An Analysis of Reading, Writing, and Language Development in an Integrated Intermediate School Program

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ACKNOWLEDGMENTS

I wish to acknowledge several individuals who patiently and generously supported me during this project and, in particular, Robert Cienkus, Ph.D., chair of the dissertation committee, for his assistance and guidance. I would also like to thank the other members of my committee, Barney M. Berlin, Ph.D., for all of his advice and good humor, and Louis Gatta, Ph.D., for his friendship and expert counsel.

I gratefully acknowledge the teachers, administrative staff, principals and students of the schools who cooperated in this project.

I wish to acknowledge Patricia M. Surdyk, Ph.D., for her editing assistance and her insights as both a writer and a dear friend.

I would also like to thank John McConnell, Ph.D., for his help with the analysis of my data.

Special colleagues who offered their enthusiasm in my work and continuously cheered me on include Diane Schiller, Ph.D. and Janis Fine, Ph.D.

More friends than could possibly be mentioned here deserve thanks for their unyielding support. The following deserve my special thanks: Mary Barbara Walsh, Ph.D., Ms. Martha Mueller Keller, Susan Kurland, Ph.D, Kay Monroe Smith, Ph.D., and Nancy McCabe.
Finally, this project would have remained a dream without the unconditional love and support of my family: my husband Lee A. Goldfine, my children Alicia Rose and Daniel Russo, and my brother Anthony Rizzato, and, most importantly, my mother, Rosarina Russo Rizzato, who more than anyone has helped me realize my dreams.
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ABSTRACT

The concept of an integrated curriculum that transcends discipline boundaries is multi-age, student-negotiated, and teacher-facilitated, and has been evolving for well over 40 years. Throughout these decades, educators such as the early Progressives of the 1920s and 1930s have advocated student-centered learning that focuses on real-life themes. Research has documented that curriculum integration can be found in many curricular designs and that it promotes improved student achievement.

This study compared student achievement in an integrated curriculum at an intermediate school level with student achievement in a non-integrated, traditional instructional curriculum in the areas of reading, writing, and language development. The experimental design considered student achievement in multiple grade levels, i.e., grades four, five, and six, and in three separate degrees of integration, i.e., high integration, moderate integration and low integration. Differences between the integrated and non-integrated program were found in the implementation of the curriculum at each site; therefore, each of the three schools in this study was examined as a separate experiment. Multiple and independent assessment measures were used to test the hypotheses presented in the study.

To enhance understanding of this research, several key terms such as integrated curriculum and traditional or non-integrated curriculum are defined. Several integration
models are also presented. Susan Drake's transdisciplinary framework uses an integrated approach which focuses on common themes, strategies and skills. It was chosen as the theoretical framework for this study since it most closely reflected the integrated curriculum program implemented by the school district.

This study confirmed that a positive correlation exists between an integrated curriculum and improved student outcomes in an intermediate school in reading, writing, and language. It therefore offers relevant information for curriculum planners regarding the success of an integrated program.
CHAPTER I

INTRODUCTION

The concept of an integrated curriculum eliminates separate subjects as the basis for organizing schooling. By definition, an integrated curriculum focuses on life problems and ideas, connecting various subjects and concepts in a relevant plan of study (Dictionary of Education, 1988; Drake, 1993; Jacobs, 1989).

Proponents of an integrated curriculum claim that this focus on the “real world” inspires academic growth demonstrated by improved performance on standardized assessments. Indeed, research has shown that a positive correlation exists between an integrated curriculum and enhanced student outcomes. For example, the famous Eight-Year Study conducted in the early 1940s by the Progressive Education Association supported the proposition that an integrated curriculum reaches students by recording evidence of improved student achievement in integrated curriculum programs (Aiken, 1942). Almost 40 years later, the National Association for Core Curriculum (1984) compiled approximately 80 normative and comparative studies on the effectiveness of integrated curricula. The results of these studies clearly revealed that students whose school experiences occurred in integrative programs scored higher on standardized achievement tests than students enrolled in programs characterized by separate subjects in a traditional curriculum. Most recently, programs such as Project AIMS (Activities to Integrate Mathematics and Science) (Wiebe, 1990) and the MacMagic program
(Mergendoller, 1991) confirmed that integration created more meaningful subject matter which improved student retention, performance and motivation.

Thus, evidence exists to support the efficacy of integrating curriculum to reflect real-world scenarios. Integration helps students form connections to life experiences which, in turn, increases their recall and understanding of content. "When we set curriculum in the context of human experience, it begins to assume a new relevance. Higher order thinking skills become a necessity as students begin to grapple with real issues and problems that transcend the boundaries of disciplines" (Drake, 1993, p. 3).

Therefore, the intent of an integrated curriculum is to create patterns of connections which create meaning and understanding.

Understanding performances need not represent discoveries new to all of human civilization or even to the classroom in question. They just need to stretch the learner somewhat...When people go conspicuously beyond the information given, then we recognize that they understand. (Perkins, 1991, p. 5)

Unfortunately, while a body of impressive research supports the academic and personal growth advantages of an integrated curriculum, the presence of integrated curricula in schools is rare. A typical student schedule in grades four, five, or six, mandates regular changes of subject. Periods of math, English, science, and other academic subjects are typically taught in relative isolation. Teachers frequently plan classes with little, if any, relationship between subject areas. The potential for intellectual connections is lacking for students, thus prompting educators such as Susan Drake and Theodore Sizer to emphasize that how people learn is an important issue to consider when planning curriculum change.
Recent research in cognitive science has shown us that the brain searches for patterns and interconnections as its way of creating meaning (Caine and Caine, 1991). As such research findings are increasingly confirmed and it is proven that humans do learn by making connections, the logical conclusion follows that it is best to teach through connections. As part of his research for the Teaching for Understanding Project, Vito Perrone of the Harvard Graduate School of Education states that in order to "draw students into the depth and complexity of a subject, we must look for topics that relate to students' lives" (Perrone, 1994, p. 11).

Many prominent educators champion an integrated curriculum. Phillip Schlechty (1990) in his book Schools for the Twenty-First Century: Leadership Imperatives for Educational Reform, redefines the role of teacher and student to illustrate an integrated curriculum approach. "For many, teacher is synonymous with instructor and conveyor of knowledge. In schools of the future, teachers will not be sources of information; they will be guides to information sources...In the school of the future, students will produce knowledge, not simply receive it" (p. 37). Herbert Thelen (1981) in The Classroom Society: the Construction of Educational Experience, and John Goodlad (1976) in Facing the Future: Issues in Education and Schooling both present integrated classrooms as the future model for educational progress and success.

Classroom teachers become agents of change because they are responsible for the implementation of any curriculum program. An example of the success of one such program related to integration involves the science teachers at South Gate School in Los Angeles who put an end to the traditional "layer-cake" approach, created in 1893 by the
National Education Association’s (NEA) Committee of Ten. This NEA committee determined that high school science study should take the form of discrete discipline courses. To replace this layer cake approach in science, teachers at South Gate taught a slice of each science every year for all students. They eliminated tracking or labeling students in science (Brunkhorst, 1991). The South Gate teachers' education philosophy driving this change was based on the premise that understanding develops by learning through connections. "Obviously, connections among the sciences cannot be understood if all the sciences are not available to all students" (Brunkhorst, 1991, p. 37). The South Gate experience is an example of the success of integration in one small segment of the curriculum.

The Purpose of the Study

The purpose of this study was to examine the effects of an integrated curriculum on student achievement in the intermediate school, grades four, five and six. The relationship between an integrated curriculum and student achievement in the areas of reading, writing and language was compared to the relationship between student achievement in a non-integrated curriculum in the same subject areas.

