade students.

The independent variables in the study were the grouping, grade level and gender. An ANCOVA was used to determine if pre-treatment differences existed, and whether

observed differences between means were due to chance or systematic differences among treatment populations. The covariates were the pretest for academic self-concept (Me Scale) and the pretest for achievement (NCE). Post-hoc analyses were conducted.

Mortality of Subjects

Although initially 60 students were eligible for the study, only forty-six students (n=46) in the multi-age group remained eligible for comparison with matched students from the general population. Five students from the experimental group did not take the ITBS in the Spring of 1994, and therefore had no ITBS NCE score for pretest comparison. Two students from the experimental group were absent the day the Me Scale pretest was administered. Two students from the experimental group moved during the course of the school year. Five students did not take the ITBS in the Spring of 1995.

Informal Observations

Prior to the study, two individuals were selected by the researcher to conduct informal monthly observations of both the control group and the experimental groups during the 1994-95 school year. These observations provided descriptive information on the two learning environments. The observers participated through notetaking. The observational data are included in Appendix E.

The experimental (multi-age) group was housed within four classrooms in one hallway. The experimental learning environment was developed to address specific global characteristics. For example, observers noted students often working on more than one project at a time. Observers often noted students as having several projects in different working stages. Also noted by observers were informal seating options

throughout the classrooms and hallways chosen by students during the instructional day. Observers noted students seated on beanbags and pillows on the floor, students seated on carpeted areas within and below classroom lofts, students seated both at and underneath tables. In addition, observers noted students standing at tables to work, rather than sitting. Observers consistently noted students in the experimental group displaying a tolerance for sound. While visiting classrooms, observers noted hearing background music, dialogue among students, and peer interaction which was described as "a constant hum". In addition, observers noted opportunities for movement during the course of the day. Students were described as independently accessing many areas within and outside the classroom. For example, students were observed utilizing the hallway as a working area, moving to other multi-age classrooms for the use of computers and other resources, and accessing the media center for additional resources. Opportunities for students to collaborate were noted by observers. Students were described as working in partnerships, and small groups. Observers noted students eating nutritional snacks while working.

Individuals in the control group were found in seventeen different classrooms. A summary of observations noted that while some project work was observed, very few classrooms offered more than one project at a time. Classroom seating options during the instructional day were mainly limited to traditional desks, although observers noted a few classrooms which offered alternatives such as tables, and occasional use of carpeted areas for reading and some centers. Many observations indicated students seated in rows of desks. While noise levels varied from classroom to classroom, most classrooms were noted as relatively quiet during formal working times, with occasional student to student interaction. Observers noted occasional movement in traditional

classrooms, but primarily observed students seated in desks, working quietly. Most comments about student movement were limited to movement within the classroom, with individual students occasionally accessing the media center.

These informal classroom observations provide interesting data to consider when examining the traditional and the multi-age learning environment. Differences in achievement and academic self-concept were addressed within the following hypotheses.

Hypothesis

It was hypothesized that there would be no difference in perception of academic self-concept between third through fifth grade students placed in a multi-age setting and third through fifth grade students placed in a traditional setting.

It was hypothesized that there would be no difference in overall academic achievement between third through fifth grade students placed in a multi-age setting and third through fifth grade students placed in a traditional setting.

CHAPTER IV

RESULTS

The purpose of this study was to determine if there were differences in the perception of academic self-concept as measured by the Me Scale and in achievement as measured by the Iowa Test of Basic Skills between students who were placed in a multi-age classroom and students who were placed in a traditional classroom. There were forty-six subjects in the experimental group and forty-six subjects in the control group. Subjects in the control group were initially matched by gender and grade level, and then matched by achievement to subjects in the experimental group. The Me Scale was administered as a pre-test at the beginning of the school year, and again as a post-test nine months later. Normal Curve Equivalent scores from the Iowa Test of Basic Skills (ITBS) were collected prior to the treatment and again eight months following the treatment. The data were analyzed using an analysis of covariance. This chapter reports the descriptive data and the results of these analyses.

