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Comparison of Instructional Practices Utilized by Pennsylvania Second-Grade
Teachers in Multiage, Multigrade, and Single-Grade Settings

by

B. Jean Walker

Presented to the Graduate and Research Committee
of Lehigh University
in Candidacy for the Degree of
Doctor of Education
in
Educational Leadership

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Abstract

For more than a century, educators have debated, questioned, and studied the effectiveness of the traditional graded structure as compared to other alternative organizational configurations. Research findings comparing the achievement, attitudes, and social development of students have been conflicting. Studies comparing achievement of students in various groupings did not typically look at the instructional practices of teachers in the classrooms being studied.

This study gathered information from second-grade teachers of single-grade, multigrade, and multiage classrooms in Pennsylvania to determine how extensively multigrade and multiage configurations are used in Pennsylvania primary classrooms. The study investigated whether there were differences in the types of instructional practices used and differences in the degree to which teachers implemented developmentally appropriate instructional practices in their classes.

A random sample of over 1500 teachers received a survey, developed by the researcher. Six hundred ninety-six teachers (44.4%) responded. The respondents completed a survey which consisted of 24 statements describing developmentally appropriate instructional practices. Respondents indicated the frequency with which they utilized each instructional practice in their classrooms on a four-point scale. They also noted the type of classroom configuration, single grade, multigrade, or multiage, whether they had been assigned to or had volunteered for their current position, their preference of classroom organizational structure, and their total years of teaching experience.

Approximately 90% of the respondents reported that they teach in a traditional



graded structure. There were several individual instructional practices significant at the $p > .01$ level. Single-grade teachers were more likely to use whole group instruction for math. Multiage teachers were more likely to use small groups for math instruction, to allow students to move at their own pace, and to group students based on learning styles. Overall, however, this study indicates that classroom organizational structure does not, of itself, significantly influence instructional practices.

Chapter I

Introduction to the Study

Historical Developments and Research

The combining of grade levels in the elementary classroom has been a grouping practice for the past several decades. The concept of the multigrade class had its roots in the one-room school house (Miller, 1990). A number of different terms describe this practice such as nongraded, split level, combination class, blended, family grouping, mixed grade, multigrade and multi-age. Regardless of label, students are grouped in classes containing two or more grade levels. Often students remain with the same teacher for two or more years (Milburn, 1981).

In contrast to multigrade configurations is the traditional single-grade system. The graded school, founded by Horace Mann in 1848, was largely a response to a need for managing large numbers of students rather than an effort to meet individual student needs (Goodlad & Anderson, 1987).

The rationale for multiage grouping assumes cognitive and affective benefits for children. Comprehensive reviews by McLoughlin (1970), Pratt and Treacy (1986), and Miller (1990) all concluded that there was little or no difference in academic achievement or social development between students assigned to multiage or single-grade classrooms. In contrast, Pavan's review of 64 research studies published between 1968 and 1990 concluded that 91% of the studies reported evidence of higher academic achievement or documented more favorable attitudes toward school in the experimental nongraded classrooms (1992). Gutierrez and Slavin (1992) looked at the contrasting conclusions of McLoughlin and Pavan. Their findings were consistent with those of Pavan. There

were more positive than negative effects resulting from nongraded configurations.

Much of the research measuring results of multiage grouping is flawed and inconclusive, partly because the terms describing grouping patterns are not well defined (Milburn, 1981). Veenman (1995) criticized previous reviews of research as limited because they simply counted the number of findings that supported either multiage/multigrade classes or single-grade/single-age classes. Veenman conducted a best evidence synthesis of 56 studies evaluating the effects of multigrade or multiage grouping. Multigrade and multiage grouping were clearly distinguished one from another. According to Veenman, multigrade grouping is “an administrative measure for dealing with unequal class sizes or shifting student enrollments” (p. 325). Multi-age grouping was described as a “pedagogical measure intended to enlarge the opportunities for interactions between younger and older students” (p. 325). Studies of nongradedness were excluded from Veenman’s review based on Anderson and Pavan’s (1993) description of nongradedness as a philosophy of education which goes beyond multiage grouping of students.

Veenman’s in-depth review concluded that the academic achievement and social adjustment of students in multigrade and multiage classes are “simply no worse, and simply no better, than single grade or single-age classes” (1995, 367). Organizational strategies alone do not appear to affect student learning; however, most studies comparing multigrade/multiage and single-grade/single-age classes provide no information on instructional practices. There is a need for further research to examine the instructional practices utilized by teachers in multigrade/multiage classrooms (Veenman, 1995).

Instructional Practices in Multigrade/Multiage Literature

Popular literature and several recent qualitative studies suggest a host of instructional practices to meet differing developmental and instructional needs of students. Most often mentioned are developmentally appropriate practices, cooperative learning, peer tutoring, learning centers, authentic assessment, flexible grouping, hands-on activities, and whole language instruction (Miller, 1991; Gaustad, 1992a; Fisher, 1997; & Privett, 1996). Such frequently mentioned, common themes of school restructuring are at the forefront of educational reform (Virginia Education Association, 1990).

Researchers Katz, Evangelou, & Hartman make no distinction between what teaching strategies should be utilized in multiage or single-grade classrooms; however, they recognize that certain developmentally appropriate strategies take on more importance in mixed-age classes (1990).

Statement of the Problem

Need for the Study

Since the initiation of the graded school over a century ago, educators have debated, questioned, and studied the effectiveness of this organizational structure. Reform efforts of the progressive era, during the open classroom era of the 1960s, and most recently during the 1990s have challenged the graded structure. In spite of such challenges, the graded structure has endured. Research findings comparing the achievement, attitudes, and social development of students in single-grade classrooms with some alternative organizational structure have been conflicting. Quantitative studies have compared student achievement, attitudes, and/or social adjustment of

experimental and control groups utilizing a variety of standardized measures. Findings of such studies are diverse, some supporting the graded classroom, others supporting nongraded, alternative organizational groupings, and many concluding no significant differences.

Research studies of the 1990s on alternative ways of grouping students for instruction have utilized qualitative methods such as interviews and case studies (Lolli, 1995; Gillaspie, 1993; & Weaver, 1998). A common theme reported in the literature is the use of developmentally appropriate instructional practices. Recent research on the brain and on intelligence has added to the knowledge base on teaching and learning (Gardner, 1993; & Sternberg, 1997). Veenman and others (Cuban, 1993; Gillaspie, 1993) report that few researchers have looked at instructional strategies as a variable when studying alternative organizational configurations. There is a need to investigate whether various organizational groupings, such as multigrade and multiage, promote the use of instructional practices that differ significantly from those utilized by teachers of single grade classes.

The current literature described a renewed interest in multiage education in the 1990's as individual educators, in elementary schools and districts, as well as entire states, sought to provide for individual learning differences and to avoid retention of students. While some studies indicated that students do better socially and emotionally in a multiage setting, most well-designed studies found no significant differences in student achievement between single-grade and multiage classes (Miller, 1990; Pratt, 1986; Veenman, 1995). However, studies comparing achievement did not typically look at instructional practices of teachers in the classrooms being studied. This study gathered information from second-grade teachers of both single-grade and

multigrade/multiage classrooms to determine whether there were differences in the types of instructional practices and differences in the degree to which teachers implement developmentally appropriate instructional practices in their classes.

Primary grades were the most frequently targeted grades for multiage reform efforts in states such as Kentucky and Oregon. There were several configurations for multiage primary classes presented in the literature. Some contained two grade levels, such as grades K-1, 1-2, or 2-3, while others contained three or more grade levels, such as K-1-2, 1-2-3, or K-1-2-3. Since the most common grade to all of these configurations was grade two, this researcher selected second-grade teachers as the target population. The researcher surveyed second-grade teachers in Pennsylvania, a state where multiage classrooms are emerging even without a statewide mandate.

Purpose of the Study

The purpose of the study was to determine how extensively multigrade/multiage grouping configurations are used in Pennsylvania primary classrooms. In addition, the study investigated to what extent second-grade teachers in Pennsylvania utilized concepts of developmentally appropriate practices as defined by the Kentucky Primary Configuration Map. The study compared the degree of implementation of developmentally appropriate instructional practices by teachers in multigrade/multiage elementary classrooms containing second-grade students with the degree of implementation of the same instructional practices in regular second-grade classrooms.

Research Questions

1. What is the proportion of Pennsylvania classrooms with age appropriate second graders assigned to multiage classes?

2. What is the proportion of Pennsylvania classrooms with second graders assigned to multigrade classes?
3. What proportion of Pennsylvania teachers of age-appropriate second graders are administratively assigned to teach in multiage and multigrade classes versus requesting such an assignment?
4. Were there significant differences among teachers of age-appropriate second graders in multiage, multigrade, and single grade classrooms with respect to instructional practices?
5. Were there significant differences between years of teaching experience of teachers of age-appropriate second graders and the use of developmentally appropriate instructional practices?
6. Were there significant differences between teachers of age-appropriate second graders who requested and those administratively assigned to teach a multigrade/multiage class with respect to instructional practices?
7. Were there significant differences among teachers of age-appropriate second graders in multiage, multigrade, and single grade classrooms with respect to 24 individual instructional practices?

Significance of the Study

Survey data from this study filled a gap between the quantitative research studies of the past and the predominantly qualitative studies of the 1990s. Past research has limited its focus to comparisons of achievement of students in single-grade and multigrade/multiage classes. Recent dissertation studies utilized case study, observation, and interview techniques to determine teacher and principal beliefs about multiage education and the change process necessary to implement such an innovation.

While recent qualitative studies recommended certain instructional practices as more appropriate for multiage classrooms, few studies produced data which actually measured the extent to which the recommended practices were utilized. Nor was it known whether instructional practices recommended as appropriate for multiage classes were just as commonly utilized in regular single-grade classes. The results of this study provided useful information for further studies of multiage education. Results also have practical implications for practitioners seeking to implement a multiage program in their school or district. School administrators could use the results as a means of setting criteria for multiage programming and to measure progress toward the targeted criteria. Loucks (1975) viewed staff development as a “primary means to change teacher behavior” (p.105). Since teachers require different professional development opportunities relevant to their individual needs, administrators may use the results of this study to customize professional development offerings.

Limitations of the Study

1. Survey instruments were mailed randomly; therefore, the researcher had to depend on the willingness of volunteers in each district to complete and return the survey instruments.

2. Surveys may have been returned only by those teachers who perceived themselves as highly implementing the instructional practices as described in the survey instruments. Teachers not implementing the targeted practices may have been reluctant to complete and return the survey.

3. The validity of responses to the survey were dependent upon honest responses of the teachers being surveyed. Responses may not be what teachers actually do, but what they believe they should do.

4. The study was limited to second-grade teachers in Pennsylvania public schools and is not generalizable to teachers of other grades or in other states.

5. All persons who completed the survey may have not interpreted category descriptors in the same way, leading to variability of responses. The instrument was “field tested” prior to distribution across the state to address this concern.

6. The instrument which formed the basis for this study was developed to measure patterns of implementation of a state-mandated reform program in Kentucky. All schools knew the key attributes of the reform and were moving toward the same target. Pennsylvania schools have no such mandate; therefore, schools implementing multiage/multigrade programs set targets based on their own grass-roots efforts.

Definition of Terms

Ability grouping - practice of placing children in fixed groups for instruction based on achievement levels.

Authentic Assessment - assessment of what students know and are able to do which occur as a part of normal classroom instruction (AASA, 1992).

Continuous progress - continuous movement of the child through the curriculum. The goal is to let children progress according to their individual rates of learning and development without being compelled to meet age-related achievement expectations (Katz, 1992).

Cooperative learning- students working together in a group small enough for

each student to participate in a clearly assigned collective task. Students are expected to carry out the task with direct and immediate supervision by teachers (Cohen, 1986).

Developmentally appropriate practice - an attempt to educate children by allowing for age-appropriate and individually-appropriate experiences (Bredecamp, 1987). Age appropriateness is based on predictable sequences of growth. Individual appropriateness considers the unique patterns of growth and personality of each child (Osborne, 1996).

Family Grouping - groups of students who stay with the same teacher and classmates for more than one year (AASA, 1992).

Flexible grouping - the frequent reorganizing of children for specific and temporary purposes such as skill needs and interests (Gaustad, 1992a).

Heterogeneous Grouping - grouping of children based on their differences - age, sex, race, or achievement. (AASA, 1992).

Homogeneous Grouping - grouping of children based on similarities, such as age, ability, or test scores. (AASA, 1992).

Innovation - identifiable process or product that is new to an organization. In this study, innovation refers to specifically named instructional practices which have been identified in the literature as necessary practices in a multiage classroom.

Inservice education and staff development - the continuing professional education of certified teachers employed in the field of education.

Instructional Practices - Those instructional practices specified in the literature as developmentally appropriate practices and listed on the Kentucky Primary Program Configuration Map will be included as the focus of this study.

Levels of Implementation of Instructional Practices - An Innovation Configuration contains descriptions for various levels of use for each component of a specified innovation. The Kentucky Primary Program Configuration Map defines four levels of implementation for each of seven sub-elements under the heading of developmentally appropriate practices. A likert-style survey which will be a modification of the Kentucky instrument will be utilized to measure the degree to which teachers are implementing developmentally appropriate practices in Pennsylvania classrooms.

Multiage - the deliberate practice of putting two or more age levels of children in the same classroom intended to enlarge opportunities for interaction between younger and older students. Curriculum and instruction are based on a continuum of skills to meet the variety of needs and interests of students (Lolli, 1995; Veenman, 1995).

Multigrade - two or more grades of students taught by one teacher in one room. Students maintain their grade-level designations and work on grade-specific curricula (Veenman, 1995).

Nongradedness (ungradedness) - removal of grade-level barriers and evaluations using grades in order to provide a continuous progress opportunity for children in an interactive setting for individualized and collegial learning experiences (Lolli, 1995).

Peer tutoring - teaching process in which tutor and tutee are classroom peers. According to Johnson and Johnson (1989) students may learn better from their peers than from adults and that students may benefit from teaching other students.

Preservice education - education of students which leads to completion of requirements for certification as a teacher, usually a college course of study leading to a degree.

Single grade - All students in a class are assigned to the same singular grade and are generally the same age. Historical rationale implies that all students of the same age learn in the same way at the same rate (Nye, 1993).

Subject integration - organizing curriculum across content areas around a topic or theme so that it is taught in a meaningful context and is relevant to the learner (Osborne, 1996).

Whole language - set of beliefs that literacy can best be taught in the meaningful context of literature and communication. Reading, writing, speaking, and listening skills, all aspects of language development are considered interrelated (Gaustad, 1992a).

Summary

There has been renewed interest in the 1990's in classrooms organized as multiage units. In the past, comparisons of nongraded organizational structures with more traditional approaches to schooling have yielded mixed results. While some studies have reported positive results in student achievement in favor of the nongraded/multiage approach, most researchers have found no significant differences in student achievement in multigrade/multiage classes and single-grade classes. Few studies have described teaching practices occurring in the classrooms studied. It may be that researchers found little difference in achievement scores because there was little difference in the instructional practices being used by teachers. This study utilized a survey based on an Innovation Configuration map to examine teaching practices in multiage, multigrade, and single-grade classrooms. This research determined the extent to which teaching practices differ among the three types of classroom organizations.

Following an introduction of the study in Chapter I, a review of the literature is presented in Chapter II. The history of multiage education from its roots in the one room schoolhouse provides the background for this study. Research on student achievement in multiage programs, conducted over the past 40 years, is presented, although most often that research has been inconclusive. Many studies were flawed and most did not account for variables such as the instructional practices of teachers in the classes being studied. Several researchers recommended the study of instructional practices in multiage classrooms as an area for future study.

Chapter III presents the methodology utilized in conducting the study. An Innovation Configuration used by the state of Kentucky to evaluate primary programs in its elementary schools served as the basis for the survey developed for this study.

The survey served as the primary research instrument in this study. Teachers assigned to teach second-grade students in multiage, multigrade, and single-grade classrooms were surveyed to determine whether developmentally appropriate practices were utilized in their classrooms and to measure the degree of implementation of those same practices. Descriptive and inferential statistical tests were used to analyze the research data. Results are presented in Chapter IV and findings summarized in Chapter V. Recommendations for further research conclude Chapter V.

Chapter II

Review of the Literature

Introduction

Through the literature relevant to this study multiage education and other organizational patterns in public education will be reviewed from an historical perspective. In the first section, information about multiage education is presented from its beginnings in the one-room schoolhouse to its emergence as an alternative to the graded system most prevalent in schools today. Results of various research studies are included in the review.