The collection of data took place at three intermediate schools in a northwestern suburban school district near Chicago, Illinois. Each school was analyzed as a separate entity to identify any structural differences among them in relationship to how they implemented the integrated curriculum mandated by the district. The schools were observed separately by the researcher to verify that the integrated curriculum as implemented did differ from a traditionally structured classroom approach. Faculty and
staff at the district level and at each school were interviewed by the researcher to identify
the perceived characteristics of each integrated program. Standardized performance-
based assessments in reading, writing and language were administered in the second
semester of the 1994-1995 school year. Data from these standardized tests were tabulated
in the spring of 1995; these data formed the basis upon which analysis of student
achievement was conducted for this study.

Theoretical Framework

Susan Drake's vision of curriculum integration across all grade levels serves as
the theoretical framework for this study. Her theory was formulated from her work in
Ontario, Canada with students in grades seven through nine in 66 integrated curriculum
project sites. In identifying common experiences of integrated curricula among project
sites, Drake (1993) presents three frameworks for structuring an integrated curriculum.

The first is a multidisciplinary framework which views curriculum through the
perspective of a discipline that incorporates content from other disciplines to increase
relevance. The second is the interdisciplinary framework which shifts from an emphasis
on applying themes to subject areas and focuses instead on the commonalities across all
the academic disciplines. The third framework is the transdisciplinary or real world
approach which refers to an integrated curriculum that sets curriculum themes, strategies,
and skills within a real-life context unrestricted by specific discipline boundaries (Drake,

The transdisciplinary approach focuses on common themes, strategies and skills.
The learning outcomes of the transdisciplinary approach reflect essential learning such as
skills to develop future productive citizenry, change management, perseverance, confidence, and problem solving. Addressing areas of real world relevance such as media, law, environment, technology, economic forces, business and time (past, present and future) are parts of the transdisciplinary model. Because these model factors outlined by Drake closely reflected the proposed student goals of the integrated curriculum program in this study, the researcher chose the transdisciplinary model as the template by which the level of integration in each of the three schools in this study was assessed.

The school district in this study used six learner outcomes as goals for the integrated curriculum classes. These have been identified by the district as:

1. collaborative worker;
2. knowledgeable person;
3. complex thinker;
4. quality worker;
5. responsible community contributor; and
6. self-directed learner.

To achieve the above outcomes, the district articulated a philosophy of learning centered beliefs concerning how children learn best. These beliefs reflected the approach of the integrated curriculum in the district. The beliefs are delineated as:

1. Children learn best when they are in a caring, ethical environment where individuals respect themselves and others, protect their property and the property of others, demonstrate concern and care for others' needs and recognize and respect cultural diversity as a resource.

2. Children learn best when they are provided with opportunities to apply knowledge in meaningful and creative ways, providing common sense explanations and solutions of problems they identify in real life. Emphasis is placed on accuracy, critical thinking and creativity. Their work is the primary source of assessment.

3. Children learn best when we foster their natural inclination to learn and expect students to assume personal responsibility for their learning in an environment that takes past learning into account,
links new learning to personal needs and actively engages students in their own learning processes.

4. Children learn best when material is appropriate to their developmental level and is presented in enjoyable, interesting, and challenging ways. Instructional practices address the intellectual, emotional, physical, and social development of students.

5. Children learn best when we recognize their rich internal context of beliefs, expectations, feelings, and motivations which can enhance quality of thinking and information processing. Factors such as reflective self awareness, positive self image, personal learning goals and positive expectation for success are necessary for optimal learning. (District Curriculum Expectations, 1994)

The majority of teachers, administrators and parents in this country appear to remain loyal to education through non-integrated classrooms, often due to their concern regarding satisfactory achievement, especially in academic areas such as reading, writing and language. This study addresses that concern and contributes to the most recent inquiries set forth by educators related to student outcomes in integrated curricula through analysis of individual student achievement in a school district which demonstrated implementation of an integrated curriculum plan.

Limitations of the Study

The main focus of this study was to analyze student performance through reading, writing and language in a school setting characterized by an integrated curriculum. Conclusions were based on a series of standardized tests normally distributed by the school. Other academic areas such as math, science or social studies were not analyzed for this study. It should also be noted that the integrated class of students in this study were in a technology-rich environment. Each student had relatively free and immediate access to computers and printers. If such access had any effect on student achievement, it
was considered a strength of the program. However, this study did not control for this effect.

**Terminology**

This study identifies and defines terms typically associated with the integrated curriculum. For example, the term “integrated” encompasses many different programs ranging from those which are project based to those recognized as problem based or authentic. Considering the variety of interpretations possible, the terms used in this study adhere to the following definitions:

1. **Integrated curriculum** is "a curriculum organization which cuts across subject-matter lines to focus upon comprehensive life problems or broad areas of study that bring together the various segments of the curriculum into meaningful association" (Dictionary of Education, 1988, p. 248).

2. **Multi-disciplinary** alludes to the focus on separate disciplines tackling the same theme (Drake, 1993, p. 33).

3. **Interdisciplinary** refers to shifting the curriculum to the commonalities that could be found across the curriculum (Drake, 1993, p. 33).

4. **Transdisciplinary** curriculum transcends discipline boundaries and sets curriculum themes, strategies, and skills within a real-life context (Drake, 1993, p. 33).

5. **Project-based curriculum** involves student-chosen projects which entail thinking through a problem and include listing resources, listing questions,
identifying where research will begin as well as where it will end, and determining how the finished project will be presented (Wolk, 1994).

6. **Problem-based curriculum** approaches a specific issue or dilemma and students brainstorm, research and finally come to a consensus or conclusion regarding the specific problem. "The purpose of the problem is to motivate students to learn and provide real world context for examining the issues involved" (Sovoie and Hughes, 1994, p. 55).

7. **Non-integrated** (traditional) refers to curriculum that is divided by specific academic areas.

8. **Teacher**, as defined in an integrated curriculum classroom, is a guide to information (Schlechty, 1990).

9. **Student**, as defined in an integrated curriculum classroom, is a producer of knowledge not merely a receiver of information (Schlechty, 1990).

10. **Thematic curriculum** is an in-depth study of a topic, an issue or a question (Manning, 1994).

11. **Intermediate school** or grades refers to grades four, five and six.

12. **Multigrade grouping** refers to students from two or more grades taught in one room at the same time. Students in multigrade classes retain their respective grade-specific curricula (Veenman, 1995, p. 319).

13. **Multi-age grouping** places students who are at least a year apart in age in the same classroom for several years. This grouping
occurs within the framework of a graded system. Students so
grouped retain their grade label but are not bound to the grade-

14. **Non-graded** refers to students who progress at their own
indivdual pace according to their ability. Grade labels are not
used. "There are no promotions or retentions," students merely
work at their own speed beginning each year where he or
she left off (Bechtol, 1993, p. 19).

**Summary**

The purpose of this study was to analyze the effect of an integrated curriculum in
the areas of reading, writing and language as measured by several performance-based
assessment measures. This study was limited to the intermediate grades four, five, and
six. The students in the integrated group were organized to form one multi-age class.

Research indicates that a positive correlation exists between an integrated
curriculum and improved student outcomes. Examples of successful experiences of
integration exist in the literature. A wide variety of definitions of various terms used by
educators studying integration requires that clarification of terms central to an
understanding of this concept be applied in this study.

Chapter II provides relevant background information regarding the integrated
curriculum based on a review of literature. Chapter III details the research methodology
employed by this study. Chapter IV presents an analysis of the data. Chapter V relates
conclusions based on the data in the study and presents recommendations for future research.
CHAPTER II

REVIEW OF THE LITERATURE

Introduction

The concept of an integrated curriculum has been of interest to educators since before the 20th century began. For example, Fraley (1978) traced the philosophical idea of integration as far back as the 1800's to the writing of Herbert Spencer who promoted real-life learning activities as evidence of support for integration. In more recent years, the term has been applied with wide variation to a multiplicity of programs. Some programs apply the label when integrating a single discipline or functional unit such as a science lab or a history class. Other programs identify an interdisciplinary teaching approach, i.e., team teaching a social studies class, as an integrated curriculum. In this study, the term integrated curriculum is used to identify programs that are learner centered and that are structured without isolated blocks of subject matter.