Descriptive Statistics

Table I shows the frequency distributions of demographic information for the experimental and control groups by gender and grade level. The groups were already in existence at the onset of the study, and not considered to be random or natural. When the experimental and control group were combined, fifty-six students (61%) were male and thirty-six students (39%) were female. Substantially more male students were

TABLE I

FREQUENCY DISTRIBUTION OF DEMOGRAPHIC INFORMATION

Grade	Male		Female	
	Experimental	Control	Experimental	Control
Third	10	10	4	4
Fourth	4	4	10	10
Fifth	14	14	4	4
	28	28	18	18

involved in the study because the identification criteria for the multi-age program encouraged an active learning style. Of the combined experimental and control groups, twenty-eight students (30%) were third graders, twenty-eight students (30%) were fourth graders, and thirty-six students (40%) were 5th graders. This may have been attributed to a greater number of students in the general school population at the fifth grade level.

When male students which represented the experimental and control group were combined and divided by grade level, twenty male students (22%) represented third grade, eight male students (9%) represented fourth grade, and twenty-eight male students (30%) represented fifth grade. When female students who represented the experimental and control group were combined and divided by grade level, eight female students (9%) represented third grade, twenty female students (21%) represented

fourth grade, and eight female students (9%) represented fifth grade. When male and female students of the experimental and control groups were combined, 28 students (30%) represented third grade, 28 students (30%) represented fourth grade and 36 students (40%) represented fifth grade.

Hypothesis 1

It was hypothesized that there would be no difference in perception of academic self concept between third through fifth grade students placed in a multi-age setting and third through fifth grade students placed in a traditional setting.

Hypothesis 2

It was hypothesized that there would be no difference in overall academic achievement between third through fifth grade students placed in a multi-age setting and third through fifth grade students placed in a traditional setting.

Results of Analysis of Covariance

Students were given the Me Scale and instructed to mark the extent to which they agreed or disagreed with statements to reflect how they felt about themselves as learners. They were further instructed that there were no right or wrong answers. An analysis of covariance (ANCOVA) was conducted to determine whether observed differences between means were due to chance or systematic differences among treatment populations. The ANCOVA was chosen due to the limitations of the intact multi-age grouping of students. Students were placed in the multi-age group by teachers in the multi-age program based on application to the program and specific learning style needs. As a result the group was already in existence when the study was initiated and not

Table II

Summary Table for Analysis of Covariance for Academic Self-Concept by Group

	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Covariate					
Pre Academic					
Self-Concept	542.1	1	542.1	31.5	.00
Main Effects	120.9	1	120.9	7.0	.01*
Group					
Explained	663.0	2	331.5	19.2	.00
Residual	1533.8	89	17.2		
Total	2196.9	91	24.1		

considered to be random or natural. An ANCOVA was needed to control the variance which may have been different due to these grouping factors.

Results for hypothesis I produced an F value of 7.0. (See Table II.) A significant mean difference was found between the experimental (multi-age group) and the control groups on self-concept ($F=7.0$, $p < .05$) with pre self-concept as the covariate and with the resulting higher mean self-concept as produced by the experimental group.

Mean scores for academic self-concept of both groups are shown in Table III. The mean score on the Me Scale pre-test for the experimental group was 28.50. The control group yielded a mean score of 30.28 for the Me Scale pre-test.

Table III

Descriptive Statistics for Group, Grade and Genderfor Pre and Post Variables

		Pre Academic		Post Academic	
		Self-Concept		Self-Concept	
		\bar{x}	S _x	\bar{x}	S _x
Group	Experimental	28.50	5.86	31.41	4.40
	Control	30.28	5.75	29.89	5.32
	Combined	29.39	5.84	30.65	4.91
Gender	Male	28.86	5.99	29.75	5.04
	Female	30.19	5.60	32.06	4.42
Grade Level	Third	29.14	6.18	31.32	4.49
	Fourth	29.57	5.76	31.75	4.09
	Fifth	29.44	5.80	29.28	5.57

Table III (Contd.)