The second section highlights information on the instructional practices of teachers, noting how various reform movements have caused a swinging of the pendulum between teacher-centered and student-centered instructional practices. Again beginning with an historical overview, the section concludes with an exploration of the influences of developmentally appropriate practices and how they have influenced both classroom and statewide reform efforts.

Next, literature on teacher training is explored. Specifically discussed is the relationship of inservice and preservice training to the preparation of teachers to work in alternative organizational configurations such as multiage or multigrade.

The chapter ends with information found in the literature on innovation and change and the relationship of innovation to teaching practices. The section defines a tool, Innovation Configuration, and how such an instrument was utilized to evaluate state reform efforts which included multiage-classroom groupings and implementation of developmentally appropriate practices.

Multiage Education Revisited

The concept of the multigrade class is not new. The combining of grade levels can be traced back to the one-room schoolhouse (Miller, 1990). A number of different terms describe the practice of grouping students of two or more grade levels in the same class - nongraded, split level, combination class, blended, family grouping, mixed grade, and multi-age.

In contrast to multigrade configurations is the traditional single-grade system. The graded system, founded by Horace Mann in Quincy, Massachusetts in 1848, was a factory model accepted as appropriate in the nineteenth century to ensure that all children had a basic education. The graded school was largely a response to a need for managing large numbers of students rather than an effort to meet individual student needs (Goodlad & Anderson, 1987). The Prussian system, on which the graded system was based, sat children of the same age in a classroom and gave them identical assignments (Sartain, 1966). The graded school idea that students of the same age achieve at the same level by completing a specified graded content in a prescribed length of time spread rapidly in the United States (Gibbs, 1975). In graded schools children can be held back a year if not achieving at the same rate of their age-group peers. In addition very bright students are occasionally allowed to progress at an accelerated rate (Sartain, 1996). Sartain suggested that "Retention or acceleration usually means repeating or skipping a year's work" (p. 106).

Almost from the beginning of the graded structure, disadvantages of grouping single-age students together in a self-contained classroom became evident. Flexible promotion and alternative grouping systems developed to provide for differentiated rates of student progress (Sartain, 1966). Self-contained, heterogeneously-grouped

classrooms continued to be the most common form of school organization; however, several other forms of grouping became the focus of research studies.

The literature from the early 1900's to the present reported attempts to enhance learning by changing organizational structure. One such change was to departmentalize with teachers teaming to teach only one or two subjects. Early studies on departmentalization (Sartain, 1966) found no significant differences in achievement of students whether a single teacher or multiple teachers presented instruction to students. Other studies focusing on homogeneous-ability grouping concluded that student achievement was affected more by the teacher than by organizational pattern (Sartain, 1966).

Additional organizational systems such as team teaching, nongradedness, and multigrade sections began to emerge in the 1960's. Carbone (1961) conducted one of the first studies that compared nongraded and graded structures. In a matched pairs design, Carbone compared the achievement of 122 primary children in a nongraded program with 122 children in graded control schools. Carbone described instructional practices as similar for both the experimental and control groups, yet found achievement significantly higher in the graded schools. A few years later Hopkins, Oldridge, & Williamson (1965) found no significant differences between reading achievement over the three year period that they tracked students in 20 nongraded classes and 25 single grade classes.

Several studies during the late 1950's and 1960's reported results that supported nongrading. Rehwoldt and Hamilton (1957) conducted an experiment in Torrance, California that dealt specifically with multiage grouping. Students in a multiage program were matched by gender and ability with students in a graded program. Findings for 84

comparisons of group progress were mixed. Students in the multiage program scored significantly better than those in the graded program on 24 comparisons of group progress. Three comparisons found graded students scoring significantly better than multiage. There were no significant differences between the two groups on all other comparisons. Hillson and others (1964) worked for a year-and-a-half with matched pairs of primary children randomly assigned to graded and nongraded classes. Nongraded students scored significantly higher on two standardized reading measures and maintained an advantage in reading over students from the control group throughout the primary years. Mixed results were also found in separate studies reported in 1963. Halliwell found evidence in support of nongrading, while Kierstead found no significant differences between the performance of students assigned to graded or nongraded classes (as reported in Sartain, 1966). Sartain speculates that such studies “cannot be adequately evaluated because it appears they may have followed a different concept of nongrading” (1966, p. 108).

Although there are many organizational patterns in public education, the vast majority of schools utilize the age-graded organizational structure. This structure has endured for nearly 150 years without its underlying assumptions being questioned (Miller, 1991). Anderson (1993) did question some of those assumptions, stating that there has “never been a respectable body of research or scholarly reflection on the academic and social legitimacy of segregating students by age and providing them with a standard curriculum” (p. 10). Research on various organizational plans is difficult to carry out and to evaluate due to the many variables that cannot be controlled. According to Sartain (1966) “many teachers in graded schools are so effective in differentiating instruction that their classrooms are quite nongraded in some areas of study...” (p. 107).

Since most schools change their organizational structure from graded to nongraded gradually, comparison of achievement at any point in time is difficult (Sartain, 1966).

Like nongradedness, the rationale for multiage grouping assumes cognitive and affective benefits for children. Although a number of research studies have looked at the effects of multigrade/multiage grouping on student achievement, self-concept, and attitudes towards school, comprehensive reviews consistently report little or no difference in student achievement based on type of classroom grouping (McLoughlin, 1970; Pratt and Treacy, 1986; and Miller, 1990). An exception was Pavan's review in 1992 which analyzed 64 research studies published between 1968 and 1990. Pavan concluded that 91% of the studies analyzed presented data suggesting the nongraded plan was preferable to graded in measures of student success. Gutierrez and Slavin's (1992) review of research looked at the contrasting conclusions of McLoughlin and Pavan. Their findings were consistent with those of Pavan: there were more positive than negative effects for nongraded configurations.

Gutierrez and Slavin's research review broke the studies into four main categories according to program characteristics and compared strength of effect sizes within each category. They concluded, "The most positive achievement effects were for the simpler forms of nongrading generally evaluated in the 1960's, early in the nongraded movement" (Slavin, 1992, p. 24). Simple forms of nongrading usually grouped students according to level of performance in one subject area for only a portion of the day. As whole schools organized nongraded programs and students received instruction in all or most subjects in such a configuration, nongraded programs grew in complexity. Achievement effects were much smaller for the more complex nongraded programs of the 1970's (Slavin, 1992).

Milburn (1981) and Veenman's (1995) reviews of literature pronounced much of the research measuring results of multiage grouping as flawed and inconclusive. Many studies lacked a clear definition of terms (Milburn, 1981). Veenman (1995) criticized previous reviews of research published by Pratt (1986) and Miller (1990) as limited because they simply counted the number of findings in favor of multiage/multigrade classes or single-grade/single-age classes. Neither Pratt nor Miller, according to Veenman, paid attention "to the particular form of multigrade/multiage classes, the methodological quality of the studies, or the size of the effects" (1995, p. 320). Veenman conducted a best evidence synthesis of 56 studies evaluating the effects of multigrade or multiage grouping where the terms multigrade and multiage were clearly distinguished one from the other. According to Veenman, multigrade grouping is "an administrative measure for dealing with unequal class sizes or shifting student enrollments" (p. 325). Multiage grouping was described as a "pedagogical measure intended to enlarge the opportunities for interactions between younger and older students" (p. 325).

Veenman's synthesis included only studies which compared multigrade and multiage classes with single-grade and single-age classes. Methodological criteria included experimental and control groups, standard measures for academic and nonacademic achievement, and comparability of samples. In addition, all multigrade/multiage grouping must have existed at least a year, samples must have included only normal students in regular classes, teachers in the experimental groups must not have been trained on the dependent variables, and there had to be at least two experimental and two control teachers in a study. Veenman also reviewed international research studies which met his established criteria for inclusion. Based on Anderson and

Pavan's (1993) description of nongradedness as a philosophy of education which goes beyond multiage grouping of students, Veenman made the decision to exclude most studies of nongradedness. Although one of the characteristics of a nongraded school, multiage grouping also occurs within a graded system (Veenman, 1995).

Veenman's synthesis summarized the effects of multiage grouping as follows:

- 1) Students have a chance to form relationships with a wider variety of children than is possible in the traditional same-age classroom. This leads to a greater sense of belonging, support, security, and confidence.
- 2) Teaching a diverse group of students demands individualized instruction.
- 3) The development of a balanced personality is promoted by fostering the attitudes and qualities that enable students to live in a complex and changing social environment.
- 4) The self-concepts of slower, older students are enhanced when they are asked to tutor younger students in their class.
- 5) More secure teacher-student relationships may be established as the student remains with the same teacher for two or more years.
- 6) Fewer anxieties may develop because the educational atmosphere is conducive not only to academic progress but also to social growth.
- 7) Multiage grouping provides younger students with the opportunity to observe, emulate, and imitate a wide range of behaviors; older students have the opportunity to assume responsibility for less mature and less knowledgeable students.
- 8) Multiage grouping invites cooperation and other forms of prosocial behavior and thus appears to minimize competitive pressures and the need for discipline.

9) Students in lower grade(s) can enrich their learning by attending to the material designed for higher grade(s), while students in the higher grade(s) can profit from opportunities to review material designed for the lower grade(s).

10) Current concepts of cognitive development (e.g. the zone of proximal development and cognitive conflict) imply that children whose knowledge or abilities are similar but not identical can stimulate each other's thinking and cognitive growth.

11) Finally, multiage grouping relaxes the rigid curriculum with its age-graded expectations, which are inappropriate for a large number of students (Draisey, 1985; Ford, 1977; Franklin, 1967; Katz, Evangelou, & Hartman, 1993; Mycock, 1966 as reported in Veenman, 1995, p. 322).

Veenman's in-depth review appeared nearly 30 years after Sartain (1966) had reached similar conclusions. Academic achievement and social adjustment of students in multigrade and multi-age classes are "simply no worse, and simply no better, than single grade or single age classes" (Veenman, 1995, p. 367). With no differences noted in academic performance or self-esteem between students assigned to multiage or single grade classes, either program provides a viable alternative for classroom groupings (Bender, 1996). The background of the teacher "may be a more significant factor...than classroom organization alone. Good teachers are effective regardless of organization" (Gibb and Matala in Sartain, 1966, p. 100).

After years of research and several waves of reform, the debate continues with respect to how classrooms should be organized for instruction. Mixed results can be traced to several factors. One is the many forms of alternative grouping, including many hybrids. Another point of confusion is the naming of organizational configurations.

Veenman made distinctions between multiage, multigrade, and nongraded, yet, often terms have been used interchangeably. Some organizational patterns are labeled as philosophical while other patterns have specific operational attributes. There is a need to move beyond comparisons made based on organizational structure alone and take a closer look at the actions of teachers assigned to the various classroom configurations.

Instructional Practices in a Multiage Classroom

What then is “good teaching?” Educators, policy makers, sociologists, psychologists and historians have all investigated instructional practices. Cuban (1993) researched teaching practices from 1880-1990 by looking at pictures of classrooms, analyzing surveys and self-reports of teachers, talking with teachers, students, and administrators, and observing in classrooms. He utilized both quantitative and qualitative data from research conducted over the last century as he evaluated teaching practices on a continuum with teacher-centered instructional practices at one end and student-centered practices at the other. According to Cuban, two major reform periods during the past century caused a shift in classroom practices from teacher-centered to students-centered. Progressive education made its mark on the first quarter of the 20th century. Similar student-centered practices emerged under the title “open classrooms” from the mid-1960s to the mid-1970s (Cuban, 1993, p.13).

Targets of reform during the 1920’s and 1930’s were formal recitation, whole group instruction, and lack of student movement. Progressivism advocated for student centered practices such as dividing the class into small groups for instruction and assigning individuals independent work. Cuban’s (1993) study of urban and rural classrooms and his analysis of national studies reported a core of progressive teaching practices such as increased student participation in small groups, project activities,

subject integration, increased use of varied classroom groupings, and freedom of movement. Rural one-room schools received attention during the progressive era as examples of student-centered programs. The ungraded nature of small rural schools resulted in small-group instruction and multiple-classroom activities as a matter of necessity. In a summary of 11 studies of over 3200 rural teachers in 20 states, the most frequently reported problems of rural teachers were due to the one-room ungraded type of organization (Uggar as reported in Cuban, 1993, p.125). Cuban conjectured, “A later generation of reformers interested in constructing student-centered classrooms would look to the rural-one room schools and see embryonic student-centered settings. They ignored the drumbeat recitations, rote instruction, poorly trained teachers, inadequate school rooms, and poverty level wages of the 1920’s and 1930’s” (1993, p. 129).

Cuban’s study concluded that district pressure and support made a difference in the level of implementation and that, what he termed as, “hybrid” forms of classroom practices emerged. Although a “substantial number of teachers did...modify their classroom repertoires...” (p. 143) the dominant pattern of instruction remained teacher centered.

Informal teaching methods spread unevenly across the nation from the 1930’s to the 1960’s. By the mid-1960’s elements common to progressive schools began to surface as open classroom pedagogy. Training, funding, and people with a passion for open classrooms advocated for flexible use of space and methods, student-selected activities, integrated curriculum, and various forms of instructional grouping. North Dakota undertook a statewide initiative to train teachers in the informal-teaching methods of the British primary schools. Similar conclusions can be made for the open classroom movement of the 1960’s and 1970’s as were made for the informal education

of the inter-war years. The dominant forms of instructional practice continued to be teacher-centered or a hybrid form of teacher-centered with some student-centered practices mixed in (Goodlad, 1974; Cuban, 1993).

Beginning in the mid-1970's and into the 1980's a series of books, national reports, and articles spoke out against open-classroom education and in favor of higher academic standards and test scores. One of the best known reports, A Nation at Risk, was published by the National Commission on Excellence in Education (1983). Enthusiasm for informal education waned as a variety of reform initiatives attempted to raise academic standards and "the changing target was moving the classroom teacher from one set of practices to another" (Cuban, 1993, p. 230).

During the 1980's groups of early-childhood educators continued the debate of teacher-directed versus student-centered teaching practices. In 1987, the National Association for the Education of Young Children (NAEYC) released Developmentally Appropriate Practices in Early Childhood Education (Bredecamp, 1987). That publication criticized the emphasis on basic skills and standardized testing and summarized cognitive research on how young children learn. The developmentally appropriate practices recommended by NAEYC "were clearly more compatible with a nongraded framework than with a graded one. The stage was set for a new wave of interest in nongraded education" (Gaustad, 1992a, p. 10).

Developmentally appropriate practices at the primary level were also supported by the National Association of State Boards of Education (NASBE) and the National Association of Elementary School Principals (NAESP) (Gaustad, 1992a).

"Appropriate" instructional practices include active, hands-on learning, flexible grouping, learning centers, and integrated curriculum—all common to the informal

teaching practices of the past. According to Bredecamp (1987), developmentally appropriate practices include play, learning at the child's own pace, interaction with peers and adults, a variety of materials, student choice, and the involvement of parents. A developmentally appropriate classroom environment allows for freedom of exploration, interaction with people and materials and concrete learning experiences which engage children both physically and mentally (West, 1996).

Also, Mangione (1992) conducted 15-minute telephone interviews of nine kindergarten and nine preschool teachers. All teachers in the study had participated in a two-year formal-training program on developmentally appropriate practices. The training program included bimonthly visits from the trainer. Mangione's interview addressed classroom environment, schedule, curriculum, understanding how children learn, the role of the teacher, and assessment techniques. More than half of the teachers reported appropriate practices in 8 out of 10 categories. The researcher noted that self reporting was not as effective as self-reporting combined with observational data. Far West Laboratories (1994) evaluated the same Mississippi training program as Mangione by means of case studies of three kindergarten and three first-grade teachers. Researchers conducted interviews at the beginning and end of the two-year training . Independent observers conducted classroom observations utilizing the Early Primary Practices Observation Scale (EPPOS). EPPOS measured four domains of developmentally appropriate practices: (a) the learning environment; (b) curriculum and materials; (c) daily routine; and (d) interaction with children. Over the two-year span of the study there was general improvement in all four domains. A limitation of the Far West study was participant attitudes. Four out of six teachers began the training with general knowledge about and interest in developmentally appropriate practices. Those

four teachers strengthened their programs over two years. Another teacher had no initial understanding of developmentally appropriate practices, yet was “successful” according to the EPPOS. A sixth participant revealed little change in attitude or practice during the two years of the study.