The first section of this literature review provides a brief overview of research on the concept of an integrated curriculum and its characteristics. The second section presents the theoretical framework used by the researcher to analyze the integrated curriculum presented in this study. The third section provides a brief summary of research regarding the use of technology in the integrated classroom.
Historical Perspective on Integration and the Curriculum

Curriculum integration is not a fad or a new approach to curriculum. Research has shown that an integrated curriculum works. Faunce and Bossing (1958) detailed a multitude of state and national curriculum efforts of the 1930s and the 1940s that were spearheaded by educators who supported learner-centered education in an integrated curriculum. During that same period, Thomas Hopkins published Integration: Its Meaning and Application (1937) which presented his belief that each person was born into a culture composed of diverse experiences, all of which were somehow interrelated and should therefore be integrated into schooling.

The integrated curriculum should be organized around fundamental interests and experiences of the learner. The subject matter is fixed in advance in broad outline and emphasis is placed upon meanings, insights, understandings, and broad techniques. (Hopkins, 1937, p. 1)

The Progressive education movement of the 1920s and 1930s placed an emphasis on student-centered, integrative work in education using the label “core curriculum.” To support the theory that student-centered integrative curriculum was beneficial to student learning, the concept of an integrated curriculum was tested in the well-known Eight Year Study of the Progressive Education Association (Aiken, 1942). In this study, Aiken evaluated different patterns of curriculum organization. Problem-centered, integrated programs predominated in the experimental schools. These programs typically drew subject matter from various fields to provide a basis for student activity directed at solving specific social problems. Aiken’s findings concluded that the students who
experienced the experimental program, i.e., integrated, were more successful than the control group of students who were in the non-integrated, i.e., traditional, programs (Aiken, 1942). Since the Eight Year Study, the National Association for Core Curriculum has carried out approximately 80 studies on integrative programs. In almost every case, students in the integrative/interdisciplinary programs performed as well or better on standardized tests than students in traditional separate classes (National Association for Core Curriculum, 1984).

Separate disciplines as well as the Carnegie units were artificially created by early educators in an attempt to organize their school world, and were often defined by the political trends of the time (Beane, 1991). Subsequent research on the effects of these patterns of organization, has shown, however, that students fail to benefit from placement in ability or age groups (Smith-Maddox and Wheelock, 1995; Veenman, 1995; Oakes, 1985; Slavin, 1987; George, 1987; Garmoran and Berends, 1987). Dividing students by age or ability, as occurs in tracking, therefore does not appear to foster academic growth. Veenman cites that advocates of multi-age grouping claim the following cognitive and noncognitive benefits:

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. Multi-age grouping provides younger students with the opportunity to observe, emulate, and imitate a wide variety of behaviors; older students have the opportunity to assume responsibility for less mature and less knowledgeable students.

8. Multi-age grouping invites cooperation and other forms of prosocial behavior and thus appears to minimize competitive pressures and the need for discipline.

9. Students in the lower grade(s) can enrich their learning by attending to the material designed for the 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, multi-age grouping relaxes the rigid curriculum with its age-graded expectations, which are inappropriate for a large number of students. (Veenman, 1995, p. 322)

Multi-age or multigrade grouping should not be confused with nongraded schooling. Publication of the classic book, The Nongraded Elementary School (Goodlad and Anderson, 1963) was a powerful influence in the promotion of grouping students in a nongraded school. Many nongraded programs and schools emerged during the 1960s and 1970s based on this work; however, the nongraded school was not at the center of sweeping national education reform. A nongraded curriculum allows students to work through the established curriculum at their own individual pace. Although a nongraded
curriculum is learner-centered, it does not integrate subject matter with a real world focus on themes, problems, projects, activities, and assessments. Students in multigrade classes are two or more grades apart in one classroom and maintain their grade-level assignments and grade-specific curricula (Veenman, 1995).

Eisner (1992) cites the Progressive movement of the 1920s as strongly promoting curriculum integration that was both multi-age as well as student-centered, and based on relevant themes. Multi-age groupings retain grade level labels, but are not restricted to grade level assignments or curriculum (Veenman, 1995). Proponents of Progressivism believed in multi-age thematic integration as the best way to inspire students to retain knowledge and develop into healthy and productive citizens. The Progressive educators of this time believed that teaching within separate disciplines hindered students from forming relationships between subjects and thus decreased the importance of the content.

Occurring at approximately the same time in history and associated with thematic integration was the growing popularity of project-based learning. The prominent Teachers College professor William Heard Kilpatrick heralded the idea in the first quarter of this century. His vision was a project-based, democratic classroom. Kilpatrick believed that curriculum should be based on child-chosen projects which fostered useful activity (Kilpatrick, 1925). His approach was in concert with that of progressive educator John Dewey, who advocated that schools should emphasize real life learning, not only to prepare one for life, but to represent life itself.
Both Kilpatrick's and Dewey's conception of project-based learning involved thinking through problems and listing resources and questions, determining where research into the problems would begin, where it would end, and how the finished project would be presented (Wolk, 1994). Students were also directed to write self evaluation to help them become metacognitively aware of their learning. Wolk (1994) notes that, "When children are free to choose their own projects, integrating knowledge as the need arises, motivation and success follow naturally" (p. 42). In project-based learning, Wolk believes the classroom environment is enriched both academically and socially, creating a true learning community.

For years, educators luxuriated figuratively in relative security because each generation of Americans outperformed its parents in education, in literacy and in economic attainment. A decade after the Sputnik challenge, student achievement was recorded at an all-time high in American academia. However, according to Bechtol (1993), the steady decline of student achievement in the 1970s caused great alarm among educators. For the first time in American history, the academic skills of one generation did not pass or even equal those of its parents. The following dilemmas, detailed in A Nation at Risk (1983) prompted initiation of educational reforms by many state and government leaders across the United States:

1. International comparisons of student achievement reveal that on nineteen academic tests U.S. students were never first or second, and, compared with other industrialized nations, were last seven times.

2. About 13 percent of all 17-year-olds can be considered functionally illiterate. Functional illiteracy among minority youth may run as high as 40 percent.
3. Average achievement of high school students on most standardized tests is now lower than the scores when Sputnik was launched. On the SATs average verbal scores fell over fifty points and average mathematics scores dropped nearly forty points.

4. Both the number and the proportion of students demonstrating superior achievement on the SAT's (i.e., those with scores of 650 or higher) have also dramatically declined.

5. Average tested achievement of students graduating from college is lower.

6. Business and military leaders complain that they are required to spend millions of dollars on costly remedial programs in such basic skills as reading, writing, spelling and computation. (Bechtol, 1993, p. 8)

The reforms mandated by the government and school districts focused on testing and promotion standards that had very disappointing results (Bechtol, 1993, p. 9). The majority of the reforms created a more standardized curriculum with an emphasis on essential skills and heavily promoted standardized testing for minimal grade requirements. The results of these efforts saw an increase in drop out rates, an increase in the retention rates, and an increase in remedial programs. Therefore, reforms and reformers that focused on data and measurement of student achievement, failed (Bechtol, 1993, p. 11). However, educators who continued to maintain attention to students as individual learners and who focused on an integrated curriculum at any level, provided evidence of student success (Copple, 1984; James, 1977; Kitabachi, 1978; Perkins, 1989; Schiro, 1978; Slavin and Madden, 1989; Thelan, 1981; Walker, 1987; Wiggins, 1989; Wise, 1988).

Current research on the integrated curriculum builds on the foundation established by the visionary educators from the first half of this century. This research supports the
fact that successful integration enriches learning by making it meaningful and holistic (Wiebe, 1990). For example, extensive field testing of an integrated curriculum produced by Project AIMS (Activities to Integrate Mathematics and Science) confirmed that integration produces the following results: (1) subject matter becomes more meaningful, thus, more useful; (2) improved quality of learning and retention results; and (3) a dramatic increase in students' motivation and involvement occurs (Wiebe, 1990). Further research supports the conclusion that real projects which utilize primary sources show more significant gains in student achievement and motivation (Slavin and Madden, 1989). Hanford (1986) and Wise (1989) both conclude that the measure of school value is in how students perform in authentic settings.