		Pre NCE		Post NCE	
		\bar{x}	S _x	\bar{x}	S _x
Group	Experimental	70.54	19.36	61.61	18.04
	Control	69.91	19.43	68.74	17.74
	Combined	70.23	19.29	65.17	18.15
Gender	Male	65.88	19.69	60.77	18.30
	Female	77.00	16.76	72.03	15.86
Grade Level	Third	72.93	16.71	68.68	16.40
	Fourth	75.71	16.30	69.36	15.18
	Fifth	63.86	21.81	59.19	20.27

The experimental group yielded a mean score of 31.41 on the Me Scale post-test. The mean score for the control group was 29.89.

Table IV

Summary Table for Analysis of Covariance for Academic Self-Concept by Group and Grade

	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Covariate					
Pre Academic					
Self-Concept	542.1	1	542.1	33.8	.000
Main Effects	237.4	3	79.1	4.9	.003*
Group	121.2	1	121.2	7.6	.007
Grade	116.4	2	58.2	3.6	.031
Explained	833.2	85	138.9	8.7	.000
Residual	1363.6	85	16.0		
Total	2196.9	91	24.1		

Table V

Analysis of Covariance Results for Academic Self-Concept by Grade

			Grade 3	Grade 4	Grade 5	
Covariate			N=14	N=14	N=18	p
Hyp 1	Pre					
Academic	Academic	Exp	32.64	30.93	30.83	
Self-	Self-					<.05
Concept	Concept	Con	30.00	32.57	27.72	

ANCOVA results for academic self-concept by grade level resulted in significant mean differences by grade level with grades three and five producing significantly greater mean levels in the experimental groups than in the control group while mean differences in grade four were found to be in favor of the control group on academic self-concept. (See Tables IV and V.) This shows a significant increase in academic self-concept for third and fifth graders in the multi-age group. However, the fourth graders in the traditional group showed a significant increase in academic self-concept.

Table III shows the distribution of means for the Me Scale pretest according to grade assignment. Third graders had a mean score on the Me Scale pretest of 29.14. Fourth graders had a mean score of 29.57. Fifth graders had a mean score of 29.44.

The distribution of mean scores for the Me Scale post-test are also reported in Table III. The third grade students yielded a Me Scale post-test score of 29.14. The fourth grade students yielded a mean score of 31.75. The fifth grade students' mean score was 29.28.

Tukey's test for pairwise comparisons was chosen for the post hoc analyses. Tukey's test was chosen because it examines all possible pairwise comparisons and is considered less conservative than other post-hoc analyses used with ANCOVA. Post-hoc analyses were run to examine all possible differences between means. No significant differences were revealed according to the analyses.

Table VI reports Analysis of Covariance results for hypothesis 2, which produced an F value of 19.5. A significant mean difference was found between the experimental and control groups on achievement ($F = 19.5, p < .001$) with pre-achievement as the covariate and with the resulting higher mean for achievement produced by the control group. This shows a strong relationship exists between the traditional group and standardized achievement scores.

Table VI

Summary Table for Analysis of Covariance for Normal Curve Equivalencies By Group

	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Covariate					
Pre NCE	22513.8	1	22513.8	327.4	.000
Main Effects	1344.5	1	1344.5	19.5	.000*
Group					
Explained	23858.2	2	11929.1	173.5	.000
Residual	6120.9	89	68.8		
Total	29979.2	91	329.4		

The distribution of mean scores for pre and post achievement are reported in Table III. In pre-tests for achievement, the Normal Curve Equivalent (NCE) Scores yielded a mean score of 70.54 for the experimental group. The mean score for the control group was 69.91. The experimental group showed slightly higher achievement than the control group at the onset of the study.