Both Mangione and Far West dealt with small samples, thereby limiting generalizability; however, findings from each of the studies indicated that some teaching practices changed over time with training. While early childhood educators debated appropriate teaching practices, entire states engaged in educational-reform movements in the 1980’s and 1990’s. Mandates in Mississippi, Kentucky, and Oregon increased national interest in multiage classrooms (Miller, 1994).

As early as 1982 a component of the Mississippi Education Reform Act mandated public kindergarten in all schools. A statewide training program focused on developmentally appropriate practices as the core of the kindergarten program. In 1986, Grace and Woodruff surveyed 154 randomly-selected school districts to determine how they planned to meet the Mississippi state mandate. All had a plan of action which included participation in a three-phased staff-development program. Once program policy and guidelines were defined, early-childhood committees developed an administrative handbook and a teacher-resource book. All areas of the curriculum were addressed in a third handbook. The training program targeted all kindergarten teachers in the state. The Mississippi Reform Act of 1982 also mandated management and leadership training for administrators and school board members. Training, which was led by the Executive Management Institute, did not take place until 1989 and 1990.

In June 1989 the Kentucky Supreme Court declared the public school system “unconstitutional” in the case of *Rose versus the Council for Better Education* (Guskey

& Oldham, 1996). The Court then ordered the General Assembly to establish a system which provided every child with an equal opportunity to have an adequate education and to monitor the system on a continuing basis. The court order led to passage of the Kentucky Educational Reform Act (KERA) of 1990. KERA addresses nearly every aspect of public education. It mandates seven key attributes which include developmentally appropriate practices, such as flexible grouping, active child involvement, and continuous progress (Kentucky Department of Education, 1991). Curricular provisions of KERA, described by Guskey and Oldham (1996), include: (a) performance standards for all students; (b) performance based assessments; (c) incentives and sanctions for improvement or decline in student achievement; (d) programs developed and funded to eliminate school failure; (e) extended services for preschool and at risk students; and (f) nongraded-primary programs mandated to replace all traditional classes for grades K-3.

Oregon's attempt to satisfy the mandate of HB 3565 involved looking at elementary school organization and mixed-age grouping. A 1993-94 directory (Oregon Department of Education, 1994) published the results of a survey indicating that 92 schools in 23 counties had established one or more mixed-level classes. School student populations ranged from as low as the teens up to 700 per building. Most school populations fell between 200 and 500. Teachers, staff members, and principals who were implementing mixed-age classrooms in their schools self-reported information that went into the directory. Schools reported when the mixed-age program was implemented and why the school implemented a mixed-age program. One-room schools and schools with fewer than 100 students reported mixed-age groupings as a necessity. Only 12 of the 92 schools stated that implementation of mixed age was directly related

to HB3565, although most of the programs came into being following passage of that legislation. Many schools reported programs to be teacher-initiated based on research and philosophical beliefs about how to best meet the needs of students. Few mentioned initiation of mixed-age programs by principals. Two schools pointed to mandates by the superintendent and school board. Those stating philosophical reasons most often mentioned developmentally appropriate practices. Economic factors and reduction in staff reportedly caused other schools to look at alternative ways of grouping students to balance class sizes. The majority of schools responding to the state questionnaire reported a combination of reasons for implementation of mixed-age programs.

While not a statewide initiative, grade-combination classes came to the forefront at the 1989 Virginia Education Association Delegate Assembly. Teachers of multigrade classes brought forth the following resolution which stated, "The VEA will recommend that all school systems acknowledge that self-contained grade combination classes meet special needs requirements which include aide support, reduced class size, and flexible curriculum requirements" (VEA & AEL, 1990, p. 3). The resolution was later adopted by the delegates. The National Education Association (NEA) resolved at the 1990 representative assembly to research the impact of multigrade classes on student achievement. While the NEA engaged in research, Virginia teachers conducted a survey of grade-combination teachers to determine instructional strategies effective in dealing with two different curricula and with varying child-development levels. The targeted instructional strategies were then to become the focus of staff-development efforts for all staff since "other teachers will note teaching strategies their multigrade teaching peers have found effective and begin to implement these" (p. 3).

The 1990 VEA study reported findings similar to survey respondents in Oregon.

The majority of teachers were administratively assigned to multigrade classes. Fewer than 25% of the 75 Virginia teachers surveyed had requested a multigrade assignment. A recommendation of the study was that all assignments to multigrade classes be voluntary and for academic reasons rather than arbitrary assignments based on uneven enrollment. As in Oregon, multigrade classes were most frequently found in schools of 300 or fewer students. The most effective instructional methods reported were integrating the curriculum, peer tutoring, cooperative learning, and team teaching. The data also revealed that management practices effective in single-grade classes may be similarly effective in multigrade classes.

There is a need for further research to examine the instructional practices utilized by teachers in multigrade/multiage classrooms (Veenman, 1995). Bender (1996) supports Veenman's call for further research, questioning whether or not schools calling themselves multiage avoid grade level distinctions and instruct students by skill level. Teachers participating in Bender's study had no differentiated-staff development and had not developed a curriculum to deliver a multiage program. Bender concludes, "The lack of adherence to the principles of multiage education may explain why the results of the study did not differentiate one program from the other" (p. 6). A study by the Kentucky Education Association and the Appalachia Educational Lab (1991) reported that, although ungraded primary programs were an "educational reality and literature reveals positive effects from this type of educational organization, little research exists on teacher strategies for delivering instruction in such a setting" (p. 5). Most studies comparing multigrade/multiage and single-grade/single-age classes provide little or no information on instructional practices. Studies which do provide information on teaching in a multigrade class describe teachers who teach a lesson to one grade while the

other grade works on follow up activities (Mason & Burns, 1995; VEA, 1990).

Students are rarely grouped across grade lines. Using ineffective-grouping arrangements and relying on single-grade instruction makes multigrade classes no different than single grade. Therefore, it is understandable that few studies have found significant differences in academic or social achievement of students.

Reports of instructional practices recommended for multiage classrooms consistently appear in the literature. Most often mentioned are: (a) developmentally appropriate practices; (b) cooperative learning; (c) peer tutoring; (d) learning centers; (e) authentic assessment; (f) flexible grouping; (g) hands on activities; and (h) whole language instruction (Miller, 1991; Gaustad, 1992b; Fisher, 1997; & Privett, 1996). Such frequently mentioned, common themes of school restructuring are at the forefront of educational reform. (Kentucky Education Association & Appalachia Educational Laboratory, 1991). Several state reform initiatives of the 1990's have called for some of the same innovative practices identified in the literature. The Massachusetts Board of Education (1990) conducted research and recommended multigrade classrooms to increase opportunities for peer tutoring, peer modeling, and cross-age groupings of students to allow students to progress at their own rate leading to continuous progress based promotion and flexible standards.

Gillaspie (1993) investigated teaching strategies utilized in Kentucky primary classrooms as part of a dissertation study comparing what she termed "traditional" and nongraded organization. Analyzing the results of a questionnaire sent to a random sample of primary teachers across the state of Kentucky, Gillaspie concluded that teachers did change instructional practices when their assigned grouping of students changed from single grade to multiage. Teachers self-reported that previously as

traditional, single-grade teachers they had spent more time providing direct instruction and using basal textbooks. Once assigned to nongraded/multiage classrooms the same teachers reported more active learning situations and integration of curriculum. Time spent working with whole class, small groups, or individuals also reportedly changed when a teacher moved from traditional to nongraded/multiage. Traditional, single-grade teachers spent more time teaching the whole class than working with small groups or individuals. Teacher grouping practices for instruction in the nongraded/multiage classroom changed to an emphasis on small-group instruction rather than predominantly teaching to the entire class. Teachers reported spending more time with individual students than they had in the traditional classroom (Gillaspie, 1993). Teachers in Gillaspie's study had traditional classroom experience prior to their assignment to the state-mandated nongraded/multiage programs. In that respect, Gillaspie was able to draw more valid conclusions than if she had been comparing separate groups of traditional and nongraded teachers. Actual comments of teachers who participated in the study indicated strong desires either to return to traditional teaching or to continue in a nongraded-organizational structure.

Katz, Evangelou, & Hartman (1990) advocate the use of innovative teaching strategies in both multiage and single-grade classrooms. Their advice is that "to maximize the potential benefits and minimize the potential risks of mixed-age groups, specific teaching strategies that may be appropriate for all teachers in all kinds of classes for young children may be of special importance when children are mixed in age" (p. 36).

More than a century ago the one-room schoolhouse teacher was challenged to divide time among children of many ages and ability levels. Although most teachers today work with single-grade classes, they face a similar challenge--that of teaching

children with an array of needs as great as those among the children of the one-room school (Tomlinson, 1999). Sarason (1990) reported today's students calling for a different way to learn. The one-size-fits-all delivery system, which mandates that everyone learn the same thing at the same time, no matter what their individual needs, has failed (Tomlinson, 1999).

Differentiating instruction, which has been a key ingredient of nongraded, multiage/multigrade organizational patterns, is an instructional practice getting increased attention as teachers seek to meet the changing needs of students. Tomlinson's work (1999) on differentiated instruction outlines what she calls the "hallmarks" of differentiated instruction, which are as follows: (a) teachers beginning where students are and building upon learner differences; (b) students competing against themselves, not each other; (c) teachers providing different ways for each student to learn; (d) teachers using time flexibly; (e) teachers using of a wide range of instructional strategies; (f) teachers clearly understanding curriculum, focusing on essential concepts, skills, and principles and modifying the curriculum as necessary to fit individual learner needs; and (g) assessment is ongoing and diagnostic and is inseparable from instruction.

Tomlinson's work is directed to all teachers, but clearly parallels what the literature presents as strategies necessary for implementation of a multigrade/multiage classroom. The "hallmarks" of differentiated instruction are also similar to NAEYC's description of developmentally appropriate practices.

Tomlinson (1999) proposed, "Many current understandings about learning provide strong support for classrooms that recognize, honor, and cultivate individuality" (p. 18). Recent research has provided educators with new knowledge about effective teaching and learning. Several researchers have studied intelligence. Gardner

(1991,1993, 1997) found intelligence to be multifaceted, suggesting eight distinct kinds of intelligence: (a) verbal linguistic, (b) logical-mathematical, (c) visual-spatial, (d) bodily-kinesthetic, (e) musical-rhythmic, (f) interpersonal, (g) intrapersonal, and (h) naturalistic. Sternberg (1985, 1988, 1997) suggested that humans think, learn, and create in different ways, limiting his notion of intelligence to three: (a) analytical, (b) practical, and (c) creative. Caine and Caine (1991) challenged previous paradigms finding that intelligence is fluid, not fixed and, in fact, can be increased or diminished. Brain research has also provided educators new information about teaching and learning (Jensen, 1998; Vygotsky 1986). New findings on intelligence and on how the brain processes information during the teaching and learning process may relate to reported differences in the kind of instruction occurring in multiage classrooms of the 1990s (Gillaspie, 1993).

Over the past half-century the student population has changed. Students who once may have stayed home or have been tutored or in institutions are now in schools (Tomlinson, 1999). Tomlinson's work suggests, "Despite compelling, new educational knowledge, classrooms have changed little over the last 100 years. The assumption remains that a child of a given age is enough like all other children of the same age that he or she should traverse the same curriculum in the same fashion as all other students of that age" (p. 22).

The continuum of instructional practices with teacher-centered direct instruction at one end and student-centered instruction at the other lives on as various reform efforts have come and gone. New research verifies that children develop at different rates, possess different kinds of intelligences, and process information through different brain pathways. If, as Gillaspie reports, teachers changed instructional practices when

assigned to a different type of organizational grouping, multiage grouping may be the impetus for implementation of the kinds of instructional practices that will meet the diverse needs of today's students. If student learning is directly affected by the instructional practices of their teachers, then teachers learning about and using new instructional practices could be a key to achieving the purposes of educational reform efforts.

Teacher Training for Multiage

Miller (1996) identified and recommended preservice and inservice training programs in six key variables for success of multiage teaching: (a) classroom organization, (b) classroom management and discipline, (c) instructional organization and curriculum, (d) instructional delivery and grouping, (e) self-directed learning, and (f) peer tutoring. Most teachers receive training for teaching single-grade classes organized around whole-class instruction and/or small-ability groupings. Pratt and Treacy (1986) pointed out that teachers in their study were critical of teacher training courses which didn't prepare them to teach in multigrade classes. Almost 80% of Canadian teachers assigned to multigrade classes indicated that they had no training in multigrade teaching (Campbell, 1993). Studies at different times and in different countries reported lack of adequate training as a common problem (Veenman, 1995).

One such study occurred 20 years prior to Veenman's research. Gibbs (1975) conducted a review of educational literature focusing on the Open Education movement during the 1960's and 70's "to note its relevance to teacher training" (p. 3). By the mid 1970's, school districts were requesting that preservice students be trained to work in open classroom environments. Gibbs made the following recommendations to teacher-education programs as a result of her study:

1. The teacher-education program should make more of the nontraditional...an integral part of the undergraduate program. This should be done in conjunction with local schools.
2. More instructors should implement non-traditional approaches (newer instructional designs) in their own teaching processes to serve as a model for teacher trainees. (p. 21)

Gibbs (1975) encouraged teacher-education programs to provide prospective teachers with an understanding of the underlying principles of open education including “modes of teaching, learning styles and open organization” (p. 5). Cuban reported findings of three national surveys of teacher-education curricula prior to 1940. Survey results revealed minimal occurrences of progressive ideas in normal and college courses of study (Zilversmit, 1976, as reported in Cuban, 1993).

The call for different approaches to teacher training continued to be sounded. Miller (1989) pointed out that different and more complex skills in classroom management and discipline, classroom organization, instructional organization and curriculum, and instructional delivery and grouping are needed to deliver instruction in a multigrade class. Lack of attention to these skills in teacher-education programs is a problem to teachers who are assigned to multiage classes (Miller, 1989, and Jones, 1987). Teacher training programs have been slow to change and are probably not producing new teachers who are ready to work in multiage settings. If that is the case, staff development is left up to the employer (Black, 1993).

In 1989, Veenman, Lem, and Roelofs designed a staff-development program for teachers of mixed-age classes in the Netherlands. The study set out to change the teaching behaviors of teachers in mixed-age classes. Treatment group differences at the

end of Veenman's training indicated that his staff-development program enhanced teachers' skills in mixed-age classes. Veenman and Raemaekers (1995) reported similar results after studying long term effects of another staff-development program for multigrade teachers. Veenman did not follow up either study to see if the changed teaching behaviors had a positive impact on student achievement. When the VEA (1990) surveyed teachers of multigrade classes across the state of Virginia, they found that teachers forced to change from single to mixed-age classes did not change their instructional approaches. They continued to teach to the whole class.

Innovation and Change

It is logical for school systems to presume that professional development will lead to teacher implementation of innovations or to changes in classroom practice. There is a growing body of research that views the implementation of educational innovation as a form of staff development for the teachers taking part in innovative projects (Marcelo, et al., 1996). Marcelo concluded,

Together with institutional changes, we can say that most of the teachers confirmed that their participation in the innovation project has provoked changes in their teaching especially in the use of new teaching materials, in the tasks assigned to pupils, in the form of presenting information to pupils, and in teacher/pupil relationships." (p. 197)

In the late 1970's and early 1980's, researchers at the University of Texas at Austin developed the Concerns Based Adoption Model (CBAM) to study teacher use of innovations. Innovation is a generic term for any program, process, or practice that is new to a person (Hord, Rutherford, Huling-Austin, & Hall, 1987). The CBAM has been used to evaluate individual variations in the use of innovations and degree of

implementation (Hall, Wallace & Dorsett, 1973). Two components of the CBAM describe the individual, Stages of Concern (Soc) (Hall & Rutherford, 1976) and Levels of Use (LoU) (Hall, Loucks, Rutherford & Newlove, 1975). The third component, which describes the innovation's operational form, was named Innovation Configuration (IC) (Hall & Loucks, 1978). The IC sets forth a framework, procedures, and criteria to use in determining whether an innovation is in use and to what degree.

Much of the research related to multiage and nongraded education describes programs in terms of philosophy, underlying assumptions, and beliefs. Dissertation studies of the 1990's have generally employed qualitative methods to examine the innovation in terms of belief systems (Lolli, 1995, Miller, 1991, Poulos, 1996, Weaver, 1998). Defining innovations in terms of fundamental beliefs may be helpful when initiating a change; however, "There is apt to be a large gulf, if not an absolute lack of correlation between espoused philosophy and actual practice" (Hall & Loucks, 1981, p. 8). Describing a program by beliefs or in terms of ultimate goals doesn't equate to implementation. Recent studies on multiage have looked at the context of the innovation as it is carried out in the classroom, the changes it creates, and the features and conditions that facilitate its development (Marcelo, et al., 1996). An attempt to describe programs in actual practice led to development of the Innovation Configuration (Hord, et al, 1987), a tool which served as the basis of the research design for this study.