Although educators acknowledge that students learn from real-life activities, very little change in schooling, and specifically in classroom teaching, has occurred throughout the current century (Henry, 1990; Schlechty, 1990; Cuban, 1984). The majority of classroom time remains mired in the realm of traditional scheduling, grounded in teacher-centered activities dominated by lecture with student time spent listening to the teacher, reading textbooks, or working independently on handout material. The task force on education of the National Governors' Association states that, "The present system requires too many teachers who focus largely on the mastery of discrete, low level skills and isolated facts," (Henry, 1990, p. IA). Thus, states such as California, Connecticut, Illinois, Utah, Vermont and the Canadian province, British Columbia, have developed approaches to alternative assessments as a means by which to encourage development of integrated curricula (Wiggins, 1989).
The next section of this review presents the theoretical framework used by the researcher to analyze the integrated curriculum presented in this study.

**Learner-Centered Principles**

The learner outcomes and learner beliefs upon which the school district involved in this study based its integrated program can be found in the *Learner-Centered Psychological Principles: Guidelines for School Redesign and Reform*, produced by the Presidential Task Force on Psychology in Education (January, 1993).

The learning-centered beliefs represented by these principles created the curriculum goals for educating children for their future adopted by this district. The 12 psychological principles describe the learner and the learning process. They focus on the psychological factors internal to the learner and yet, they recognize the external environment. The principles are intended for all learners, from preschoolers to adult learners.

The principles are divided into two sections. The first 10 principles subdivide into metacognitive and cognitive, affective, developmental, and social factors and issues. The last two principles relate to the importance of individual differences. The principles state:

**Metacognitive and Cognitive Factors**

*Principle 1:* The nature of the learning process. Learning is a natural process of pursuing personally meaningful goals, and it is active, volitional, and internally mediated; it is a process of discovering and constructing meaning from
information and experience, filtered through the learner's unique perceptions, thoughts, and feelings.

**Principle 2:** Goals of the learning process. The learner seeks to create meaningful, coherent representations of knowledge regardless of the quantity and the quality of data available.

**Principle 3:** The construction of knowledge. The learner links new information with existing and future-oriented knowledge in uniquely meaningful ways.

**Principle 4:** Higher-order thinking. Higher-order strategies for thinking about thinking - for overseeing and monitoring mental operations - facilitate creative and critical thinking and the development of expertise.

**Affective Factors**

**Principle 5:** Motivational influences on learning. The depth and breadth of information processed, and what and how much is learned and remembered, are influenced by: a) self awareness and beliefs about personal control, competence, and ability; b) clarity and saliency of personal values, interests and goals; c) personal expectations for success or failure; d) affect, emotion, and general states of mind; and e) the resulting motivation to learn.

**Principle 6:** Intrinsic motivation to learn. Individuals are naturally curious and enjoy learning, but intense negative cognition and emotions (e.g., feeling insecure, worrying about failure, being self-conscious or shy, and fearing corporal punishment, ridicule, or stigmatizing labels) thwart this enthusiasm.
Principle 7: Characteristics of motivation enhancing learning tasks. Curiosity, creativity, and higher-order thinking are stimulated by relevant, authentic learning tasks of optimal difficulty and novelty for each student.

Developmental Factors

Principle 8: Developmental constraints and opportunities. Individuals progress through stages of physical, intellectual, emotional, and social development that are a function of unique genetic and environmental factors.

Personal and Social Factors

Principle 9: Social and cultural diversity. Learning is facilitated by social interactions and communication with others in flexible, diverse (in age, culture, family background, etc...), and adoptive instructional settings.

Principle 10: Social acceptance, self-esteem, and learning. Learning and self-esteem are heightened when individuals are in respectful and caring relationships with others who see their potential, genuinely appreciate their unique talents, and accept them as individuals.

Individual Differences

Principle 11: Individual differences in learning. Although basic principles of learning, motivation, and effective instruction apply to all learners (regardless of ethnicity, race, gender, physical ability, religion, or socioeconomic status), learners have different capabilities and preferences for learning mode and strategies. These differences are a function of environment (what is learned and
communicated in different cultures or other social groups) and heredity (what occurs naturally as a function of genes).

**Principle 12:** Cognitive filters. Personal beliefs, thoughts, and understandings resulting from prior learning and interpretations become the individual's basis for constructing reality and interpreting life experiences.

In yet another iteration of the same principles, Alexander and Murphy (1994) combined the inherent philosophy of the basic 12 concepts into five essential dimensions of learning that have been researched for decades. These dimensions are: (1) the knowledge base; (2) strategic processing or executive control; (3) motivation and affect; (4) development and individual differences; and (5) situation or context.

The knowledge base serves as the foundation of all learning. It serves as the basis of association with new information by "coloring and filtering all new experiences" (Alexander and Murphy, 1994, p. 6). Strategic processing or executive control is the ability to "reflect upon and regulate one's thoughts and behaviors which is considered essential to learning and development" (Alexander and Murphy, 1994, p. 9). Motivation and affect are considered intrinsic motivation, attributions for learning and personal goals which play a significant role in the learning process. "Learning, while ultimately a unique adventure for all, progresses through various common stages of development influenced by both inherited and experimental factors" (Alexander and Murphy, 1994, p. 15). This dimension accounts for growth and individual differences in learners. Lastly, situation or context refers to learning as equally a "socially-shared undertaking and an individually-constructed enterprise" (Alexander and Murphy, 1994, p. 20).
Although The Learner-Centered Psychological Principles are presented in a list format, they should not be considered separate learning categories within the student. As an individual, a student is a complex person growing and actively thinking on many different levels. Educators have a better chance to inspire relevant changes in student learning and in schools by understanding an interplay of the various learning dimensions within every person.

**Theoretical Frameworks for Integrating the Curriculum**

Susan Drake's work, *Planning Integrated Curriculum: the Call to Adventure* (1993) proposes three frameworks for integrating a curriculum. The first is a multidisciplinary framework which views curriculum through the perspective of a discipline that incorporates content from other disciplines to increase relevance. The second is the interdisciplinary framework which shifts from an emphasis on applying themes to subject areas and focuses instead on the commonalities across all the academic disciplines. The third framework is the transdisciplinary or real world approach which refers to an integrated curriculum that sets curriculum themes, strategies, and skills within a real-life context unrestricted by specific discipline boundaries (Drake, 1993). For each approach, Drake offers a conceptual framework, with associated learning outcomes and assessment methods. Her conceptualizations were based on a synthesis of information gathered from 66 integrated curriculum project sites in Ontario, Canada, grades seven through nine.
Multidisciplinary Framework

"The multidisciplinary approach views the curriculum through the lens of a discipline that includes content from other disciplines to increase relevance" (Drake, 1993, p. 35). Figure 1 provides a model for the multidisciplinary approach that identifies disciplines or subject areas.

Fig. 1 Multidisciplinary Framework. Reprinted, by permission, from Susan M. Drake, Planning Integrated Curriculum: the Call to Adventure (Alexandria, VA: ASCD, 1993) 35.

Drake notes that a multidisciplinary starting point is a logical first step to integrating the curriculum. Teachers continue to work in the context of a subject area made comfortable by virtue of its familiarity. However, the multidisciplinary approach dispels some of the boundaries between subject areas while leaving enough of the disciplines to allow teachers to continue to organize knowledge through the definition of
the disciplines. "Existing course content is easier to fit into an integrated mode" (Drake, 1993, p. 36).