Post NCE scores for the experimental group yielded a mean of 61.61. The mean score for the control group was 68.74. The combined means were 65.17. Following the treatment the control group demonstrated higher achievement than the experimental group.

Table VII

Summary Table for Analysis of Covariance for Normal Curve Equivalencies by Group and Grade

	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Covariate					
Pre NCE	22513.8	1	22513.8	352.9	.000
Main Effects					
Group	1342.8	1	1342.8	21.0	.000
Grade	72.3	2	36.2	0.6	.569
Explained	24556.4	2	4092.7	64.2	.000
Residual	5422.8	85	68.8		
Total	29979.2	91	329.4		

CHAPTER V

CONCLUSIONS

Summary

This study hypothesized that third, fourth, and fifth grade students grouped by multi-age would show no differences in academic self-concept and achievement than students of the same grade levels grouped traditionally. The experimental group (n=42) and the control group (n=42) were randomly matched according to gender, grade level, and then by achievement.

As a treatment the experimental (multi-age) group received instruction in a multi-age classroom which consisted of third, fourth and fifth grade students. In the multi-age group, independent observers documented a variety of options available to students which supported individual learning styles. The overall working environment was described by observers as informal.

Each group was given the Me Scale to measure academic self-concept at the beginning of the study, and again as a post-test, seven months following the treatment. After seven months into the treatment, achievement was measured using NCE scores from the ITBS for both groups.

Discussion

Results of an ANCOVA revealed significant differences in favor of the multi-age group for academic self-concept. Third and fifth grade students in the multi-age group had higher perceptions of academic self-concept than students grouped traditionally. However, fourth grade students in the traditional group had higher academic self-concepts. Examining academic self-concepts by gender resulted in significant mean differences favoring the multi-age group. Males and females in the multi-age group showed higher self-concepts than males and females in the control group. Significant differences between males and females were found in achievement favoring the traditional group.

This study supported positive differences in academic self-concept for third and fifth grade multi-age students. The study did not support an increase in academic self-concept at the fourth grade level. However, if this study had been conducted on a three-year time scale, allowing for students to experience all three levels of the multi-age grouping, results might have been different. Because the multi-age program was only in its first year, results may not have been a true indication for the fourth grade students.

This study cannot support that students in a multi-age grouping will show no differences in achievement as measured by the Iowa Test of Basic Skills. It should be noted, however, that this three-year multi-age program offers students a continuous progress cycle which allows for pacing modifications. Students are not required to master objectives according to rigid grade level expectations. Instead they are given the flexibility to meet these objectives within the three year program cycle, or if necessary, an additional year is built in to ensure mastery of specific objectives.

Therefore, the ITBS scores lack content validity for this group.

It should also be noted that the instrument chosen to measure achievement may be inconsistent with the continuous progress approach to the multi-age classroom. When the learning environment changes, so should the assessment techniques (Nye, 1993). Because students in multi-age programs are assessed in non-traditional ways, Nye (1993) points out that these students may do poorly on standardized tests. Currently states implementing multi-age programs are examining new assessment strategies which promote performance based or authentic assessment (Nye, 1993). Conventional achievement emphasizes the learning and reproduction of specific definitions, facts and skills that have been prespecified by authorities, whereas authentic achievement emphasizes using the mind to produce discourse, material objects, and performances that have personal, aesthetic, and utilitarian value (Newmann, 1993). For non-graded students to score as well as or better than graded students would be remarkable considering the contrast in student performance goals (Anderson & Pavan, 1993). Therefore, alternative assessments for achievement should be sought for further studies examining multi-age grouping of students, or achievement should be dropped as a variable.