Innovation Configurations (IC) include operational descriptions of the behaviors of teachers and students, use of materials, and other procedures and strategies and variations on how each component may be implemented by various users of the innovation. The IC can be used to introduce an innovation and to monitor the progress of implementation. Data gathered can be organized and displayed by the individual user

to determine types of assistance needed and to make informed decisions about support. The IC arranges descriptions of how an innovation looks in practice in order of descending acceptability, with the most valued descriptors listed first (Hord, et al, 1987).

Information about components or basic elements of an innovation, such as multiage grouping, can complement understanding of the philosophy of a program and can aid in defining classroom instructional expectations for teachers. In a research context an Innovation Configuration can be “used to determine constancy of treatment across individuals in the treatment group and to assess the extent to which the treatment is truly absent from the control group” (Heck, Stiegelbauer, Hall, & Loucks, 1981, p. 3).

When Kentucky sought an instrument to evaluate the progress of programs initiated as a result of the Kentucky Educational Reform Act of 1990, the Innovation Configuration became the instrument of choice. The IC, which identifies key components of the Kentucky Primary Program, enabled researchers to evaluate the level of implementation of various program components based on a common set of standards and guidelines. The original instrument, known as a Component Configuration Map and first used in 1993, was open ended and required observers to make judgments on level of implementation based on observation notes regarding designated categories. Levels of implementation were rated from 1 to 4 , with 1 being no implementation and 4 being high degree of implementation. Successive studies in 1994 and 1995 revised and refined the instrument to further define each variation for greater observer understanding and interrater reliability. Each study collected data from a random set of schools across eight Kentucky educational regions. Trained observers, mostly representing higher education, conducted interviews, observed classrooms, and reviewed documents in order to

determine the level of implementation of KERA initiated programs.

The 1995 study looked at data collected from a geographically-stratified random sample of 24 primary schools across Kentucky. Four primary teachers were randomly selected for observation in each school. In the end 92 teachers remained in the sample, a small number on which to generalize level of implementation throughout the state. As part of the study the 92 teachers completed a survey instrument and were observed in the classroom for a full day. Observers also interviewed each teacher and the school principal (Bridge, 1995). Observation and interview data provided the evidence to determine the level of implementation for each of the seven critical elements and 48 sub-components of the Primary Program.

Although Bridge's 1995 Kentucky study found wide variation from teacher to teacher, over half of the teachers were using KERA-recommended instructional practices in reading, writing, and mathematics. Fewer than half utilized the recommended: (a) instructional practices in science and social studies; (b) flexible grouping with provisions for continuous progress of students; (c) a variety of instructional strategies allowing for student-initiated activities; (d) instructional learning centers; or (e) broad based themes and units.

Approximately half of the teachers in the sample were teachers in multiage configurations where the majority of students remained with the same teacher for two or more years. The Bridge study (1995) concluded that:

Teachers who were implementing the Primary Program with high fidelity differed most from teachers who were implementing the program with low fidelity in components of the program over which the individual teacher has control, especially involving the use of a variety of instructional and assessment

techniques that are designed to facilitate the continuous progress of students.

(p. xiv)

A recommendation of the study was to provide staff development which would build “teachers knowledge of developmentally appropriate instructional and assessment strategies to monitor and facilitate students’ continuous progress” (p. xv).

Summary

Multiage/multigrade groupings for instruction have existed for a large part of our history and are a reality in today’s schools. The literature reveals some positive effects from this type of instructional organization which has gained renewed attention in the 1990s “as a way of curbing ability tracking and grade retention” (KEA & AEL, 1991, p. 5). While historically multiage classes have been formed out of necessity due to uneven enrollments, there is now evidence that multiage classes are being formed intentionally to promote developmentally appropriate instruction. Reform efforts and mandates in states, such as Kentucky and Oregon, as well as policy reports released by the National Association for the Education of Young Children (Bredecamp, 1987), the National Association of School Boards of Education (1988) and the National Association of Elementary School Principals (1990), have brought multiage education to the forefront nationally. Districts across the country and individual schools have made multiage education a part of local reform efforts. Establishment of ungraded-multiage groupings brings together instructional practices at the forefront of current educational reform research.

There has been little research on teacher-instructional strategies in multiage programs. Authors such as Cuban (1993) and Brophy and Good (1986) have chronicled teaching strategies only from an historic viewpoint. Research studies and available

syntheses of research have focused primarily on comparisons of student achievement in multiage/multigrade and single-grade classrooms. Instructional practices in multiage/multigrade classrooms have been noted as an area for further study, yet such studies are difficult.

The best known, and possibly most-widely used, instrument for such a study is Pavan's Indicators of Nongradedness. However, researchers, such as Veenman, when summarizing research on multiage/multigradedness, discount studies of nongradedness because of the inconsistency of definition. A statewide effort in Kentucky to implement a developmentally appropriate multiage primary program resulted in the creation and refinement of an instrument to measure the level of implementation of the reform efforts. The Primary Program Configuration Map, developed by the Kentucky Institute for Education Research (KIER), defines what developmentally appropriate teaching practices look like at various levels of implementation. KIER, in researching and evaluating critical components of Kentucky's primary program reform, spent several years refining an instrument to assist in that research and evaluation. The configuration map, a portion of which will serve as the basis for this study, is a further refinement of observation instruments used in Kentucky for research and evaluation in 1993, 1994, and 1995. This research study will expand the use of the instrument to survey teaching practices of primary teachers in Pennsylvania.

It is necessary to keep in mind that many factors must be considered when determining the success or failure of an educational program. Multigrade and multiage programs have been compared to more traditional programs for over half a century. Early research focused mainly on student achievement as measured by some standardized test. Small sample size, unmatched experimental and control groups, and

lack of a clear definition of terms have resulted in mixed findings.

Research reports and popular literature on the topic of multiage grouping fall into three categories. There is a large body of information which describes teachers' experiences and beliefs that multiage grouping meets the needs of students. Often there has been no study conducted to document those beliefs. Secondly, there are research studies whose findings suggest how to implement multiage programs. Teachers or researchers who have been involved in programs they believe to be successful conducted research in a single classroom or a single school then reported their findings. Generalizability is limited in such studies. The third category is that of well-designed studies. A minority of studies attempt to document comparisons of students assigned to single-grade, multigrade, and multiage classes. Most of these studies report student achievement, attitude towards school, and/or social adjustment. Few researchers have looked at the instructional practices of teachers when comparisons were made.

This study will survey second-grade teachers as to their level of implementation of various instructional practices. The survey instrument will also gather data on the type of classroom configuration, preference of classroom configuration, years of experience, and whether teachers were administratively assigned or had volunteered for their current position. The literature repeatedly asserts that teaching in multiage/multigrade classrooms requires certain beliefs (Weaver, 1998) and a repertoire of specific-instructional practices (Gillaspie, 1993; Settle, 1995). With the national attention given to developmentally appropriate education and multiage/multigrade grouping, it is unclear whether teachers in such settings are changing how they instruct students. In contrast to certain other states, Pennsylvania has not mandated developmentally appropriate practices or multiage-primary classrooms. This study will

investigate teaching strategies of both single-grade and multiage/multigrade primary teachers in elementary schools in Pennsylvania. The goal will be to determine if instructional strategies purported to be necessary for successful multiage classrooms are implemented to a greater or lesser degree in multiage classes than in single-grade classes.

Comparisons of students in single-grade and multiage classes have generally noted little difference in achievement. Research on achievement has rarely included data on instructional practices. There are contrasting viewpoints in the literature on whether or not instructional practices change when a teacher has a class of students of the same age and grade or a class made up of multiple grades and ages. Lack of evidence can certainly be traced to the difficulty in separating all the variables that go into teaching. Focusing on a specific grade-level teacher and a finite set of instructional practices, as defined by the Kentucky Configuration Map, will add to the body of knowledge regarding how teachers teach. Information from such a study may be useful to principals and other instructional leaders who may be considering implementation of multiage programs. Results will also aid in planning for targeted staff-development experiences.

This chapter reviewed literature related to multiage/multigrade education, its historical beginnings and its impact on student achievement. Additionally, the literature revealed a core of common instructional practices associated with a change from single grade to multiage/multigrade classes and the need for inservice and preservice training of teachers. In Chapter III, the statistical design and methodology for gathering data on primary-teaching practices in Pennsylvania will be described.

Chapter III

Methodology

Design of the Study

This study was designed to compare instructional practices of Pennsylvania public school teachers assigned to multigrade/multiage and single-grade classrooms. Specifically, the study was designed to determine whether developmentally appropriate practices were utilized and to what degree they were implemented in classrooms containing second-grade students. Although the single-graded structure has remained more prevalent, many schools throughout the country have implemented multigrade/multiage classes. Researchers (Carbone, 1961; Hillson, et al., 1964; Rehwoldt & Hamilton, 1957;) have frequently compared the achievement of students assigned to single-grade and multigrade/multiage classrooms using standardized measures. Little, if any, attention has been given to variables such as the instructional practices of teachers. Recommendations for further study have included the need to investigate classroom instructional practices (Carbone, 1961; Gillaspie, 1993; Veenman, 1995). During reform efforts of the 1990s, entire states, such as Kentucky and Oregon, mandated multiage primary programs on the assumption that this structure will have benefits for children.

This study surveyed second-grade teachers in Pennsylvania to determine whether they were using the developmentally appropriate practices recommended in the literature as necessary for teaching in a multigrade/multiage classroom. Pennsylvania, like many other states, has no state mandate; yet, reform efforts have resulted in a renewed interest in multiage education in the Commonwealth. This chapter describes in detail the methodology for this study. Research questions and hypotheses tested are

followed by information about the population, the sample, the survey instrument, data collection procedures, and the method of data analysis.

Research Questions

This study addressed the following research questions:

1. What is the proportion of Pennsylvania classrooms with age-appropriate second graders assigned to multiage classes?
2. What is the proportion of Pennsylvania classrooms with second graders assigned to multigrade classes?
3. What proportion of Pennsylvania teachers of age-appropriate second graders are administratively assigned to teach in multiage and multigrade classes versus requesting such an assignment?
4. Are there significant differences among teachers of age-appropriate second graders in multiage, multigrade, and single-grade classrooms with respect to instructional practices?
5. Are there significant differences between years of teaching experience of teachers of age-appropriate second graders and the use of developmentally appropriate instructional practices?
6. Are there significant differences between teachers of age-appropriate second graders who requested and those administratively assigned to teach a multigrade/multiage class with respect to instructional practices?
7. Are there significant differences among teachers of age-appropriate second graders in multiage, multigrade, and single-grade classrooms with respect to 24 individual instructional practices?

Hypotheses

Research questions four through seven were answered through testing the following null hypotheses:

4. No statistically significant difference existed in the types of instructional practices utilized by teachers of age-appropriate second graders in multiage, multigrade, or single-grade classes.
5. No statistically significant differences existed between the use of developmentally appropriate instructional practices and the years of teaching experience of teachers of age-appropriate second graders in multiage, multigrade, or single-grade classes .
6. No statistically significant difference existed with regard to the types of instructional practices utilized by teachers who requested and those who were administratively assigned to teach age-appropriate second-grade multigrade/multiage classes.
7. No statistically significant difference existed with regard to each of 24 instructional practices, identified as developmentally appropriate by the Kentucky Primary Program Configuration Map, utilized by teachers of age appropriate second graders in multiage, multigrade, or single-grade classes.
- a) No statistically significant difference existed with regard to the use of children's literature and reference books for reading instruction.

- b) No statistically significant difference existed with regard to student-initiated activities in the classroom.
- c) No statistically significant difference existed with regard to students reading independently in a sustained silent reading time.
- d) No statistically significant difference existed with regard to students being flexibly grouped and regrouped for instruction.
- e) No statistically significant difference existed with regard to the integration of all content areas when connections were natural.
- f) No statistically significant difference existed with regard to the delivery of math instruction to a whole group.
- g) No statistically significant difference existed with regard to the delivery of math instruction to small groups.
- h) No statistically significant difference existed with regard to the delivery of individualized-math instruction.
- i) No statistically significant difference existed with regard to the teaching of reading skills in context.

- j) No statistically significant difference existed with regard to the use of technology for math instruction.
- k) No statistically significant difference existed with regard to students expressing themselves in a variety of ways.
- l) No statistically significant difference existed with regard to the planning of themes, units, and projects around broad-based themes and core concepts.
- m) No statistically significant difference existed with regard to student application of mathematical concepts.
- n) No statistically significant difference existed with regard to the integration of reading throughout the curriculum.
- o) No statistically significant difference existed with regard to each student moving at his/her own pace and level of learning.
- p) No statistically significant difference existed with regard to the use of direct instruction.
- q) No statistically significant difference existed with regard to the use of cooperative learning.

- r) No statistically significant difference existed with regard to the use of independent learning.
- s) No statistically significant difference existed with regard to students reading to one another.
- t) No statistically significant difference existed with regard to the use of math manipulatives for math investigations.
- u) No statistically significant differences exist with regard to the inclusion of special needs students with regular education students for instruction.
- v) No statistically significant differences existed with regard to students being grouped based on learning style
- w) No statistically significant differences existed with regard to students being grouped based on interests.
- x) No statistically significant differences existed with regard to students being grouped for instruction based on skills.

Population and Sample Size

The population for this study consisted of public-school teachers in the Commonwealth of Pennsylvania assigned to teach a single-grade, a multigrade, or a

multiage class of age-appropriate second-grade students during the 1999-2000 school year. The literature clearly presented evidence that the majority of schools implementing multiage classes utilized K-2, K-3, or 1-2 organizational configurations. Thus, teachers of age-appropriate second-grade students were the target population. Elementary school teachers in Pittsburgh and Philadelphia were not included in the population. The Bryn Athryn School District does not include any schools and, therefore, was not part of the study. Teachers in the three schools involved in the pilot tests were excluded from the population from which the sample was drawn. Teachers in all remaining 1709 Pennsylvania public-elementary schools in 498 school districts were considered the population for the study.

Since the population is actually second-grade teachers, not schools, the researcher estimated the number of second-grade teachers in the state. A call to the Pennsylvania Department of Education (PDE) Data Services Division provided information regarding elementary-school enrollment during the 1998-99 school year. Elementary schools were defined as those schools containing any combination of grades kindergarten through sixth. Excluding Philadelphia and Pittsburgh school districts, there were 119,766 first-grade students enrolled in Pennsylvania public schools during 1998-99. While enrollment is not stable and often changes as students move up in grades, it was reasonably assumed that there was a similar number of second-grade students in the state during the 1999-2000 school year. The population of second-grade teachers was estimated by dividing the total number of second-grade students by the size of an average second-grade class. Such a figure could not be provided by the PDE; however, a range of 20-24 was provided. To determine a close approximation of the number of second-grade teachers in the population for this study, the 119,766 total first-grade

enrollment figure was divided by an average of 22 students per class. There are, therefore, an estimated 5444 second-grade teachers in the sample population. Since there was no available listing of names and addresses of second-grade teachers, the population sample had to be reached by contacting schools.

There are a variety of methods for determining sample size for conducting surveys. Using a table for determining sample size, a random sample with a 95% confidence level required a sample size of 313 for a population of 1709 schools (Johnson, 1989). When proper sampling techniques and appropriate sample sizes are used, reliable inferences about the population can be drawn. In order to raise the likelihood of an adequate number of survey returns, the research study over sampled by 50%. Over sampling by 50% raised the number of sample schools from 313 to 470.

Simple random sampling was used for this research. After deleting schools in Philadelphia and Pittsburgh and the three pilot schools from a listing provided by the PDE Bureau of Information Systems Division of Data Services (1999), 1709 elementary schools remained. Elementary schools are organized on the PDE printout by county and school district. Each of the remaining 1709 elementary schools was assigned a number, beginning with schools in Adams County and ending with schools in York County. Using computer-generated random-sampling techniques, a sample of 470 Pennsylvania elementary schools was selected. The mailing list of 470 schools represented 27% of the 1709 public elementary schools remaining in the population. The number of second-grade teachers working in the 470 sample schools approximated 27% of the population of second-grade teachers which was 1470 teachers. A sample of 1470 second grade teachers was far greater than the number necessary. Assuming a low return rate, a greater sample size insured a sufficient number of responses for analysis in

multigrade and multiage comparisons.