To increase the connection between ideas and a theme, teachers and student teams organized within a multidisciplinary structure may employ the strategy of clustering and reclustering as exemplified in Figure 2. This strategy was developed by consultant Jan Sanders of the Institute of Cultural Affairs (Drake, 1993). "For example, if team members brainstorm to create a semantic web around the theme of 'car', they will then be able to cluster ideas into subthemes such as pollution transportation, and design" (Drake, 1993, p. 37). Then the teams may recluster the information into new subthemes i.e. war, status, and economics. This type of strategy helps to create new thinking patterns.

![Cluster and Recluster](image.png)

Fig. 2. Cluster and Recluster. Reprinted, by permission, from Susan M. Drake, Planning Integrated Curriculum: the Call to Adventure (Alexandria, VA: ASCD, 1993) 37.

"The multidisciplinary approach asks: what is important to learn within different disciplines?" (Drake, 1993, p. 36). This approach encourages links between fields of knowledge in order to develop increased relevance in the curriculum content for the student. "Procedural knowledge and the skills of each discipline are presented in ways that connect them to the other disciplines" (Drake, 1993, p. 36). Drake recommends
semantic webbing as a simple but effective process of brainstorming connections for a theme. Once a theme is chosen, team members brainstorm ideas that may connect to the theme. Figure 3 offers an example of semantic webbing.

Fig. 3. Semantic Webbing. Reprinted, by permission, from Susan M. Drake, Planning Integrated Curriculum: the Call to Adventure (Alexandria, VA: ASCD, 1993) 36.

The learning outcomes and assessments can still be based on the traditional or standardized knowledge of the discipline (Drake, 1993). As in Traditional Outcomes Based Education (OBE) developed by Spady and Marshall (1991), Drake agrees that, within this framework, outcomes do not reflect real life because they remain based on the curriculum. Thus, assessments in the multi-disciplinary approach seek to measure student mastery of the outlined procedures and expectations.
**Interdisciplinary Framework**

The interdisciplinary framework, as illustrated in Figure 4, focuses on commonalities across disciplines rather than emphasis on application of themes to subject areas. "Given today's educational technologies and the emphasis on metacognition, most teams turn to critical thinking skills as the organizing principle for order and structure" (Drake, 1993, p. 38). The procedures and content of separate disciplines are transcended; for example, problem solving and decision making require the same concepts regardless of discrete discipline.

![Diagram of Interdisciplinary Framework](image)

**Fig. 4.** The Interdisciplinary Framework. Reprinted, by permission, from Susan M. Drake, Planning Integrated Curriculum: the Call to Adventure (Alexandria, VA: ASCD, 1993) 38.

Content matter has less importance in the interdisciplinary approach. The emphasis is on metacognition and learning how to learn. "The question becomes: How
can we teach a student higher order competencies?" (Drake, 1993, p. 38). By integrating subject areas, students learn the generic nature of higher order thinking skills and recognize that they can be used outside the classroom.

As a conceptual framework, a curriculum planning wheel is more effective in interdisciplinary planning than semantic webbing. The focus moves from natural connections to moving the connection process through the disciplines as shown in Figure 5.

![Curriculum Planning Wheel Diagram](image)

Fig. 5. Curriculum Planning Wheel. Reprinted, by permission, from Susan M. Drake, Planning Integrated Curriculum: the Call to Adventure (Alexandria, VA: ASCD, 1993) 39.
As described by Jacobs (1989) and Palmer (1991), the curriculum planning wheel includes many disciplines. "Usually, this approach leads to a focus on generic skills across the curriculum" (Drake, 1993, p. 39). A theme is chosen by the group and the emphasis is placed on skills common to subjects. For example, the theme may be a current environmental issue such as water pollution; students apply their problem-solving skills to formulate a possible plan of action to resolve the problem.

Learning outcomes are less specific within a transdisciplinary framework than in the multidisciplinary approach. "The differentiation among cognitive, affective, and skill domains often dissolves in practice and the outcomes are expressed as 'blended'" (Drake, 1993, p. 40). In the interdisciplinary approach, assessment is performance-based, extending beyond the boundaries of disciplines. Process rather than product is emphasized in the classroom. Process may be evaluated sequentially through benchmarks or by levels of growth that evaluate an individual student's performance. Drake relates the interdisciplinary framework to Spady and Marshall's Transitional OBE (1991).

Transdisciplinary Framework

The transdisciplinary approach may also be referred to as the 'real-world' approach. "Interconnections in the transdisciplinary approach are so vast they seem limitless; the theme, strategies, and skills seem to merge when the theme is set in its real-life context" (Drake, 1993, p. 40). Figure 6 represents the transdisciplinary framework.
The transdisciplinary integrated curriculum shifts to an approach that differs from that of the previous two frameworks. The key organizing question relates to how we can teach students to be responsible, productive citizens. The skills utilized in this curriculum are not driven by subject or discipline. They include skills related to change management, time management, dealing with ambiguity, perseverance, and confidence-building. In this framework, meaning and relevance are developed through a life-centered approach; knowledge is acquired as it relates to real life or cultural/social context. "The content is not considered to be intrinsically important; in fact, it is determined by the theme and student interest rather than because it has been predetermined by any guidelines" (Drake, 1993, p. 41).

The conceptual framework for the transdisciplinary approach is the real world web (Figure 7). In this approach, connections exist in a real life context that emphasizes meaning. The assessment process moves from mastery of procedures of discipline as found in the multidisciplinary approach to the "attainment of life skills and higher-order,
life-role skills" (Drake, 1993, p. 47). Drake compares this web to a kaleidoscope; through one lens a certain pattern develops, the pattern shifts to another lens, and the same pieces create another pattern.

![The Transdisciplinary Web](image)


Outcomes and assessments within the transdisciplinary framework focus on essential life skills. Therefore, higher order thinking skills, technology and computer literacy, interaction, adaptability, flexibility, applied math and science, problem solving, and communication are among the broad life skills that should be set in a "context of personal relevance" (Drake, 1993, p. 43). In the transdisciplinary approach standardized tests have their place in formulating a student profile, however, there should be a move
toward qualitative and anecdotal assessment. Ongoing assessments could also include portfolios or other authentic assessments. Drake believes the transdisciplinary framework closely relates to the Transformational OBE of Spady and Marshall (1991) which promotes higher-order, real-life activities.

Additional Frameworks

Another important contributor in curriculum theory and research is Heidi Hays Jacobs. In *Interdisciplinary Curriculum* (1989), Jacobs presents ten frameworks for describing the curricula. The following list summarizes the continuum of curriculum frameworks developed by Jacobs:

1. Fragmented - like a periscope, it has one direction; one sighting; narrow focus on single discipline. It is equated to the traditional model of separate disciplines.

2. Connected - like an opera glass, focus in one discipline; delves into the interconnections of subject matter.

3. Nested - related to the idea of 3-D glasses; multiple dimensions to one unit or topic.

4. Sequenced - a varied internal content outlined by related but broader ideas.

5. Shared - not unlike binoculars; two disciplines share an overlapped concept(s) or skill(s).

6. Webbed - offers a broad view of the whole picture as one idea; webbed to various other concepts.
7. Threaded - a magnifying glass idea of curriculum; highlights bit ideas that magnify all content.

8. Integrated - similar to a kaleidoscope; new patterns and ideas utilize the content and concepts of each academic discipline.

9. Immersed - a personal view that allows microscopic explanation; all ideas and concepts are filtered through a lens of special interest or knowledge.

10. Networked - a prism idea of curriculum; creates various dimensions and areas of focus or interest.

Drake and Jacobs are among the many educators and researchers who present frameworks for an integrated curriculum. One framework has not been proven necessarily superior to another. Each has its place, whether on a continuum of curriculum development or as another way to organize and label curriculum change and development.

The following section provides a brief summary of relevant research regarding the use of technology in the classroom.

**Technology and the Integrated Curriculum**

Although this study did not control for the effect of technology in the schools wherein the data collection occurred, a consideration of any type of curriculum does not seem appropriate today without some attention given to the effects of technology and its potential for effectiveness. In addition, the school district in this study established technology rich classrooms for each of the integrated groups.
The current trend in research on learning is to view technology as the means by which one may process knowledge (McCluskey, 1994). It has the potential to provide information, but little else. In and of itself, technology cannot organize information into useable form. Learning occurs when a complete connection is made between technology and knowledge (McCluskey, 1994).