Also emphasized in the multi-age classroom are a variety of process skills, including an emphasis on technology and written expression. Neither of these is accounted for on the ITBS. The traditional classrooms offer curriculum more consistent with the basic skills in the manner in which they are tested on the ITBS. Activities in the multi-age classroom are centered around a variety of alternative learning experiences including hands-on science and social studies activities, learning centered field trips, problem centered learning, process writing, and use multi-media

technology. Students are also given frequent opportunities to use multiple intelligences as a means to define and solve problems. In retrospect, perhaps a different instrument should have been selected to measure more specific outcomes. Further studies should more carefully select measures of achievement which lend themselves to more specific areas of academics.

Using composite scores (NCE) limits the ability to determine more specific strengths and weaknesses in achievement. For example, a student might have scored significantly higher in math than in reading, but because the composite score averages several academic areas, that strength may not be evident in the score.

A weakness of the study was the length of the treatment. The treatment lasted for only eight months, which equates approximately one school year. This was also the first year for the multi-age program; more time would be needed to gain comprehensive information about achievement. In an analysis of research, Anderson and Pavan (1993) concluded that longitudinal studies indicate that the longer students are in a nongraded program, the more likely it is that they will have positive school attitudes and better academic achievement.

The large number of males (N=28) in the experimental group compared with the smaller number of females in the experimental group (N=18) may have also been a factor which led to statistically significant lower achievement scores for the experimental group. Traditionally, females have outperformed males on standardized achievement scores.

Further Studies

Few studies looking at multi-age grouping have been conducted at the upper elementary level. Even fewer studies have examined academic self-concept of students in multi-age groupings at the elementary level.

Since this study demonstrated differences in achievement favoring the traditional classroom, it would be interesting to examine and compare curricular goals and activities and testing outcomes of the traditional and multi-age group to determine if differences exist. With the emphasis on process skills in the multi-age program, less emphasis is placed on memorization of basic facts. It would also be interesting to use an alternative assessment to measure academic achievement beyond the traditional standardized paper and pencil test. Therefore, further research which looks more specifically at academic goals needs to be conducted to determine the value of multi-age grouping and its impact on achievement.

Long term benefits of multi-age grouping should be examined further by researchers. It is difficult to assess benefits of a continuous progress program in only one grade level, particularly for the middle child. Additional studies should be conducted to determine the affective benefits on the middle level child, in this case, the fourth grade student.

Affective benefits of a continuous progress approach to multi-age grouping, allow students to experience less pressure to perform grade-specific tasks. Individual strengths and weaknesses are taken into account. Students are given more time to attain specific concepts, as well as expanded opportunities when appropriate. Gaustad (1992) points out that children typically progress at different rates in different areas of achievement, alternately spurring ahead and hitting plateaus rather than moving along at

a steady pace. Because grade level expectations and restraints are lifted, students experience more success in all areas. As confidence increases, students perceive themselves more positively academically.

Education is an ongoing process that continues throughout a lifetime. The extent to which students pursue learning outside of the learning environment is determined early on in their academic experiences. Bloom (1981) concluded that children who have pleasurable school experiences are more diligent and achieve greater success in careers. Children develop perceptions of themselves as learners early on through experiences and opportunities provided in the classroom. Teachers must continue to strive to allow each student to experience success. Developmental differences must be acknowledged regardless of groupings. Students must not be penalized for needing a little extra time to understand a particular concept. Likewise, students who are ready to move on should not be held back. Meeting individual student needs promotes success for students. Success for learners builds strong perceptions of academic ability and establishes a foundation for a lifelong love of learning.

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APPENDIXES

APPENDIX A

LOCAL SCHOOL SYSTEM APPROVAL

June 23, 1994

Suzanne Lair
1516 W. 49th St.
Tulsa, Oklahoma 74107

Dear Suzanne,

Your proposal to do research for your masters' thesis on the PACE program at West Elementary School has been approved. This research will be beneficial to the school district to monitor the effects of this pilot program and we look forward to seeing the conclusions.

Please continue to keep me informed about the procedures you are using to assure the confidentiality of the students and to gather data.