Instrumentation

The Kentucky Primary Program Configuration Map served as the basis of the survey developed by the researcher. The University of Kentucky Institute for Education Research (KIER) developed the Primary Program Configuration Map to evaluate the implementation of the mandated Kentucky Education Reform Act of 1990 (Bridge, 1995). The survey instrument for this study was based on a refinement of observation instruments used in 1993, 1994, and 1995 for research and program evaluation in Kentucky. Refinements to clarify descriptions of the variations were made each year based on feedback from observers. In 1995 items relating to multiage-grouping patterns and the inclusion of five-year-olds and special-needs students were added to the configuration map. The original instrument focused on the seven critical attributes of the primary program set forth by state mandate. Those seven attributes were: (a) developmentally appropriate educational practices; (b) multiage/multi-ability classrooms; (c) continuous progress; (d) authentic assessment; (e) qualitative reporting methods; (f) professional teamwork; and (g) positive parent involvement. Each school in Kentucky created implementation action plans around four major categories: (a) learning environment; (b) developmentally appropriate practices; (c) assessment; and (d) educational partnerships. Plans were reviewed by consultants and university professors identifying indicators for each component of the action plan. A Primary Program Action Plan Review Form was then developed. According to Bridge, a primary researcher for KIER, "The majority of components on the Primary Program Configuration Map correspond to the categories and indicators on the Primary Action Plan Review Form" (1995, p.7). The configuration map, which was originally an open

ended protocol, was revised in accordance with comments made by those who served as observers in 1993 and 1994 studies. Initial observers had to rate the various components on a scale of 1 to 4, with 1 indicating “no evidence” of implementation, 2 “little evidence,” 3 “moderate evidence,” and 4 “extensive evidence” (Bridge, 1995).

Prior to the 1994 study, the observation instrument was revised to define each component and the variations that occur in the implementation of the innovation. The instrument was further refined in 1997 and divided into five major categories. Only one component of the instrument served as a model in the creation of the survey for this study, that entitled “Developmentally Appropriate Practices.” Each component of the Kentucky Configuration Map was further separated into subcategories. Since this study focused primarily on instructional practices, two subcategories under Developmentally Appropriate Practices, namely, “Integrated Instruction” and “Varied Instructional Strategies” were the basis for survey items. Elements included under the subcategory “Integrated Instruction” used by this researcher were: (a) broad-based themes and units; (b) meaning-centered reading; and (c) problem solving mathematics. The subcategory entitled “Varied Instructional Strategies” included the following elements as part of this research study: (a) balanced instructional delivery; (b) balance of student and teacher initiation; (c) flexible grouping; and (d) continuous progress.

The survey instrument developed for this research was a Likert-type survey with 24 statements describing instructional practices. Each statement was taken from the portion of the Kentucky Primary Program Configuration Map which defined practices that signify the highest degree of implementation of developmentally appropriate practices. Permission from Dr. Roger Pankrantz, Kentucky Institute for Educational Research, for use of the configuration map, with modifications, was granted

(Appendix A). The instrument used for this research was renamed Survey of Instructional Practices of Teachers of Age-Appropriate Second-Grade Students

(Appendix B). Twelve of the 24 items on the survey instrument which described instructional practices contained exact wording from the Kentucky Primary Program Configuration Map. Other items were modified to remove words that may have led the respondent towards a specific response. Survey respondents were asked to select the degree to which each statement described what occurred instructionally in their classrooms. A short section seeking data related to each respondent's present teaching assignment and years of teaching experience concluded the survey.

Reliability and Validity of the Instrument

Content validity of the instrument used for this study was established in three ways: (a) use of a previously validated instrument; (b) validation by a panel of experts in Kentucky; and (c) citations from experts in the literature. The Kentucky Primary Program Configuration Map was developed by a group of university researchers. Items reflected the seven critical factors mandated by the Kentucky Reform Act. Groups of observers from the ranks of university professors, doctoral students, and school administrators used videotapes of primary classrooms to establish inter-observer reliability and met to discuss and refine the wording for each item. All of the items on the Survey of Instructional Practices of Teachers of Age-Appropriate Second-Grade Students were taken from components of the Kentucky instrument and were determined to be good predictors of overall program implementation. Modifications were minimal and were intended only to remove language that may have led the respondent. Each of the 24 items on the survey instrument, although modeled after the Kentucky instrument, have been supported in the literature as an indicator of developmentally appropriate

instructional practices. Appendix C was generated to establish content validity by presenting a rationale and citations from the literature for each item on the survey.

A series of Spearman Rank-Order Correlations was conducted during Bridge's research study of the Kentucky Primary Program in 1995. Six of the ten highest correlations for the Kentucky evaluation instrument were noted as developmentally appropriate instructional practices: (a) continuous progress 0.82; (b) balanced instructional delivery 0.79; (c) active engagement 0.79; (d) student talk 0.77; (e) balance of teacher and student initiated activity 0.77; and (f) variety of instructional materials 0.76. All of the items on the Survey of Instructional Practices of Teachers of Age-appropriate Second-Grade Students were taken from components of the Kentucky instrument determined to have the highest correlations. Therefore, all of the survey items have been shown to have high reliability. Further reliability was established through pilot testing.

Pilot Study

Once the Kentucky Primary Configuration Map was modified into a survey format, the survey was field tested by teachers at three elementary schools known by the researcher to have both single-grade and multiage configurations in place for second graders. The pilot study focused on the clarity of each question and the general format of the survey to ascertain the reliability of the instrument. A total of 10 teachers, five single-grade and five multiage, were asked to review the self-assessment survey and the cover letter containing general directions. The researcher met with pilot participants in each of the schools following their review. Teachers were asked to note statements that were not clear and to offer any comments regarding how to improve the instrument or the letter of directions. An evaluation form was provided for teacher comments

(Appendix D). The researcher sought feedback from principals regarding the clarity of directions for distribution of surveys and completion of the response postcard.

Principals were also asked to put their responses in writing. There were no major changes recommended in wording, sequencing, or format. Minor changes were made to the survey in accordance with respondent feedback.

Data Collection Procedures

From a listing of all Pennsylvania public elementary schools, excluding Pittsburgh and Philadelphia, the researcher selected a computer-generated random sample of 470 schools. In order to estimate the appropriate number of surveys mailed to each sample school, it was necessary to know the number of teachers of age appropriate second-grade students assigned to each school. Student enrollment data was available in the "School Profiles" section of the Pennsylvania Department of Education (PDE) web site (<http://www.paprofiles.org>). Schools are listed by county, just as they are on the PDE printout of elementary schools. Enrollment by grade is provided for each elementary school in the Commonwealth. Although only an approximation, 1998-1999 first-grade enrollment figures, the most recent data posted on the web site, were used to estimate the 1999-2000 second-grade enrollment for each school in the sample. Second-grade enrollment was divided by 22, an estimated average class size, to determine the number of surveys mailed to each school.

A mailing was sent to the principal of each of the sample schools. The packet contained a letter of introduction (Appendix E) which explained the purpose of the study and outlined what was required of the principal and any teacher respondents to the survey. The mailing included blank surveys with a cover letter to teachers (Appendix F), self-addressed stamped envelopes, and a postcard to be completed by the

principal (Appendix G). Letters to the teachers stressed anonymity of individual responses. The principal was asked to distribute a copy of the survey, a cover letter, and a self-addressed return envelop to each classroom teacher in the school who was teaching age-appropriate second-grade students in any organizational configuration. The cover letter oriented teachers to the purpose of the study and outlined directions for completion of the survey.

Confidentiality of all respondents was stressed and participants were encouraged to respond in a sincere and candid manner. The cover letter noted that the identification coding on each survey assisted the researcher in determining which schools returned the survey. A secure location separate from the survey data protected the identification numbers and the names of the schools associated with each number. There was no identification of individual teachers. Concern that the building principal or district office personnel would see their responses might have inhibited some teachers from freely responding. To alleviate such concerns and further insure candid responses, completed surveys were not to be returned to the building principal. Teachers were instructed to place completed surveys into the self-addressed stamped envelopes and mail the survey directly back to the researcher.

Each principal was asked to return a postcard upon receipt of the survey packet. The postcard asked the principal to check off whether or not he or she distributed the surveys to teachers of age-appropriate second-grade students in the school. The postcard also had a space for the principal to indicate how many surveys were distributed in that particular school. Returned postcards alerted the researcher to which schools participated in the survey and to the number of surveys distributed. Knowing that the principal did or did not distribute the surveys further aided in preparation for a

second mailing which was not necessary.

Statistical Procedures for Data Analysis

Teachers recorded their responses and returned the forms for scoring.

All survey data were transferred into an Statistical Package for the Social Sciences (SPSS) software package for statistical analysis. The independent variable was the type of class: single grade, multigrade, or multiage. Dependent variables were the instructional practices measured by the survey. Descriptive statistics were calculated for all items. Variations are described in terms of central tendency and standard deviation.

The question comparing the instructional practices of the traditional second grade teacher with the multigrade teacher and the multiage teacher was analyzed by using an analysis of variance. Scheffler (1988) stated that an analysis of variance compares the variation among group means with the variation that is due to within-group variation alone. Mean scores were computed for the total group of teachers in each classroom configuration: single grade, multigrade, and multiage. Means were calculated based on responses to all 24 items describing developmentally appropriate practices. Significance was determined at the $p < .05$ level. Further tests were conducted for each of the 24 sub categories under hypothesis four using an analysis of variance test at the $p < .01$ level of significance.

The survey asked teachers to indicate whether they requested to teach in a multigrade/multiage class or they were administratively assigned to a multigrade/multiage classroom. Two-tailed t-tests were performed to distinguish any differences in degree of implementation of instructional practices between teachers who were administratively assigned to a multigrade/multiage class and those who volunteered for such an

assignment.

Questions concerning proportion of multigrade and multiage classes and demographic information related to teacher assignments and years of experience were analyzed by number and percentage of responses received. Teachers' years of teaching experience were reported on the survey in one of five groups. Mean scores of the survey for each of the five groups were tested for significance utilizing an analysis of variance.

Summary

This study intended to analyze the instructional practices of teachers of age appropriate second-grade students in Pennsylvania to determine if instructional practices differed significantly among various organizational configurations. The instrument used focused only on instructional practices identified in the literature and on the Kentucky Primary Program Configuration Map as developmentally appropriate practices. Years of teaching experience and preferences of teaching assignments provided data for further analysis. The randomness of selection of an appropriate sample size allowed results to be generalized to the population of all teachers of age appropriate second-grade students in the Commonwealth of Pennsylvania. Chapter IV, which follows, organizes and analyzes the results of the survey. A summary of findings and recommendations for further study is reported in Chapter V.

Chapter IV

Presentation of Data

Introduction

The purpose of this chapter is to present data regarding classroom instructional practices collected from a survey of teachers of age-appropriate second-grade students in Pennsylvania public schools. This chapter is divided into three sections. The first section presents background information on the population surveyed and describes the process for distribution of surveys to a sample of teachers throughout the Commonwealth. Next is a discussion and data regarding survey returns. The third section describes the results of the survey framed by each of seven research questions.

Determination of Population and Sample

The population for this study included public school teachers in the Commonwealth of Pennsylvania assigned to teach a single-grade, a multigrade, or a multiage class of age-appropriate second-grade students during the 1999-2000 school year. Bryn Athyn, Philadelphia, and Pittsburgh districts were not included in the population. Three elementary schools selected to review the survey instrument were also excluded; however, other schools in their districts remained in the population. Teachers in all remaining 1709 Pennsylvania public elementary schools in 498 school districts made up the population for the study.

The number of second-grade teachers in the population was estimated from numbers of first-grade students in Pennsylvania during the 1998-99 school year. The Pennsylvania Department of Education (PDE) reported 119,766 first-grade students in Pennsylvania schools during 1998-99. Assuming a similar enrollment for second grade

during the 1999-2000 school year and dividing that number by an average of 22 students per class resulted in an estimated 5444 second grade teachers in the population. Since there was no available listing of names and addresses of second grade teachers, surveys were mailed to a sample population of schools to be distributed to teachers.

A recommended sample number from a table for determining sample size from population size plus over sampling by 50% established the need for a sample of 470 schools. Enrollment figures reported on PDE School Profiles were used to estimate the number of second-grade teachers in each school. Total first-grade enrollment for 1998-99 was divided by 22 to provide an estimate of how many second-grade teachers worked in each school in the sample. Fifty-one schools in the random sample did not have second-grade classrooms in the building; therefore, they were eliminated from the sample. Mailings were sent to principals of 419 schools for distribution to teachers of age-appropriate second-grade students. A total of 1568 surveys were mailed out to the 419 schools. In addition to the surveys for teachers, each packet mailed to a school contained a postcard to be returned by the principal. The purpose of the postcard was to note whether or not the principal had distributed the surveys in his/her building. Table 1 displays a breakdown of principal responses.

Table 1

Building Principal Responses to Distribution of Survey

	Frequency	Percent
Total postcards mailed	419	
Postcards not returned	140	33.4
Total postcards returned	279	66.6
“Yes” distribution	256	91.8
“No” distribution	23	8.2

In the case of 25 schools, the principal failed to return a postcard; however, teacher surveys were received from those buildings. There was no response from teachers in 13 schools where principals returned postcards indicating that surveys had been distributed. Ninety-four schools had a 100% return rate. All teachers who received a survey in those 94 schools returned a survey.

Return of Surveys

For a population of an estimated 5540 teachers of age-appropriate second-grade students in Pennsylvania, a chart of random numbers indicated the need for 359 responses in order to have a representative sample size. Six hundred ninety-six teachers (44.4%) returned surveys, a number which nearly doubled the sample size needed. A second mailing was, therefore, unnecessary. All survey data was entered into the Statistical Package for the Social Sciences (SPSS) computer application for ease of testing and reporting. Table 2 contains respondent data summarizing the number of surveys mailed and returned.

Table 2

Survey Returns By School and By Teacher

	Frequency	Percent
Number schools receiving surveys	419	100.0
Number schools with at least one teacher respondent	268	64.0
Number of schools with no teacher respondents	151	36.0
Number of schools with no response teacher or principal	128	30.5
Teacher surveys mailed	1568	100.0
Teacher surveys returned	696	44.4
Surveys mailed, but not returned	872	55.6

Analysis of Data

This study addressed seven research questions. The data which follow address each question in order. Questions one and two asked the proportion of Pennsylvania classrooms with age-appropriate second graders assigned to multiage and multigrade classrooms. Teachers' responses to item 25 of the survey provided the descriptive information contained in Table 3. Item 25 asked teachers to note their present classroom organizational assignment.

Table 3

Proportion of Grouping Configurations of Pennsylvania Age-Appropriate Second
Grade Classrooms

Type of Grouping	Frequency	Percent
Single-grade	634	91.1
Multigrade	28	4.0
Multiage	34	4.9
Total	696	100.0

The proportion of single-grade classroom configurations far exceeds the number of multigrade and multiage organizational structures, which together make up less than 10% of Pennsylvania second-grade classrooms.

The survey not only asked teachers to report their current organizational configuration, but also asked for their preference of assignment. Data compiled from teacher responses to survey item 26 regarding preference of classroom organizational assignment appear in Table 4.

Table 4

Teacher Preference of Classroom Organizational Assignment

Current Grouping	<u>Preference</u>					
	<u>sg</u>		<u>mg</u>		<u>ma</u>	
	f	%	f	%	f	%
sg (n=634)	586	92.4	19	3.0	29	4.6
mg (n=28)	14	50.0	13	46.4	1	3.6
ma (n=34)	8	23.5	0	0.0	26	76.5

When data were disaggregated by type of classroom configuration, high percentages of single-grade and multiage teachers reported a preference for their current classroom organizational assignment. Single grade was the configuration of choice for half of the multigrade teachers responding to the survey rather than their current multigrade assignment.

Research question three asked the proportion of Pennsylvania teachers of age appropriate second graders administratively assigned to teach multiage and multigrade classes versus requesting such an assignment. Item 27 on the survey stated, "How was your present assignment determined?" Data from teachers' responses to item 27 provided the information necessary to answer research question three. The research question did not separate multigrade and multiage teacher responses. Collectively, the 62 respondents presently teaching in a multigrade or multiage situation were evenly split between being assigned (48.4%) and having requested or volunteered for (51.6%) their current classroom organizational assignment. When data were disaggregated for the two groupings, proportions were quite different. Two-thirds (67.9%) of the

multigrade teachers were assigned to teach the mixed-grade class with only one-third requesting such an assignment. A reverse proportion occurred in the case of multiage teachers. Over 67% of multiage teacher respondents requested or volunteered for a multiage assignment. The rest (32%) were administratively assigned. Multigrade teachers were proportionately similar to the entire population. Over two-thirds of all respondents (69.1%) reported that they had been administratively assigned to their current positions. The rest (30.9%) had requested or volunteered for their current position. A summary of that data is contained in Table 5.