David Pucel (1992) states that technology literacy should be a part of the general education of all students for the following reasons: (1) technological literacy is important in preparing people for life and work; (2) technological literacy must be based on sensory as well and language based learning; and (3) technology is unique in the school curriculum.

An example of a successful integrated curriculum program incorporating technology is the MacMagic program at the Davison Middle School in San Rafael, California. Macintosh computers, video cameras, tape recorders, and other related technology were used in the program which integrates English, history, and multimedia courses (Mergendoller, 1991). The program had children from different backgrounds and different abilities work toward shared goals.

A recent study also determined whether working in a classroom using personal computers to teach the writing process enabled students to increase their writing performance. The study took place in Delaware utilizing one middle school from each of its 16 school districts. The results indicated that: (1) students' writing skills were enhanced through the use of computers within the context of the process approach to
writing; (2) students enjoyed writing more when using computers in conjunction with their normal writing instruction (Beyer, 1992).

The Scarborough School District in Maine published the description of a technology-integrated curriculum project in 1988. The goal of the Scarborough project was to develop, implement and distribute a curriculum rich with technology for grades 6-12. Course summaries, content, materials and evaluation methods provided support the curriculum was indeed integrated by content. However, students remained separated by grades and an evaluation of the students' outcomes was not included in the publication.

The Apple Classrooms of Tomorrow project (ACOT) in California is an integrated project-based curriculum that is technology enriched. The project is funded by Apple Computer, Inc. The purpose of the project is formative: to explore, develop and demonstrate technology in teaching and learning. The ACOT is a learner-centered curriculum based on projects and student direction/negotiation. In this program, traditional measures of achievement showed no significant decline or improvement in student performance at the classroom level (Baker, Herman, and Gearhart, 1989). Teachers reported better performance on the part of individual students.

Technology represents the present and the future of education. When, in her survey of 90 Virginia classrooms, Karen Bosch (1993) found that computers were not an integral part of classrooms, teaching, or student learning, she registered her alarm that these students were ill-prepared to face the future. Bosch notes that administrators must look beyond the number of computers in schools to integration of computers across the curriculum (Bosch, 1993).
Dwyer, Ringstaff and Sanholtz (1991) have conducted extensive research on instruction in technology-rich classrooms. They served as the primary research team for the Apple Classrooms of Tomorrow, a program in California that offers students a true multimedia environment. They present the concept of evolution as an important issue to consider in technology-rich classrooms. For real change to take place, these researchers propose phases of growth.

The first phase is labeled "entry" (Dwyer, Ringstaff and Sanholtz, 1991, p. 49). In this phase, little computer interaction occurs. Pedagogy is based on lecture, recitation, and seatwork with much emphasis placed on textbooks. In the second phase, labeled "adoption" (Dwyer, Ringstaff and Sanholtz, 1991, p. 49), pedagogy remains lecture, recitation and seatwork, but there is a shift in instructional technology to text with extensive computer access for the students. In the third phase, "adaptation" (Dwyer, Ringstaff and Sanholtz, 1991, p. 49), pedagogy expands from lecture, recitation and seatwork also to include play and experimentation, again with extensive computer access. "Appropriation" (Dwyer, Ringstaff and Sanholtz, 1991, p. 49) is the fourth phase. In this phase, great expansion in pedagogy based on high computer access occurs in the classroom. The text lends itself to lecture, recitation, and seatwork, while the technology lends itself to a pedagogy that is individualized, cooperative, project based, simulated, interdisciplined, multimodal, and self paced (Dwyer, Ringstaff and Sanholtz, 1991, p. 49). In the final and fifth phase, invention develops. The text becomes a reference book and computer access/technology becomes the main instructional methods. The pedagogy is highlighted by interactivity, doing, and creating. For all phases, outcomes
are social and cognitive. Entry, adoption, adaptation, and appropriation are phases that lead to a readiness or purposeful stage of change called invention (Dwyer, Ringstaff and Sanholtz, 1991, p. 50).

Summary

The term integrated curriculum has been applied to a wide variety of programs throughout recent history. Some programs apply the label to integrating a single discipline or functional unit such as a science lab or a history class. Other programs identify their curriculum as thematic, project-based or problem-based. For the purpose of this study, the term integrated curriculum refers to a program that is learner-centered and is structured without isolated blocks of subject matter.

The review of the literature highlighted the importance of the Progressive Movement in fostering the promotion of real-life learning activities in an integrated curriculum. Such legendary educators as Dewey, Kilpatrick, Goodlad and Thelan contributed to the integrated curriculum movement.

The body of research related to integrated curriculum includes several premises about teaching and learning in an integrated program. These premises can be summarized as follows:

Students grow academically and socially when they experience a curriculum that establishes a connection to real world issues (Perrone, 1994; Wolk, 1994; Sovoie and Hughes, 1994; Drake, 1993; Brunkhorst, 1991; Caine and Caine, 1991; Slavin, 1989; Walker, 1987).
Tracking students does not foster academic development. A number of studies have shown that no benefits ensue for placing students into ability groups (Smith-Maddox and Wheelock, 1995; Veenman, 1995; Slavin, 1987, 1990; George, 1987; Garmoran and Berends, 1987; Oakes, 1985).

Students learn from real activities. There has been little change in schooling over the past century in classroom teaching (Cuban, 1984). The majority of classroom time remains traditionally organized. Classroom time remains grounded in teachers lecturing and students listening, students reading textbooks or students working on handouts. Real projects that utilize primary sources show more significant gains in student achievement and motivation (Slavin and Madden, 1989; Perrone, 1994; Perkins and Blythe, 1994).

The Carnegie units are not inherently the only way to arrange a school. Phillip Schlecty (1990) a leading school reformer, believes that these conventions are not necessarily better.

The measure of school value lies in how students perform in authentic assessments. Scores on standardized achievement tests are merely another source for profiling a student's ability, interests and achievement (Hanford, 1986; Wise, 1988). The task force on education of the National Governors' Association states that, "The present system requires too many teachers who focus largely on the mastery of discrete, low-level skills and isolated facts" (Henry, 1990, p. IA).

Technology-enriched classrooms, particularly in integrated settings, enhance student achievement (Dwyer, Ringstaff and Sanholtz, 1991; Mergendoller, 1991; Pucel, 1992).
Finally, research has documented that curriculum integration can be found in many curricular designs, including, thematic, core, problem-based, multidisciplinary, interdisciplinary, and transdisciplinary models.
CHAPTER III

METHODOLOGY

The purpose of this study was to examine the effects of an integrated curriculum on student achievement in the intermediate school, grades four, five and six. Student achievement in an integrated curriculum in the areas of reading, writing, and language was compared to student achievement in a non-integrated curriculum in the same subjects. This chapter includes a description of the study sample, a description of the assessment instruments utilized, and a description of the statistical procedures used in analysis of the data.

Because both the district and each intermediate school included in this study shared a common description of academic and self-actualization goals, the researcher initially anticipated comparing the integrated groups across the district. However, observations and interviews undertaken to verify that the integrated group differed from the non-integrated group, revealed significant structural differences regarding the level of integration at each school site. As a result, each school came to be regarded as a separate experiment.

School A offered a fully integrated program throughout the entire school day; throughout the study, School A was identified as highly integrated (HI). School B offered an integrated program in all subjects, except for a math class divided by grade level; thus,
it was identified as moderately integrated (MI). Finally, School C was organized into a half-day integrated program devoting the morning to traditional academic subjects dividing the students by grade level; it was thus identified as providing low integration (LI). It must be noted that, although School C is identified as having low integration (LI), students' afternoon activities and programs were highly integrative. Therefore, the integrated group in School C could justifiably remain distinguishable from a solely traditional classroom group in the same school.