Thanks for your dedication and hard work for the students of Jenks.

Sincerely,

A handwritten signature in cursive script that reads "Cathy Burden".

Cathy Burden, Ph.D.
Assistant Superintendent for Curriculum and Instruction

APPENDIX B

O. S. U. INSTITUTIONAL REVIEW BOARD

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW

Date: 07-14-94

IRB#: ED-95-003

Proposal Title: THE EFFECTS OF A MULTI-AGE CLASSROOM SETTING ON STUDENT
ACHIEVEMENT AND ACADEMIC SELF-CONCEPT

Principal Investigator(s): Diane Montgomery, Suzanne Lair

Reviewed and Processed as: Exempt


Approval Status Recommended by Reviewer(s): Approved

APPROVAL STATUS SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT
MEETING.

APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A CONTINUATION
OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL.
ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Reasons for Deferral or Disapproval are as
follows:

Signature:


Chair of Institutional Review Board

Date: July 22, 1994

APPENDIX C

RECORDS REVIEW SHEET

Subject ID _____

Gender _____

Group Assignment _____

Subject or Match

Pre-Test Achievement (NCE)
ITBS April, 1994

Post-Test Achievement (NCE)
ITBS Spring, 1995

Pre-Test ME Scale
Fall 1994

Post-Test ME Scale
Spring 1995

Name_____

Male Female

#_____

Teacher_____

Grade Level_____

three

and the other two chapters write

APPENDIX D

THE ME SCALE

ME SCALE

Subject ID _____

Directions: Read each statement. If you agree write **A** on the line. If you disagree write**D.**

- _____ 1. I am smart.
- _____ 2. Other kids like me because I am smart.
- _____ 3. I do good work in most of my classes.
- _____ 4. My teachers like me because I am smart.
- _____ 5. I try to do my best in all my classes.
- _____ 6. I can think of new ideas.
- _____ 7. I can think of many ideas.
- _____ 8. I have a good imagination.
- _____ 9. I can draw well.
- _____ 10. I am a leader.
- _____ 11. Other kids like to play (associate) with me.
- _____ 12. I am a good reader.
- _____ 13. I am good in math.
- _____ 14. I do well on tests.
- _____ 15. I usually get high grades.
- _____ 16. I can think of very unusual ideas.
- _____ 17. I am well liked by older students.
- _____ 18. I enjoy reading.
- _____ 19. I read many books.
- _____ 20. I like to write stories.

- _____ 21. I think I will become a great person.
- _____ 22. I like to discuss things.
- _____ 23. I like to play with kids who are smart.
- _____ 24. I have good attitudes towards school.
- _____ 25. I have high ability.
- _____ 26. I learn fast.
- _____ 27. I learn new things easily.
- _____ 28. I like to study things that are hard to learn.
- _____ 29. I am highly motivated.
- _____ 30. I am open to new ideas.
- _____ 31. I have a good memory.
- _____ 32. I think I will do something great in life.
- _____ 33. I will go to college.
- _____ 34. I will become famous.
- _____ 35. I have many hobbies.
- _____ 36. I am different from other kids.
- _____ 37. I like to read biographies.
- _____ 38. I like to study mathematics.
- _____ 39. I can solve problems easily.
- _____ 40. I like to read.

Authors of Me Scale: Feldhusen, J. F. and Kolloff, M. B.

2. The first two items listed above have already been addressed.

APPENDIX E

INFORMAL CLASSROOM OBSERVATIONS

Each visit, observers were asked to note the following learning style characteristics addressed in the classroom:

degree of mobility

food intake

projects initiated

type of learning environment

level of sound

cooperative learning

Observers randomly visited the multi-age classrooms and classrooms outside of the multi-age program informally on a monthly basis. The following journal entries were the result of the informal descriptive documentation.