Table 5

Proportion of Multiage/Multigrade Teachers Assigned Versus Requested Assignment

Type of Grouping	Type of assignment			
	Assigned		Requested	
	no.	%	no	%
Multigrade/multiage (n=62)	30	48.4	32	51.6
Multigrade (n=28)	19	67.9	9	32.1
Multiage (n=34)	11	32.4	23	67.6
Total All Respondents (n=696)	481	69.1	215	30.9

Research questions four through seven were answered through hypotheses testing of data reported by teachers for items one through 24 on the Survey of

Instructional Practices of Teachers of Age-Appropriate Second-Grade Students. The possible responses to the 24 survey statements were: (a) “never;” (b) “seldom;” (c) “sometimes;” and (d) “frequently.” The responses depict the extent to which each respondent viewed his or her frequency of use of each instructional practice listed in the survey.

Hypothesis four stated that no statistically significant difference existed in the types of instructional practices utilized by teachers of age-appropriate second graders in multiage, multigrade, or single-grade classes. Data were first analyzed to determine the mean score for the total survey and the mean score for each of the three organizational groupings, single grade, multigrade, and multiage. The highest possible score was 96. The total mean score for all respondents was 81.1221 with a standard deviation of 6.5246. Means and standard deviations for each of the three organizational groupings are reported in Table 6.

Table 6

Means for Three Organizational Groupings

Type of Grouping	Mean	Standard Deviation	Cases
Single grade	81.0221	6.4673	634
Multigrade	80.5714	6.9943	28
Multiage	83.4412	6.9465	34

Total means did vary among the three groups surveyed. The mean score for multiage teachers was more than two points higher than means of the other two groups. An analysis of variance tested the means to determine if a significant difference existed. A

one way analysis of variance is based upon the assumption that scores in each group have approximately the same variance. Since the various grouping configurations in this study did not contain a similar number of subjects, the assumption of equal variances was tested using Levene's test, a statistical test designed for that purpose and recommended by Huck, Cormier, and Bounds (1974). If the researcher accepts the null hypothesis of equal variances when using Levene's test, then results from a regular ANOVA procedure would be valid. Results of a one way analysis of variance test on survey mean scores appear in Table 7.

Table 7

Analysis of Variance of Instructional Practices of Teachers of Age-Appropriate
Second Grade Students By Classroom Configuration

Source	df	SS	MS	F	P
Between Groups	2	197.6889	98.8445	2.3308	.0980
Within Groups	693	29388.9303	42.4083		
Total	695	29586.6193			

Levene's Test for Homogeneity of Variances			
Statistic	df1	df2	2-tail Sig.
.1632	2	693	.849

There was no significant difference in total mean scores for the 24 developmentally appropriate instructional practices measured by the survey. The possibility of

non homogeneity of variances due to unequal cell size was tested using Levene's technique; however, the degree of heterogeneity was not significant. Hypothesis four was accepted. No two groups were significantly different at the $p < .05$ level.

Hypothesis five found no statistically significant differences existed between the use of developmentally appropriate instructional practices and the years of teaching experience of teachers of age-appropriate second graders in multiage, multigrade, or single grade classes. Item 28 on the survey, which asked for total years of teaching experience, provided information regarding the number of years of teaching experience of each respondent. Years of teaching were broken down into five ranges: (a) 1-3 years; (b) 4-6 years; (c) 7-10 years; (d) 10-20 years; and (e) more than 20 years. Just over two-thirds of all respondents (477) reported ten or more years of teaching experience. Again, the maximum score possible for the survey was 96. Mean scores by years of teaching experience are presented in Table 8. Minimum and maximum survey scores for each category are also included.

Table 8

Use of Developmentally Appropriate Instructional Practices by Years of TeachingExperience

Range of experience	n	Mean	S.D.	Minimum	Maximum
1- 3 years	85	80.51	6.80	56.00	93.00
4- 6 years	65	81.14	5.76	67.00	92.00
7-10 years	69	81.67	6.42	68.00	93.00
10-20 years	175	81.01	6.89	58.00	94.00
over 20 years	302	81.24	6.43	59.00	94.00

An analysis of variance compared the five means to test whether differences in means were significant. Levene's technique tested for homogeneity of variance since cell size was unequal. Table 9 presents results of that testing.

Table 9

Analysis of Variance of Developmentally Appropriate Instructional Practices ofTeachers of Age-Appropriate Second Grade Students By Years of TeachingExperience

Source	df	SS	MS	F	P
Between Groups	4	58.9828	14.7457	.3451	.8475
Within Groups	691	29527.6365	42.7317		
Total	695	29586.6193			

Table 9 continued

Analysis of Variance of Developmentally Appropriate Instructional Practices of Teachers of Age-Appropriate Second Grade Students By Years of Teaching Experience

Levene's Test for Homogeneity of Variances

Statistic	df1	df2	2-tail Sig.
.2751	4	691	.894

ANOVA and Levene's test found no two groups significantly different at the $p < .05$ level. The null hypothesis was accepted indicating that there are no significant differences in the use of developmentally appropriate instructional practices of teachers with regard to years of teaching experience.

Sixty-two of the teachers who responded to the survey taught in a multigrade or multiage classroom. Table 5 presented data regarding the proportion of the total population assigned versus those who requested or volunteered for their 1999-2000 teaching assignment. Hypothesis six proposed that no statistically significant difference existed with regard to the types of instructional practices utilized by teachers who requested and those who were administratively assigned to teach age appropriate second-grade multigrade/multiage classes. Table 10 contains data comparing survey mean scores for multiage and multigrade teachers based on how they were assigned for the 1999-2000 school year.

Table 10

T-Tests for Use of Instructional Practices by Multigrade/Multiage Teachers Based on Method of Classroom Assignment

Variable	n	Mean	S.D.	SE of Mean
Assigned	30	80.7333	6.928	1.265
Requested	32	83.4688	7.030	1.243

Mean difference = -2.7354

Levene's Test for Equality of Variances: $F = .053$ $P = .819$

The degree of heterogeneity of variances was not significant at the $p < .05$ level, nor was the differences in means statistically significant ($p < .05$); therefore, the null hypothesis was accepted. There were no significant differences in the types of instructional practices utilized by those who requested and those administratively assigned to teach age-appropriate second-grade multigrade/multiage classes.

The first 24 statements listed on the survey represented instructional practices identified as developmentally appropriate by the Kentucky Primary Configuration Map. Table 11 lists the 24 survey items in descending order by total mean. Also included in the data is a breakdown of survey responses by frequency and percentage of total respondents.

Table 11

Survey Items by Total Mean and Frequency of Response

Item No.	Mean Score	S.D.	<u>Survey Responses</u>							
			“never”		“seldom”		“sometimes”		“frequently”	
			f	%	f	%	f	%	f	%
14	3.89	.36	2	.3	3	.4	68	9.8	623	89.5
11	3.85	.39	1	.1	5	.7	94	13.5	596	85.6
06	3.80	.47	4	.6	8	1.1	110	15.8	574	82.5
16	3.79	.47	5	.7	5	.7	119	17.1	567	81.5
09	3.76	.55	9	1.3	14	2.0	112	16.1	561	80.6
20	3.76	.47	1	.1	9	1.3	148	21.3	538	77.3
01	3.74	.54	3	.4	24	3.4	123	17.7	546	78.4
19	3.68	.53	3	.4	13	1.9	119	27.4	489	70.3
03	3.66	.61	6	.9	34	4.9	151	21.7	505	72.6
13	3.58	.54	1	.1	12	1.7	268	38.5	415	59.6
12	3.56	.65	6	.9	42	6.0	207	29.7	441	63.4
05	3.50	.64	4	.6	42	6.0	254	36.5	396	56.9
17	3.43	.58	2	.3	25	3.6	342	49.1	327	47.0
21	3.42	.83	36	5.2	45	6.5	205	29.3	411	59.1
04	3.41	.75	17	2.4	59	8.5	242	34.8	378	54.3
15	3.28	.73	8	1.1	91	13.1	294	42.2	303	43.5
24	3.22	.77	23	3.3	78	11.2	315	45.3	280	40.2
18	3.21	.72	10	1.4	92	13.2	333	47.8	261	37.5

Table 11 continued

Survey Items by Total Mean and Frequency of Response

Item No.	Mean Score	S.D.	<u>Survey Responses</u>							
			“never”		“seldom”		“sometimes”		“frequently”	
			f	%	f	%	f	%	f	%
02	3.14	.67	4	.6	99	14.2	386	55.5	207	29.7
07	2.92	.71	30	4.3	114	16.4	432	62.1	120	17.2
08	2.92	.73	29	4.2	126	18.1	411	59.1	130	18.7
10	2.84	.85	38	5.5	201	28.9	294	42.2	163	23.4
22	2.42	.84	99	14.2	267	38.4	266	38.2	64	9.2
23	2.34	.78	109	15.7	263	37.8	299	43.0	25	3.6

The instructional practices in the top quartile, and therefore reportedly most frequently utilized by all respondents (n=696), are: (a) item 14, the integration of reading throughout the curriculum; (b) item 11, students expressing themselves in a variety of ways; (c) item 6, whole group math instruction; (d) item 16, direct instructional delivery in all content areas; (e) item 9, reading skills taught in context; and (f) item 20, the use of manipulatives in math investigations. Instructional practices least frequently used by teachers in this study are noted in the bottom quartile of Table 11. They are: (a) item 2, students initiating activities in the classroom; (b) item 7, math instructional delivery to small groups; (c) item 8, individualized math instructional delivery; (d) item 10, the use of technology for math instruction; (e) item 22, the grouping of students for instruction based on learning style; and (f) item 23, the grouping of students for instruction based on interests. Only two items on the survey

had a median score below 3.0. Items 22 and 23 regarding the grouping of students by learning style or by interest had median scores of 2.0 which indicates a practice seldomly used by the teachers in this study.

Hypothesis seven set forth that no significant difference existed with regard to each of 24 instructional practices, identified as developmentally appropriate by the Kentucky Primary Configuration Map, utilized by teachers of age-appropriate second graders in multiage, multigrade, or single-grade classes. Means for each of the 24 survey statements, computed by type of classroom grouping, were tested with an analysis of variance to determine if a significant difference existed in the individual instructional practices of teachers who taught in different classroom organizational configurations. An analysis of variance assumes equal cell size and homogeneity of variance. When cell size is unequal, such as the large imbalance between single-grade respondents (634), multigrade (28) and multiage (34), the researcher is obligated to test the assumption of equal variances (Huck, et.al., 1974). In addition to ANOVA, Levene's test was run for each of the 24 test items to determine homogeneity of variance. If heterogeneity is not significant, the ANOVA results would be valid. Table 12 presents data for each of the first 24 questions on the survey. Means and standard deviations for each type of classroom configuration are listed for each survey item, followed by results of a one way ANOVA testing.

Table 12

Comparison of Means of Individual Survey Items by Type of Classroom Grouping

Item No.	sg (n=634)		<u>Type of Grouping</u>		ma (n=34)		<u>ANOVA</u>	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	F Ratio	Sig of F
1	3.738	.540	3.786	.499	3.764	.496	.139	.870
2	3.150	.659	3.036	.693	3.118	.770	.421	.656
3	3.666	.604	3.464	.838	3.706	.524	1.556	.212
4	3.399	.748	3.392	.786	3.618	.697	1.389	.250
5	3.500	.616	3.250	.928	3.647	.691	3.074	.047* a
6	3.833	.410	3.536	.838	3.441	.746	16.921	.000**
7	2.896	.702	2.964	.745	3.353	.691	6.813	.001**
8	2.913	.725	2.964	.881	3.059	.649	.694	.500
9	3.756	.558	3.714	.535	3.882	.327	.965	.382
10	2.830	.843	2.964	.838	2.853	.926	.346	.708
11	3.850	.379	3.929	.262	3.706	.629	2.850	.059
12	3.546	.657	3.679	.476	3.647	.597	.916	.401
13	3.580	.537	3.679	.476	3.412	.557	2.134	.119
14	3.893	.353	3.750	.441	3.853	.360	2.291	.102

Table 12 continued

Comparison of Means of Individual Survey Items by Type of Classroom Grouping

Item No.	<u>Type of Grouping</u>						<u>ANOVA</u>	
	sg (n=634)		mg (n=28)		ma (n=34)		F Ratio	Sig of F
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
15	3.254	.733	3.393	.685	3.706	.579	6.620	.001**
16	3.809	.460	3.643	.622	3.618	.493	4.189	.016* b
17	3.420	.577	3.393	.629	3.618	.551	1.953	.143
18	3.199	.727	3.250	.701	3.471	.563	2.340	.097
19	3.677	.525	3.536	.576	3.765	.697	1.449	.236
20	3.756	.472	3.679	.476	3.853	.360	1.110	.329
21	3.429	.829	3.357	.679	3.353	.917	.227	.797
22	2.398	.845	2.536	.838	2.824	.758	4.403	.013*
23	2.327	.786	2.357	.679	2.677	.727	3.254	.039
24	3.205	.782	3.321	.612	3.500	.663	2.594	.076

^a Levene's test rejected null hypothesis of equal variances (F = 10.99, df = 2/ 693, p<..01).

^b Levene's test rejected null hypothesis of equal variances (F = 8.005, df 2/693, p<.01)

* p<.05

**p<.01

Six of the 24 items tested showed significance at the p<.05 or p<.01 levels;

however, ANOVA results for items five and 16 may not be valid due to significant heterogeneity of variances. Data analysis of survey items six, seven, 15, and 22 found significant differences in instructional practices when comparing means for the three classroom groupings: single-grade, multigrade, and multiage.

The null hypotheses, 7(f) and 7(g) were rejected for survey items six and seven which related to the instructional delivery of math. With regard to whole group math instruction, the mean of 3.833 for single-grade teachers was significantly different than that of both multigrade (3.536) and multiage (3.441) teachers. Multiage teachers scored the highest on item 7 regarding small group instructional delivery of math. The multiage mean of 3.353 was significantly different than that of single-grade teachers (2.898). Multigrade teachers with a mean of 2.964 did not differ significantly from either of the other groups.

Similarly, a significant difference was found between multiage and single-grade teachers on item 15 with regard to each student moving at his/her own pace and level of learning. The mean for multiage teachers on item 15 was 3.706 and single grade was 3.254. The multigrade mean of 3.393 was not significantly different from the other two groupings. Null hypothesis 7(o) was rejected at the $p < .01$ level.

The fourth instructional practice to test significant was item 22 on the survey which stated, "Students are grouped for instruction based on learning style." Once again, multiage teachers with a mean of 2.824 differed significantly ($p < .05$) from the single-grade teachers with a mean of 2.398. The multigrade mean of 2.5357 was not significantly different from either of the other groupings. Hypothesis 7(v) was rejected. A significant difference did exist with regard to students being grouped based on learning style.

Summary

The purpose of this study was to determine the proportion of multigrade and multiage classes containing second-grade students in Pennsylvania and whether the instructional practices of teachers differed depending on the type of classroom organizational structure. Single-grade configurations continue to be the predominant method for organizing students for instruction. Less than 10% of Pennsylvania classrooms containing age-appropriate second-grade students are multigrade or multiage. While about a third of the teachers surveyed reported that they had requested or volunteered for their current assignment, all others were administratively assigned.

Hypotheses four, five, six and seven tested for significant differences in instructional practices with regard to classroom configuration, years of teaching experience, and whether a teacher was administratively assigned or requested his/her assignment for the 1999-2000 school year. Hypothesis testing found no significant differences in instructional practices with regard to classroom configuration, years of teaching experience, and whether a teacher was administratively assigned or requested his/her assignment for the 1999-2000 school year. Hypotheses four, five, and six were accepted. Hypothesis seven tested each of 24 instructional practices to determine if any significant differences existed with regard to type of organizational configuration. Sub hypotheses 7(f), 7(g), 7(o) and 7(v) were rejected. There were significant differences based on type of grouping; however, there were no significant differences found for all other sub hypotheses under hypothesis seven. Chapter V, which follows, will summarize the findings of this study, present conclusions, and offer suggestions for further study.