The Sample

Subjects in this study were students in grades four, five and six, in three separate public intermediate schools in a suburban school district near Chicago, Illinois. The initial sample included 132 fourth grade students, 114 fifth grade students, and 122 sixth grade students for a total sample size of 368 students. Demographically, the student population represented a mixed racial and ethnic background and a predominantly middle to slightly upper middle class socioeconomic suburban population.

The students were randomly placed in integrated and non-integrated class groups by the individual school administrations. Although the administrations reported that random placement had occurred, the researcher employed statistical assurances to verify random placement. In order to ensure a comparable sample, a matched control group was established. As a result, sample sizes reported on tables throughout the study may differ slightly because a student may not have completed one of the post-test measures. If a test score was missing, both the control and the match were omitted from the t-test.
Students were stratified by school, grade, and gender within each of the categories and were rank ordered using two standardized test scores from the previous year. These test scores were taken from student performance on the total reading and total math portions of the California Test of Basic Skills (CTBS), Form A, administered during May/June 1994. Students in the integrated group were matched with students in the non-integrated group unless the integrated student and his/her adjacent control student had widely divergent reading and math scores.

To match the stratified students within the school, grade, and gender categories, the reading and math scores from the CTBS were used. The control student selected to match to an integrated student had the minimal sum of differences from the integrated student’s scores on total Reading and total Math. If a student did not take the CTBS and was in the school district the previous year, the district’s competency exam scores were used in place of the corresponding CTBS scores. If a student had no preliminary data, he/she was eliminated from the sample.

In order to ensure that no significant differences existed between the experimental or integrated and control or non-integrated groups at the beginning of the school year, the achievement standard scores from the CTBS administered in June 1994 in the areas of reading and language were analyzed. A paired t-test was used to compare the achievement scores of the students in the two groups on the CTBS test in grades four, five, and six in each of the school sites prior to the assessment. Tables 1, 2, and 3 show statistically significant differences between the two groups in language, School A (HI), grade four and in mathematics, School B (MI), grade four; however, the researcher
concluded the control groups are typical of the student population in the integrated
program since all other grade levels and subject areas show no significant differences.

Table 1

CTBS Scores - School A (HI)

<table>
<thead>
<tr>
<th>Grade 4</th>
<th>Reading</th>
<th>Integrated</th>
<th>Control</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=18 (Pairs)</td>
<td></td>
<td>716.4</td>
<td>715.8</td>
<td>0.232</td>
<td>0.819</td>
</tr>
<tr>
<td></td>
<td></td>
<td>35.1</td>
<td>37.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td>Mean</td>
<td>732.6</td>
<td>716.3</td>
<td>2.224</td>
<td>0.040*</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>35.8</td>
<td>44.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math</td>
<td>Mean</td>
<td>711.2</td>
<td>719.4</td>
<td>-1.084</td>
<td>0.293</td>
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<tr>
<td></td>
<td>SD</td>
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<table>
<thead>
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<th>Grade 5</th>
<th>Reading</th>
<th>Integrated</th>
<th>Control</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
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* Significant at p < .05
** Significant at p < .01
### Table 2

**CTBS Scores - School B (MI)**

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* Significant at p < .05
** Significant at p < .01
Table 3

CTBS - School C (LI)

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* Significant at p < .05
** Significant at p < .01
Curriculum Description and Design

The curriculum design for all grades in the school district in this study, both integrated and non-integrated, flow from the state goals for learning. The state of Illinois established achievement goals for all students by the completion of grade 12 in every subject area. In reading and language arts, the state goals for grades four, five and six have been identified as:

1. The student will be able to read, comprehend, interpret, evaluate and use written material.
2. The student will be able to listen critically and analytically.
3. The student will be able to write standard English in a grammatical, well organized and coherent manner for a variety of purposes.
4. The student will be able to use spoken language effectively in formal and informal situations to communicate ideas and information and to ask and answer questions.
5. The student will be able to understand the various forms of significant literature representative of different cultures, eras, and ideas.
6. The student will be able to understand how and why language functions and evolves. (District Curriculum Expectations, 1994)

Based on these state goals, the school district in this study also developed specific learner outcomes and objectives for each grade in every subject area. These outcomes and objectives are referred to as curriculum expectations and are included in Appendix A. The curriculum expectations, like the six state goals listed previously, detail broad academic skills allowing room for professional creativity in their implementation and approach by various schools. Thus, the differences between the integrated and the non-integrated groups were not found in different district learner outcomes or objectives between the two groups, but rather, in the implementation of the outlined curriculum expectations.
In the integrated program within all three schools, students experienced a curriculum that cut across subject matter lines and focused on broad areas of study. The students used project-based and problem-based approaches to study a wide variety of subjects. Students actively negotiated their course of study with the teachers, so that teachers were guides to information by facilitating small group discussions and brainstorming ideas with the students. Students had easy access to technology with computers placed in the three integrated classrooms in each school. Multi-age grouping characterized the integrated program. Students retained their grade labels as part of one larger integrated classroom; however, they were not restricted to their respective grade-specific curricula. Each integrated group at each school had approximately seventy-five students (twenty-five students from each grade 4, 5 and 6).

The students in the control group in each of the three schools, were in a non-integrated program. They were separated by grade level and retained their respective grade-level assignments and their respective grade-specific curricula. They were placed in separate classrooms with approximately 25 students per class. In the non-integrated group, students' learning experiences were organized in a traditional format, i.e., subject-matter based (i.e. reading class, writing class, science, math, etc.) with a pre-determined amount of time allotted for each subject. The curriculum was teacher directed with teachers formulating lesson plans for each class with an outline of expected student outcomes. Students in the non-integrated group had access to the school's computer lab which could be utilized during a student's free period or with permission from the
individual teacher. A summary of the curriculum characteristics of Schools A, B, and C is presented in Table 4.

Table 4

Integrated and Non-integrated Curriculum Characteristics

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<th>Non-integrated</th>
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<tr>
<td>Reflects District Outcomes</td>
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<td>Yes</td>
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<tr>
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<td>No</td>
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<tr>
<td>Technology Access</td>
<td>in classroom</td>
<td>school computer lab</td>
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Summary of Observations

The integrated classroom groups and the traditional classroom groups at each of the three intermediate schools in this study were observed by this researcher on different days. A minimum of four observation visits per school site took place from March - May of 1995. In order to create a base for description, specific observation areas were outlined
by this researcher with the assistance of Dr. Mark Smylie and Dr. Joseph Kahne from the University of Illinois Department of Education. The observation questions utilized by the researcher included: (1) what tasks and activities engage the students? (2) how are the students grouped? (3) what are the interactions taking place in the classroom? (4) what are the influences in the classroom rules and activity transitions? (5) what is the nature of engagement and off task behavior? and (6) what are the materials actively being used by students and teachers? A complete listing of questions and summary of observations are found in Appendix B. Interviews were not cited directly in this study since they were considered confidential.

The three schools in this study began the 1994-95 school year with the same district vision and integrated curriculum program. Each integrated program offered a curriculum across subject areas that was multi-age (Terminology, p. 9). Teachers assumed the role of guides and facilitators to information and the students became active learners, working in problem-based or project-based settings. The students were active in creating the structure and organization of their school time and efforts. However, during the course of the first semester, two of the three schools slightly altered their integrated curriculum program.

School A (HI) maintained the vision of an integrated program so that the entire school day was consistently organized to allow students to negotiate with teachers who acted as facilitators and guides according to the original vision of the district. The students were actively involved in organizing their learning experiences in the program. School B (MI) separated into grade levels for a math class in the afternoon. At this point
in the day, School B resembled a non-integrated classroom with students assuming a more passive role and teachers offering direct instruction. In School C (LI), the morning was organized by grade level and by discipline according to the school district's texts and recommendations, i.e., social studies, math, and reading. School C (LI) offered an integrated program in the afternoon only. The morning program was a non-integrated program experience with teacher-directed learning activities. However, the afternoon session was problem-based/project-based with teachers changing roles to become information facilitators.