Date August, 1994

Grade 5th

Students were working on class projects in small groups. It appeared to that each group was working on the same type of project. The students had begun their projects together. Some groups of students asked permission to move to the hallway for more space. There seemed to be lots of movement within the classroom, but no movement outside the classroom. (Other than the group who asked to move to the hallway.) No snacks observed.

Date August, 1994

Grade Multi-age

Students were working on Daily Oral Geography, accessing globes and encyclopedias in several classrooms. Some were working in partnerships, while other searched more independently for materials. Students moved about freely. The noise level was moderate, with some conversation, most of which seemed to be related to the questions they were trying to answer. Some students ate fruit bars, and some drank from plastic water jugs. Most often students were seated in the floor. Some students stood at the pull-down map, some leaned over tabletops and some moved to the hallway with globes to have more space.

Date September, 1994

Grade 3rd

The desks were arranged in rows. The students were basically quiet. The teacher gave students several reminders to whisper. Students were engaged in timed math facts tests. No movement of students observed this visit. While completing this task, students were confined to their seats. (Other than visits to the pencil sharpener.) No snacks observed. Some conversation was noted following the timed test.

Date September, 1994

Grade Multi-Age

Students were seated in bean bags, a carpeted area with pillows, at tables, on stools, and at a computer station while listening and participating in a writing mini-lesson. The noise level was mainly limited to interaction in discussion. Some students were eating snacks i.e. granola bars, Fruit Roll-Ups, etc. After the mini-lesson, students scattered to work on individual writing projects. Some students gathered together for revision and editing conferences. There was a constant hum in the classroom.

Date October, 1994

Grade 5th

Most students were seated at tables working cooperatively on science experiments. Some students were standing around tables, a couple of students sat in chairs on their knees leaning over instead of sitting. Each group of students were working on similar experiments. There was a high degree of sound. Students were engaged in conversation centered around the science experiment throughout the classroom. A couple of students asked to go and get "drinks" at the water fountain. No food intake was observed.

Date October, 1994

Grade Multi-age

Students were working in partners on science experiments. Many of the groups sat or stood at science lab tables. Some were sitting in a carpeted area in the room. There was a high degree of sound and movement. Students appeared to be accessing various instruments around the room to use in their experimenting. Several students left the classroom to access materials from other classrooms. Some students were eating snacks i.e. Fruit Roll-Ups, fruit, breakfast bars.

Date November, 1994

Grade 4th

The class was on their way to the media center for a whole class lesson. When the students reached the media center, they began working in partnerships on various projects. When students completed projects, they were allowed to begin another project. No intake was observed. Some discussion among students working in groups was observed.

Date November, 1994

Grade Multi-age

Students were practicing presentations for social studies projects. Students were scattered throughout the classroom, in the classroom next door, and in the hallway. They worked collaboratively, finishing up projects and practicing performances. A very high degree of sound and movement was noted. Some students ate snacks and drank from water bottles and juice packets. A few students who were finished with their projects, went to work on writing projects in another room.

Date December, 1994

Grade 4th

The classroom was highly structured. (You could have heard a pin drop.) No students were observed eating or drinking. The whole class took a restroom break together. Every student was completing the same worksheets. After a while, students did a Shurley English lesson. This lended itself to some sound. As a class, students were chanting rules for sentences. Students were seated in individual desks, in row. Some students were sitting up on their knees during the Shurley Lesson. No cooperative groups were observed, other than the whole class lesson.

Date December, 1994

Grade Multi-age

Students were scattered around the classroom and the hallway working in small groups on science experiments. There was lots of movement back and forth into the classroom, especially by those working in the hallway. (They went back in to get additional supplies several times.) Several students took bathroom/drink breaks here and there. A few groups of students were working more directly with the teacher. There was a high degree of sound as students collaborated on experiments. Some students were eating snacks. Music was played while students worked.