Chapter V

Summary, Conclusions, and Recommendations

Summary of Findings

This chapter highlights the major findings of the study as reported in Chapter IV, presents reasonable conclusions based on the findings, and sets forth recommendations for further study. A review of literature indicated that much research has been conducted on alternative forms of classroom configurations such as multigrade and multiage grouping. The area most extensively researched was that of student achievement with regard to the type of classroom configuration. There is little empirical research on whether the instructional practices of teachers differ significantly according to classroom organizational structure. This study surveyed teachers of age-appropriate second-grade students in three classroom configurations: single grade, multigrade, and multiage. The primary objective of the study was to explore the instructional practices of teachers in the three classroom organizational structures.

The instrument used was a survey based on developmentally appropriate practices as defined in the Primary Program Configuration Map developed to evaluate program implementation in the state of Kentucky. Seven major questions were asked:

1. What is the proportion of Pennsylvania classrooms with age-appropriate second graders assigned to multiage classes?
2. What is the proportion of Pennsylvania classrooms with second graders assigned to multigrade classes?
3. What proportion of Pennsylvania teachers of age-appropriate second graders are administratively assigned to teach in multiage and multigrade classes

versus requesting such an assignment?

4. Were there significant differences among teachers of age-appropriate second graders in multiage, multigrade, and single-grade classrooms with respect to instructional practices?

5. Were there significant differences between years of teaching experience of teachers of age-appropriate second graders and the use of developmentally appropriate instructional practices?

6. Were there significant differences between teachers of age-appropriate second graders who requested and those administratively assigned to teach a multigrade/multiage class with respect to instructional practices?

7. Were there significant differences among teachers of age-appropriate second graders in multiage, multigrade, and single-grade classrooms with respect to 24 individual instructional practices?

Six hundred ninety-six teachers of age-appropriate second-grade students working in the Commonwealth of Pennsylvania completed and returned surveys. The survey instrument contained 28 items. The first 24 items each described a specific developmentally appropriate instructional practice. Teachers who completed the survey indicated the frequency of use of each practice in their particular classrooms. The last four items on the survey, numbers 25 through 28, were demographic in nature, asking for type of classroom configuration, preference of classroom configuration, method by which classroom assignment was made, and number of years in education.

Findings Concerning Teacher Classroom Assignments

Teacher responses to item 25 on the survey regarding present organizational assignment provided data to answer research questions one and two. The majority

(91.1%) of second-grade teachers in the Commonwealth of Pennsylvania reported that they taught in a single-grade classroom configuration. Alternative organizational structures, such as multigrade and multiage, made up less than 10% of the state's second-grade classrooms. Based on survey responses, four percent (4.0%) of Pennsylvania second-grade teachers were assigned to multigrade classrooms. Slightly more (4.9%) were teaching in a multiage configuration. Interestingly, when asked their preference of organizational assignment in survey item 26, the percentage of teachers who preferred single grade was slightly less (87%) than the 91% currently assigned to single-grade classrooms. Eight percent (8.0%) stated a preference for multiage, nearly double the number currently teaching in a multiage configuration.

Survey item 27 provided data regarding how teachers' present assignments had been determined. Second-grade teachers surveyed were likely to have been administratively assigned to their classroom organizational structure. Just under a third (30.9%) of all surveyed had requested or volunteered for their 1999-2000 classroom assignment. All others (69.1%) reported administrative assignments. Multiage teachers were more likely than others to request or volunteer for their multiage assignment. Over two-thirds (67.6%) of the multiage teachers returning surveys reported that they had requested or volunteered for a multiage assignment versus only (32.1%) of multigrade teachers.

Findings Concerning Differences in Overall Instructional Practices

Hypotheses four and five were tested using analysis of variance. Hypothesis six was tested using a two-tailed t-test. A limitation of the study was the great differences in cell size of the three instructional groupings. Single-grade teachers overwhelmingly outnumbered multigrade and multiage respondents. When initial inspection of the

response data indicated unequal cell size, a test for homogeneity of variance was made using Levene's technique. The degree of heterogeneity was not significant for hypotheses four, five and six. All three hypotheses were accepted. There were no significant differences (significant at the $p < .05$ level) in the overall instructional practices of teachers of age-appropriate second-grade students with regard to classroom organizational configuration, with respect to years of teaching experience, or with regard to whether teachers were administratively assigned or had volunteered for a position. The lowest score for any teacher who returned the survey was 56 out of a possible 96. The maximum score was 94. The median score was 82.

Findings Concerning Differences in Specific Instructional Practices

In order to test hypothesis seven, twenty-four analysis of variance tests were performed. Each of the first 24 items on the survey was tested to determine whether there was any significant difference in the use of the specified practice among single grade, multigrade, and multiage teachers. In order to test each sub hypothesis, mean scores were calculated for the total sample as well as for each type of classroom configuration. The highest overall means for the 24 individual items on the survey were on the following items: (a) item 14, reading integrated throughout the curriculum (3.89); (b) item 11, students expressing themselves in a variety of ways (3.85); (c) item six, whole group math instructional delivery (3.80); (d) item 16, direct instructional delivery for all content areas; (e) item nine, teaching reading skills in context (3.76); and, (f) item 20, use of manipulatives in math (3.76).

Lowest means for individual items included: (a) item two, student-initiated activities (3.14); (b) item seven, small group instructional delivery in math; (c) item eight, individualized math instructional delivery (2.92); (d) item 10, the use of

technology for mathematical investigations (2.84); (e) item 22, grouping students by learning style (2.42); and, (f) item 23, grouping students based on interest (2.34).

Certain instructional practices did significantly differ with regard to the type of classroom organizational structure. Single-grade teachers significantly differed from multiage teachers in the use of whole group instruction for math. Multiage teachers, on the other hand, utilized small groups more frequently for math instruction than their single grade and multigrade peers. Multiage teachers differed significantly in two other areas. Students in multiage classrooms reportedly move at their own pace significantly more often than those in a single-grade configuration. Multiage teachers also differed significantly with regard to grouping their students based on learning style. While a significant difference did exist, the mean score was below three for all three configurations, single grade 2.398, multigrade 2.536, and multiage 2.824. A median score of 2.0 on item 22 indicates that over half of the teachers surveyed reported that they “seldom” or “never” use learning style as a basis for grouping students. Only item 23, with regard to grouping students based on interest, was used less frequently by respondents.

Conclusions

It seems that, in spite of reform efforts of recent years, the overwhelming majority of schools group students for instruction using the single-grade classroom model. Other classroom configurations, such as multigrade and multiage comprise less than 10% of all second-grade classrooms in Pennsylvania. There were fewer multigrade or combined grade classes than anticipated by the researcher. Grades are often combined into multigrade groupings for economic reasons due to uneven enrollment figures. The practice has been most prevalent in rural areas and in small schools. According to this

study, only four percent (4.0%) of Pennsylvania second-grade students were in multigrade classrooms during the 1999-2000 school year. Such a small percentage may indicate less of a need for such configurations as rural and small schools are closed or consolidated with other larger elementary schools. Another factor could be the growing trend toward reduction of class size in the primary grades. Students enrolled in two separate grades may have been combined in the past to create classes of 25-30 or more students. With increased pressure by parents and by national leaders to reduce class size, smaller numbers of students are allowed to remain a single-graded grouping.

In the case of multiage grouping, the results were as anticipated. In spite of mass marketing of the concept during the 1990s and the popularity of conferences and workshops specializing in multiage education, only a small percentage of multiage classrooms actually exist in Pennsylvania. Teachers may be hesitant to increase the already wide range of instructional levels within their classrooms. Several teachers responding to the survey indicated that they taught in a single-grade classroom; however, they commented, their classes were made up of multiple ages and ability levels.

Mass marketing may have caused some teachers to begin thinking about other types of configurations. In Pennsylvania, there appears to be some teacher interest in alternative grouping arrangements beyond those teachers who are currently teaching in a multiage setting. Eight percent (8.0%) of the teachers surveyed stated a preference for multiage grouping. Survey respondents indicating a preference for multiage grouping outnumbered those who were currently teaching in a multiage configuration (4.9%). The reasons for such a preference are not clear. Several factors may explain why there are not more classes following the multiage model. Teacher interest and excitement about

school reform does not always translate into practice. Resistance from administrators, colleagues, and/or parents may impede the change process or may stifle innovations such as multiage grouping entirely. The benefits of a multiage configuration, especially in the area of student achievement, remain inconclusive. The traditional single-graded structure is how most people think of “school.” Without definitive data to prove that an alternative grouping is superior to the graded structure, educators have a tremendous public relations challenge. Changing grade configurations in schools may be too high profile of a change to adopt easily.

The results of this study are similar to findings of other studies conducted in the 1960s. Carbone (1961) found little difference in teachers’ instructional practices with regard to graded or nongraded classroom structures. Goodlad and Anderson (1963) contended that “school organization by itself does little or nothing to improve instructional practice” (p. 38). Following a renewed interest in multiage grouping in the 1990s, Gillaspie (1993) explored teachers’ instructional strategies once again. In the Gillaspie study teachers generally perceived that they had changed teaching strategies when they changed from a traditional graded structure to a nongraded classroom organizational structure.

Some findings of this study supported similar findings in the Gillaspie study. Both studies reported a significant difference in the use of whole group instruction. Teachers in traditional, single-grade classrooms use whole group instructional delivery significantly more than those assigned to nongraded or multiage classrooms. Conversely, teachers of multiage classes differ significantly in the use of small group instructional delivery. While the Gillaspie study found significant differences between graded and nongraded with respect to the use of direct instruction and the integration of

reading across the curriculum, this study found no such differences. Direct instructional delivery and the integration of reading throughout the curriculum were among the highest rated items on the survey for all teachers, irrespective of classroom configuration.

Developmentally appropriate practices, as defined by the survey instrument used for this study, are being utilized in the second-grade classrooms of Pennsylvania. The extent of use varies, but not significantly, based on classroom organizational structure, years of teaching experience, or manner in which teachers are assigned to classrooms. Schools are still responsible for managing large numbers of students just as they were in the days of Horace Mann; however, it is reasonable to conclude that teaching strategies in general may have changed during the 1990s with the release of new research on how children learn. The work of the National Association for the Education of Young Children (1989) triggered national conversations regarding which instructional practices were “developmentally appropriate” for a new generation of students. Goodlad and Anderson (1987) recommended a greater emphasis on meeting individual student needs. The results of this study suggest that second-grade teachers in general have embraced the use of developmentally appropriate instructional practices, no matter the type of classroom configuration. With the exception of two survey items, grouping by learning style and grouping by interest, the median score of all other survey items was a three or higher. This indicates that over half of all second grade teachers in Pennsylvania are using developmentally appropriate instructional practices at least “sometimes.” Fourteen of the 22 survey items had a median score of four which indicates a “frequent” use by the majority of teachers.

Student achievement comparisons of single grade, multigrade, multiage, and other alternative instructional groupings have been inconclusive throughout the literature.

Findings of this study would help explain the ambiguity of such studies since teachers are reporting the use of similar instructional practices regardless of the organizational structure. Individuals who have decision making power in schools and school districts may find the results of this study useful. Often decisions are made to restructure based on the reputation of programs being implemented in other parts of the country. Once a decision is made to change some part of a program such as classroom configuration, high quality implementation may not always follow. A change in the way students are grouped does not necessarily result in a change in the way teachers teach. One may question whether or not schools should be spending the time and resources on restructuring activities that would change classroom configurations if the primary goal of such a change is to implement the kinds of instructional practices that will meet the diverse needs of students.

If changing classroom configuration is not to be the focus of restructuring, perhaps the improvement of instructional practices should become the focus. Staff development may be a more fruitful approach to introducing developmentally appropriate practices to classrooms than mandating changes in organizational structure with the expectation that multiage grouping will encourage greater use of developmentally appropriate practices. Schools need a means to plan for and monitor changes. If those in leadership roles agree that the 24 items on the survey instrument used for this study represent desirable instructional practices, the instrument could be used for planning and monitoring purposes. The instrument could be helpful in the determination of staff development activities. Teachers require different professional development opportunities relevant to their individual needs. Knowing to what degree a teacher is using specific instructional practices could influence the goals of staff

development. Utilizing a measure, such as the Survey of Instructional Practices of Teachers of Age Appropriate Second Grade Students, could assist school leaders in planning for more effective, targeted or “customized” professional development activities for staff. A caution would be that a lack of confidentiality could result in less candid responses by teachers. A trusting, non-threatening relationship would have to exist between administration and teachers in order for the survey instrument to be used in this manner.

Recommendations for Future Research

1. Replicate the present study with teachers of age-appropriate second graders in other states. Of particular interest would be replication of the study in a state such as Kentucky which has mandated the use of developmentally appropriate practices and multiage classroom organization.

2. Compare the instructional practices of teachers in states where specific practices are mandated and teachers in other states which have no such mandates, logically extending the findings of this study.

3. Replicate this study with other grade levels. Second-grade teachers were selected for this study because multiage configurations frequently include students who would be considered age-appropriate second graders. Multiage organizational structures are not limited to primary groupings. The survey instrument could be used to learn the proportion of multigrade or multiage configurations which include students of other grades and the instructional practices of their teachers.

4. Enhance the findings of this study by correlating a teacher’s total score on the survey instrument with achievement test data for that particular teacher’s class. Past studies comparing the achievement of students in single grade, multigrade, and/or

multiage classes have reported variables such as socioeconomic background, gender, and ability of students. Overall, findings have been inconclusive. Instructional practices of teachers have not typically been reported. The survey instrument used in this study could provide quantitative scores of the instructional practices of teachers with which to compare summative achievement data of their students

5. Extend this study by comparing the proportion of alternative classroom configurations in rural, suburban, and urban districts. The literature seems to indicate that small rural districts may need to use multigrade configurations for economic reasons. Since all schools in the study were coded, it would be possible to go back and determine each school's classification as rural, suburban, or urban. The Pennsylvania Department of Education and the Pennsylvania School Boards Association have data to assist with such a match.

6. Disaggregate the data from this study according to subject areas. For instance, five items on the survey relate specifically to the instruction of reading: (a) item 1, "Students use children's literature and reference books for reading instruction;" (b) item 3, "Students read independently in a sustained silent reading time (SSR);" (c) item 9, "Reading skills are taught in context;" (d) item 14, "Reading is integrated throughout the curriculum;" and (e) item 19, "Students read to one another." Data gathered for this study could be manipulated and combined to determine the frequency with which second-grade teachers are utilizing developmentally appropriate strategies for the teaching of reading.

The survey included six items specific to the teaching of mathematics: (a) item 6, whole group math instructional delivery; (b) item 7, small group math instructional delivery; (c) item 8, individualized math instructional delivery; (d) item 10, the use of

technology for math instruction; (e) item 13, the application of math concepts; and (f) item 20, the use of manipulatives for math investigation. Similarly data for survey items 6, 7, 8, 10, 13, and 20 could be disaggregated, then combined to gain insight into the teaching of mathematics in Pennsylvania second-grade classrooms.

7. Use single items on the survey as a springboard for follow up research. For example, item 10, regarding the use of technology for math instruction or item 21, which measured the frequency with which special needs students are included with regular education students for instruction, could be used as part of other studies. Frequency of use of technology could be correlated with math achievement scores. Those classrooms which include special needs students to a greater degree could be compared with classrooms with little or no inclusion to determine if instructional practices differ significantly.

8. Use the survey as a tool for individual schools or districts to do a needs assessment of classroom instructional practices. The first 24 survey items could provide data regarding staff development needs for a particular grade level, an entire elementary school, or across an entire school district. Used as a self-assessment tool, the survey could help teachers identify areas of strength and weakness and set short and long term goals for continuing professional growth.

9. Change the demographic questions at the end of the survey. Frequency of use of the 24 instructional practices could be reported by gender, race, size of school, or other categories of interest to a researcher.

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APPENDIX A



Directors

Chair
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Nashville, TN

October 27, 1999

Vice Chair
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Ashland

B. Jean Walker
Assistant Superintendent
Elizabethtown Area School District
600 E. High Sreet
Elizabethtown, PA 17022

Dear Ms. Walker:

Terry Eidell
Charleston, WV

According to your request, you have my permission to utilize portions of the Kentucky Configuration Map in developing a survey instrument for your research.

Lois Gray
Vine Grove

Good luck with your future endeavors.

Andre Guess
Louisville

Sincerely,

Blaine Hudson
Louisville

Roger S. Pankratz

Joe Kelly
Lexington

Gary Mielcarek
Louisville

RSP:sj

Ernie W. Stamper
Georgetown

Carol Stumbo
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APPENDIX B **Survey of Instructional Practices of Teachers of** **Age-Appropriate Second-Grade Students**

Read each statement and mark the number which best describes the frequency of use of the following instructional practices in your classroom.

1=never	2=seldom	3=sometimes	4=frequently
1. Students use children's literature and reference books for reading instruction.			1 2 3 4
2. Students, as well as the teacher, initiate activities in the classroom.			1 2 3 4
3. Students read silently in a sustained silent reading time (SSR).			1 2 3 4
4. Students are flexibly grouped and regrouped for instruction.			1 2 3 4
5. <u>All</u> content areas are integrated when connections are natural.			1 2 3 4
6. Math instructional delivery is ...	...whole-class.		1 2 3 4
7.	...small group.		1 2 3 4
8.	...guided individual.		1 2 3 4
9. Reading skills are taught in context as needed.			1 2 3 4
10. Technology is used to pursue mathematical investigations.			1 2 3 4
11. Students express themselves in a variety of ways.			1 2 3 4
12. Themes, units and projects are planned around broad-based themes and core concepts.			1 2 3 4
13. Students apply mathematical concepts being studied.			1 2 3 4
14. Reading is integrated throughout the curriculum.			1 2 3 4
15. Each student moves at his/her own pace and level of learning.			1 2 3 4
16. Instructional delivery for all content areas includes...	...direct instruction.		1 2 3 4
17.	...cooperative learning.		1 2 3 4
18.	...independent learning		1 2 3 4
19. Students read to one another.			1 2 3 4
20. Manipulatives are used for math investigations.			1 2 3 4
21. Special needs students are included with regular education students for instruction.			1 2 3 4

22. Students are grouped for instruction based on learning style. 1 2 3 4

23. Students are grouped for instruction based on interests. 1 2 3 4

24. Students are grouped for instruction based on skills. 1 2 3 4

The following definitions are provided to assist you in determining your responses to questions 25 through 28.

Single grade - All students in a class are assigned to the same singular grade and are generally the same age.

Multigrade - Two or more grades of students are taught by one teacher in one room. Students maintain their grade level designations and work on grade specific curricula.

Multiage - The deliberate practice of putting two or more age levels of students in the same classroom intended to enlarge opportunities for interaction between younger and older students. Curriculum and instruction are based on a continuum of skills to meet the variety of needs and interests of children.

25. Your present classroom organizational assignment? 1 2 3

1) single grade 2) multigrade 3) multiage

26. Your preference of classroom organizational assignment? 1 2 3

1) single grade 2) multigrade 3) multiage

27. How was your present assignment determined? 1 2

1) I was administratively assigned.
2) I requested or volunteered for the assignment.

28. Your total years of teaching experience? 1 2 3 4 5

1) 1- 3 years
2) 4- 6 years
3) 7- 9 years
4) 10-20 years
5) more than 20 years

APPENDIX C

Supporting Rationale and Research for Survey of Instructional Practices of Teachers of Age-Appropriate Second-Grade Students

Survey Item: 1) Students use children's literature and reference books for reading instruction.

Rationale: Effective reading curriculum develops knowledge and skills in an authentic, meaningful context, not in isolation. What is meaningful is more easily learned, understood, and remembered.

Research on whole language and reading instruction:

Anderson & Pavan (1993)	Bredecamp (1987)	Bridge (1995)
Gaustad (1992b)	Miller (1991)	

Survey Item: 2) Students, as well as the teacher, initiate activities in the classroom.

Rationale: Learning opportunities initiated and directed by the student are necessary in order for him/her to fully assimilate learning.

Research on student-centered learning:

Anderson & Pavan (1993)	Bredecamp (1987)	Bridge (1995)
Miller (1996)		

Survey Item: 3) Students read silently in a sustained silent reading time (SSR).

Rationale: Reading fluency and comprehension improve as students increase the time spent reading.

Research on independent reading:

Anderson & Pavan (1993)	Bridge (1995)
Kame'enui & Simmons (1998)	

Survey Item: 4) Students are flexibly grouped and regrouped for instruction.

Rationale: Students learn at different rates and have different needs.
Developmentally appropriate schools are flexible in how they group children.

Research on flexible grouping:

Bredecamp (1987)	Bridge (1995)	Cuban (1993)
Gaustad (1992b)	Gutierrez & Slavin (1992)	Sartain(1966)

Survey Item: 5) All content areas are integrated when connections are natural.

Rationale: Integration of subjects is beneficial to student learning. Student learning does not occur in narrowly-defined subject areas; their development and learning are integrated.

Research on integration:

Bredecamp (1987)	Bridge (1995)	Cuban(1993)
Gaustad (1992a)	Hopkin, et al.(1997)	Jacobs (1991)
Shanahan (1997)	VEA (1990)	

Survey Items: 6, 7, & 8) Math instructional delivery is whole class, small group, and guided individual.

Rationale: Developmental characteristics and instructional levels vary in a classroom which requires varying approaches by the teacher.

Research on grouping for math instruction:

Bridge (1995)	Cuban (1993)	Gillaspie (1993)	Miller (1996)
Veenman (1995)			

Survey Item: 9) Reading skills are taught in context as needed.

Rationale: Information is retained when taught in the context of something a student understands, rather than in isolation. Student understanding of what he/she reads is based on the ability to relate the written word to personal experiences.

Research on contextual reading:

Anderson & Pavan (1993)	Bredecamp (1987)	Bridge (1995)
Caine & Caine (1991)	Gillaspie (1993)	

Survey Item :10) Technology is used to pursue mathematical investigations.

Rationale: The use of calculators and computers can improve the quality of the curriculum and the quality of learning, helping children identify key features of mathematics. Technology motivates students to learn.

Research on mathematics instruction:

Anderson & Pavan (1993)	Bridge (1995)	Ryan (1991)
National Council of Teachers of Mathematics (NCTM) (1989)		

Survey Item: 11) Students express themselves in a variety of ways.

Rationale: Learning takes place as students touch and manipulate materials and interact with people.

Research on differentiating instruction:

American Association of School Administrators (AASA) (1992)		
Bredecamp (1987)	Bridge (1995)	Gaustad (1992a)
Tomlinson (1999)	West (1996)	

Survey Item: 12) Themes, units and projects are planned around broad-based themes and core concepts.

Rationale: The ability to make connections, to solve problems by looking at multiple perspectives, and to incorporate information from different subject areas, will be essential for future success. Unifying themes which have a high level of interest for children lead to high student involvement and effort.

Research on whole language and integration:

Anderson & Pavan (1992)	Bredecamp (1987)	Bridge (1995)
Lipson (1993)		

Survey Item: 13) Students apply mathematical concepts being studied.

Rationale: Children need to understand that mathematics can be applied to real world problems and situations and to other curricular areas. Children learn math skills and processes when encouraged to explore and solve real mathematics problems.

Research on application of mathematics:

AASA (1992)	Bridge (1995)	Katz (1994)
NCTM (1989)		

Survey Item: 14) Reading is integrated throughout the curriculum.

Rationale: The brain may resist learning fragmented facts that are presented in isolation. Learning is believed to occur faster and more thoroughly when it is presented in meaningful contexts with an experiential component.

Research on reading and integration:

AASA (1992)	Anderson & Pavan (1993)	Bredecamp (1987)
Bridge (1995)	Caine & Caine (1991)	Gaustad (1992b)
Gillaspie (1993)	Hopkin, et. al. (1997)	Shanahan (1997)

Survey Item: 15) Each student moves at his/her own pace and level of learning.

Rationale: Developmentally students mature and learn at different rates. Enormous variance exists in the timing of individual development that is within the normal range.

Research on differentiating and pacing:

AASA (1992)	Anderson & Pavan (1993)	Bredecamp (1987)
Bridge (1995)	Tomlinson (1999)	Veenman (1995)

Survey Items: 16, 17, and 18) Instructional delivery for all content areas includes direct instruction, cooperative learning, and independent learning.

Rationale: Recognition of individual differences dictates that a variety of teaching strategies and grouping configurations be used.

Research on instructional delivery:

Bredecamp (1987)	Bridge (1995)	Cuban (1993)
Gaustad (1992a)	Gutierrez & Slavin (1992)	Miller (1996)
Veenman (1995)	VEA (1990)	

Survey Item: 19) Students read to one another.

Rationale: There are intellectual and cognitive benefits when children work together.

Research on reading development:

AASA (1992)	Anderson & Pavan (1993)	Bridge (1995)
Johnson & Johnson (1989)	Massachusetts Board of Education (1990)	

Survey Item :20) Manipulatives are used for math investigations.

Rationale: Young children are active individuals who manipulate ideas while interacting with people and materials. They need to use physical materials in order to learn abstract ideas.

Research on hands on learning:

Bredecamp (1987)	Bridge (1995)	Gaustad (1992a)
NCTM (1989)		

Survey Item: 21) Special needs students are included with regular education students for instruction.

Rationale: There are benefits academically and socially to special needs and regular education students when special needs students are included in regular classroom groupings for instruction. Inclusion of all students teaches the student and his/her peers that all persons are equally valued members of society.

Research on inclusion:

Bridge (1995)	Elbaum et al (1999)	Ford & Davern (1989)
Saint-Laurent et al. (1998)	Stainback (1996)	Tomlinson (1999)
Villa & Thousand (1988)		

Survey Item: 22) Students are grouped for instruction based on learning style.

Rationale: Students are intelligent in different ways and exhibit strengths in different learning modalities such as auditory, visual, and kinesthetic; therefore, instruction must be presented in different ways in order to allow for maximum learning.

Research on multiple intelligences and differentiation:

AASA (1992)	Bridge (1995)	Gardner (1991)
Gaustad (1992a)	Tomlinson (1999)	

Survey Item: 23) Students are grouped for instruction based on interests.

Rationale: Student motivation to learn increases when they are interested and feel ownership in the learning process. Curriculum content should take advantage of a student's natural abilities, interests, and enthusiasm for learning.

Research on student-centered classrooms and grouping:

AASA (1992)	Anderson & Pavan (1993)	Bredecamp (1987)
Bridge (1995)	Hidi (1990)	Miller (1991)

Survey Item: 24) Students are grouped for instruction based on skills.

Rationale: Student learning builds on the acquisition of skills which can be placed on a hierarchy or continuum. Students learn at different rates, therefore, the acquisition of skills occurs at varying rates.

Research on continuous progress:

AASA (1992)	Bredecamp (19987)	Bridge (1995)
Gaustad (1992a)	Gillaspie (1993)	Miller (1989)

APPENDIX D

Survey of Instructional Practices of Age-Appropriate Second-Grade Students

PILOT STUDY EVALUATION

Name of Evaluator _____

School _____

Position Multiage_____Single grade_____

Phone _____

Email Address _____

Thank you for your cooperation in reviewing the attached survey and letter of directions which will be sent out to a random sample of teachers of age-appropriate second-grade students across Pennsylvania.

Please answer the following questions:

1. Is the letter of directions understandable? _____Yes _____No
Please provide any recommendations to improve clarity.

2. Can you easily distinguish among the four descriptors? _____Yes _____No
If not, please explain.

3. Are the survey items clearly stated? _____Yes _____No

4. Do you have any other evaluative comments about the survey?
If so, please explain. _____Yes _____No

Date_____Signature of Evaluator_____

Thank you for your assistance.

APPENDIX E

April 2000

Dear Principal:

As part of my doctoral work at Lehigh University, I have designed a research project to gather information regarding organizational groupings and instructional practices in Pennsylvania elementary classrooms. Your elementary school has been randomly selected from a listing of all elementary schools in Pennsylvania to participate in a survey entitled, **Survey of Instructional Practices of Teachers of Age-Appropriate Second-Grade Students.**

Enclosed is a packet of materials to be distributed to regular classroom teachers who teach age appropriate second-grade students. The distribution is intended for teachers of single-grade, multigrade or multiage groupings in your building containing second grade students. Each second grade teacher should receive:

- one survey form
- one cover letter with instructions
- one self-addressed, stamped envelop

Participants will be returning the surveys directly to me.

Also enclosed in the packet of materials is a postcard. Please complete the postcard to let me know whether or not you will distribute the surveys in your building, then return the postage paid card to me. All responses will be aggregated so confidentiality will be maintained. The identification coding on each survey and on the postcard will assist me in determining which schools have returned the survey. Names of schools and teachers will not be used at any time in reporting research results. All responses will be considered only in combination with those from other participants.

I understand how busy you and your teachers are and certainly appreciate any time you spend helping me in this research effort. If you need additional information, feel free to contact me at the email address or phone number below. Questions that may result from your participation in this study may be directed to my advisor, Dr. Richard P. McAdams at 610-758-3242 or to Ruth Tallman, Office of Research and Sponsored Programs, Lehigh University, 610-758-3024.

Thank you in advance for your willingness to assist me in this study.

Sincerely,



B. Jean Walker
Assistant Superintendent for Curriculum and Instruction
600 East High Street
Elizabethtown, PA 17022
(717) 367-1521
jwalker@etown.k12.pa.us

Enclosures

APPENDIX F

April 2000

Dear Second Grade Teacher:

As part of my doctoral work at Lehigh University, I have designed a research project to gather information regarding organizational groupings and instructional practices in Pennsylvania elementary classrooms. Your elementary school has been randomly selected from a listing of all elementary schools in Pennsylvania to participate in a survey entitled, **Survey of Instructional Practices of Teachers of Age-Appropriate Second-Grade Students**. Your principal has agreed to distribute the attached survey to all teachers of age-appropriate second-grade students in your school. The survey should take between 10 and 15 minutes of your time to complete.

The survey consists of 24 statements regarding instructional practices that may or may not be occurring in your classroom. For each statement, please mark the number on the rating scale that best describes the frequency of utilization in your classroom. The last four items on the survey ask for information that will assist in analyzing the data from the survey.

Confidentiality of all respondents will be maintained. The identification coding on each survey will assist me in determining which schools have returned the survey. Names of schools will not be used at any time in reporting research results nor will there be any identification of individual teachers. All responses will be considered only in combination with those from other participants. In order to further ensure your candid responses, I have supplied a self-addressed, stamped envelop so that you may return the survey directly to me. No one else will review your survey. By completing the survey and returning it to the investigator, you are consenting to the use of your survey data in aggregate with that of all other returned surveys.

As a former elementary teacher, I realize how many things an elementary teacher has to do. I appreciate your willingness to assist me in this research effort. If you need additional information, feel free to contact me at the email address or phone number below. Questions that may result from your participation in this study may be directed to my advisor, Dr. Richard P. McAdams at 610-758-3242 or to Ruth Tallman, Office of Research and Sponsored Programs, Lehigh University, 610-758-3024. **Please return the survey by April 20, 2000.**

Sincerely,



B. Jean Walker

Assistant Superintendent for Curriculum and Instruction
600 East High Street
Elizabethtown, PA 17022
(717) 367-1521
jwalker@etown.k12.pa.us

Enclosures: Survey of Instructional Practices of Teachers of Age Appropriate
 Second Grade Students
 Self-addressed, stamped envelop

APPENDIX G

Response Postcard

Please complete the information on this card and drop it in the mail.

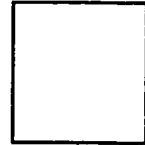
_____ I have distributed the surveys to teachers of age-appropriate second grade students in my school.

Number of surveys distributed _____

_____ I have chosen not to distribute the surveys to second grade teachers in my building. I have disposed of all surveys.

Comments:

Code:



B. Jean Walker
507 Campus Road
Elizabethtown, PA 17022

VITA

Beverley Jean Walker is the oldest of four children of Lewis and Dorine Mumma. She is a 1964 graduate of North Hagerstown High School. She attended Frostburg State College as a recipient of a Maryland PTA scholarship graduating with a Bachelor of Arts Degree in Kindergarten Primary Education in 1968. Her early teaching career included primary grade assignments in Maryland, Virginia , and Georgia. She earned a Masters of Education in Early Childhood Education in 1978 from Georgia State University and Elementary Principal Certification from Temple University in 1992. Continued studies at Lehigh University led to a Superintendent Letter of Eligibility in 1997 and further studies in an Educational Leadership doctoral program.

In addition to her public school teaching experience, she has served as the administrator of a group of private nursery schools and child care centers in the central Pennsylvania area. She was instrumental in the establishment of employer-sponsored child care at the Navy Ships Parts Control Center in Mechanicsburg and at the Pennsylvania Department of Labor and Industry in Harrisburg in the mid-1980s. She also served for twelve years as an adjunct instructor in the Department of Early Childhood Education at Harrisburg Area Community College.

Since her return to public education in 1990, she has taught kindergarten and served as an elementary assistant principal and a principal in the West Shore School District. Currently she serves as Assistant Superintendent for Curriculum and Instruction in the Elizabethtown Area School District where she lives with her husband, Joe. They have five grown children and three grandchildren.