Date January, 1995

Grade 3rd

No food or drink intake observed in this visit. Several students were given permission to go to the restroom and get drinks. Students were seated in desks in rows working independently on finishing individual book reports. The classroom was fairly quiet. (Mainly whispering) Students received several reminders to quiet down. No cooperative learning observed in this visit.

Date January, 1995

Grade Multi-age

Students were moving about freely from classroom to classroom deciding individually where they needed to work to catch up on assignments. Some students worked at computers on writing projects, others utilized the media center to access research needed for social studies projects, some students finished science experiments with partners. Other who were finished with requirements began interest based projects. A high degree of sound was tolerated by both teachers and students. Constant movement was observed. Some were observed eating snacks.

Date February, 1995

Grade 5th

During the visit, several students asked for permission to visit the media center to check out books while others worked quietly at various centers around the room. Students sat on the floor and stood at tables to complete center activities, and then moved back to desks to finish work. Some asked to leave the room to go and get drinks. The classroom was mainly quiet. Little student to student interaction observed.

Date February, 1995

Grade Multi-age

Students were giving presentations in social studies for individual projects. There was lots of interaction among students between presentations. However, students were very quiet during presentations. A few ate snacks while watching presentations. Some were in the hallway preparing props and getting visuals organized. Students were taking turns videotaping presentations. Students were seated all around the room. Some were sitting in beanbags, some lying on pillows, others were sitting on tabletops, and a few were sitting in chairs.

Date March, 1996

Grade 3rd

Students accessed many areas within the classroom to finish various reading projects. Students moved about freely in the classroom. Some students had individual water bottles, but no food intake was observed. Some students worked in partnerships on projects, while some worked independently. Some students were seated in a carpeted area, some were seated at desks, and some were seated at tables.

Date March, 1995

Grade Multi-age

Students worked on worked with a guest artist on interviewing skills. After a whole group lesson, students worked cooperatively to complete the given task. Movement of students was observed in this visit. There was constant interaction among students after the whole group lesson. Students were both seated and standing at tables, sitting on the floor, sitting in a loft area, sitting below the loft area, and sitting in chairs at tables. Some students had drinks, but few were observed with snacks. Some students finished the task and began work on new projects.

Date April, 1995

Grade 4th

Students were working as a whole class on poetry in the media center. Students were creating individual projects. Interaction among students was observed. Students were engaged in the activity, and collaborated with other students to locate other resources. Students were mainly seated at tables, although there was a lot of movement observed at times. Students moved about the library locating resources. No food intake was observed, although some students asked to leave the media to go and get drinks.

Date April, 1995

Grade Multi-age

Students worked on individual interest projects. Some students were seated in carpeted areas working on projects, some students were across the hallway accessing computers, others were lying on the carpet in the hallway reading, and others were spray painting projects in the courtyard. A variety of music was played throughout the working time. Some students ate snacks and drank from water bottles. Students moved about as necessary, accessing resources to

use for interest projects. A few students worked in partnerships. Others worked independently.

VITA

Suzanne Renee Lair

Candidate for the Degree of

Master of Science

Thesis: THE EFFECTS OF A MULTI-AGE CLASSROOM SETTING ON STUDENT
ACHIEVEMENT AND ACADEMIC SELF-CONCEPT

Major Field: Applied Behavioral Studies

Biographical:

Personal Data: Born in Oklahoma City, Oklahoma, November 13, 1968, the daughter of Thomas W. Branch and Sandra K. Bell.

Education: Graduated from Western Heights High School, Oklahoma City, Oklahoma in May 1987; received Bachelor of Science degree in Elementary Education from Oklahoma Baptist University, Shawnee, Oklahoma in December 1990; completed requirements for the Master of Science degree at Oklahoma State University in May, 1996.

Professional Experience: Teacher, Brazosport Public Schools, Lake Jackson, Texas, January, 1991-July, 1992. Teacher, Jenks Public Schools, Jenks, Oklahoma, August 1992-Present.

Professional Memberships: Oklahoma Association for the Gifted, Creative and Talented.