Although the program varied at each school site, the overall atmosphere in each school appeared to the researcher to be quite similar. Each school provided a safe, secure and welcoming place for learning. The climate at each school encouraged curiosity and positive interaction. All of the rooms were bright, colorful, and comfortable, offering students a place to grow academically, emotionally, and socially. Each of the schools offered resource books, materials and computers/printers/modems as part of the integrated classroom so that students could initially research almost any project- or problem-based issue. At each school during the integrated program, the teachers acted as guides for students, offering suggestions and assistance as pupils worked in small groups. Overall, the researcher noted an excellent variety of student work and observed a palpable enthusiasm for learning present in each school.

Assessment Instruments

The assessment instruments utilized in this study were performance-based measures. The same assessment instruments were administered to all of the students in
the study. In reading, the instruments assessed literal comprehension and inferential comprehension for a total reading score; in writing, the instruments assessed total writing (holistic), content (focus and support/elaboration), and organization; and, in language, they assessed usage/sentence structure and mechanics.

A detailed description of each assessment follows with additional rubric delineations available in the Appendices D, E, F, G, H, and I, as well as, from American College Testing (ACT), Iowa City Iowa, and Education Consultants Research Associates (ECRA), Arlington Heights, Illinois. Two experienced graders who were also certified teachers, were assigned to read and score each writing sample (p. 55).

Reading and Essay Writing Assessment

Based on Literature Prompt

Reading was assessed through the use of a reading performance test designed to evaluate literal comprehension and inferential comprehension. The reading and essay writing assessment tool was developed by ECRA. In the literal comprehension section of the assessment, students independently read a passage based on a literature excerpt and answered questions based on the literal comprehension or actual content of the passage. Each literal comprehension question was given a value of one point (Appendix C).

In the inferential comprehension section of the assessment, students responded in writing to a prompt relating to the theme or meaning presented in the literature passage. Students inferred and constructed meaning from the passage presented and demonstrated their comprehension through their individual written responses. For example, if the passage was a satirical criticism of the way our society treats the elderly, the best writing
samples would note the author's intended meaning beyond the literal meaning stated in
the text.

Inferential comprehension was judged on a six point scale established by ECRA
(Appendix D). This independent, performance-based assessment evaluated writing
through total writing (holistic), content (focus and support/elaboration) and organization.
Two graders independently assigned the points to student responses based on the ECRA
scale which stresses development of a main idea utilizing details and support from the
literature prompt. The two scores, literal comprehension, and inferential comprehension,
were combined to form the Total Reading Score, with inferential comprehension given
twice the weight of the literal comprehension because it is considered a higher-order
performance skill.

Essay Writing Assessment Based on
Student-Selected Prompt

The second independent writing assessment was based on a student-selected
prompt and was evaluated in the same following three areas: total writing (holistic),
content (focus and support/elaboration) and organization. The student writing sample
was given a rating from one to six in each of the three categories. The Writing
Assessment rubrics were those developed by ACT in the Comprehensive Assessment
Program (CAP).

Each essay was graded holistically for overall effectiveness on a six-point scale
for scoring the Total Writing assessment. The scale used for grading total writing
(holistic) included content and organization. The scales were established by ACT in the
CAP writing assessment (Appendices E, F, and G). Criteria for what constitutes a good writing sample were limited to four elements: (1) a clear statement of purpose (or thesis); (2) clear examples; (3) clear focus; and 4) relative freedom from errors in sentence structure and mechanics. The two graders used these four criteria as the basis for rating the quality of the writing samples.

Language Assessment Based on Writing Sample

from Literature and Student-Selected Prompt

In assessing language, the literature prompt and student-selected writing prompt were evaluated for usage/sentence structure and mechanics according to the ACT six-point scale in the CAP writing assessment as outlined in Appendices H and I. Specifically, pronoun usage, subject-verb agreement, variety of syntax and sentence lengths, absence of run-ons and frequency of fragment sentences were evaluated.

Reliability Analyses

The scores given by each grader for each feature were correlated. The Pearson Product-Moment Correlation ($r$) can be used to measure inter-rater reliability. However, the correlation between independent gradings of tests is not bounded by 1.00 but rather by the maximum correlation that can be measured using the same ratings under an optimal sorting. That sorting is constructed by rank ordering the two graders' scores, regardless of paper, and then computing a Pearson Correlation $r_m$. The adjusted correlation for inter-rater agreement is $r_a = r/r_m$. 

Statistical Design and Procedures

In April of 1995, performance assessments in the following areas were administered to all students in the district: reading (literal and inferential comprehension), writing (total writing/holistic, content and organization) and language (usage/sentence structure and mechanics). The interrater reliabilities were computed for these performance measures for each grade, four, five, and six in the areas of reading, writing and language. The reliability computed for each of these measures is: in reading, .90; in total writing, .92; in content, .87; in organization, .89; in usage/sentence structure, .89; and in mechanics, .93. These high interrater reliability results support the fact that the method of grading and the resulting assessment scores are stable and produce highly reliable estimates of student ratings by the graders.

To ensure scoring validity, each test was graded by two independent graders who were certified teachers and experienced graders. The graders were not associated with the schools used in this study. Both graders received the same training. First, anchor papers were chosen to illustrate each possible score; extensive discussion and practice were undertaken prior to rating the actual student responses. To prevent grader drift, the team of graders were in constant communication, meeting two times per week to evaluate anchor papers and/or address additional issues which had arisen in the course of their work. The close communication network established by the graders fostered the reliability of the evaluation process. In the event a test score varied by more than one point between two graders, a third independent grader, also a certified teacher and experienced grader, scored the test. The coefficient of correlation between graders is: in
reading, 79.3%; in total writing, 73.9%; in content, 69.2%; in usage and sentence structure, 68.8%; in organization, 69.3%; and in mechanics, 69.9%. Therefore, in the majority of cases, the grading team was in agreement regarding student scores.

To ascertain any significant differences in achievement between the two groups, a paired t-test was used to compare scores of the integrated curriculum and non-integrated curriculum groups on all performance measures. In order to determine if there were any significant differences among the three schools, comparisons were made on an individual school basis.

The CTBS reading and language scores for May 1994 were also used to determine if any significant differences existed between the two groups prior to placement in either the integrated or non-integrated group as measured by this norm-referenced general achievement test.

**Hypotheses**

The purpose of this study was to determine the effects of an integrated instruction program on the achievement of students in the areas of reading, writing and language.

The null hypotheses of this study were:

1. There are no significant differences between the achievement of students in an integrated instructional program and a non-integrated instructional program in the area of reading.

2. There are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of writing.
3. There are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of language.

It was determined that the null hypotheses would be rejected at the .05 level of significance (Alpha = .05). The primary statistical technique was the paired t-test.

The results of the data analysis are presented in Chapter IV in both narrative and table form.
CHAPTER IV
PRESENTATION AND ANALYSIS OF DATA

This study sought to determine whether an integrated curriculum at an intermediate school level, grades four, five, and six, influenced student achievement in the areas of reading, writing and language development. This chapter presents the findings and analysis of the data collected during the course of the study.

Prior to their inclusion in the integrated curriculum group, students at three public intermediate schools in a suburban school district near Chicago, Illinois, were administered the California Test of Basic Skills (CTBS). Utilizing a matched pair t-test, it was determined that student achievement scores in the subject areas of reading, language, and mathematics for those students placed in the integrated curriculum group were statistically similar to scores of those students placed in the traditional curriculum group. Tables 1, 2, and 3 (Chapter III, pp. 44-46) provide a summary of these results. Therefore, at the beginning of the school year, it was determined that student achievement was comparable in these subject areas.

The experimental design of this research identified student achievement in grades four, five, and six as the dependent variable in the study and levels of integration, i.e., high integration (HI), moderate integration (MI), and low integration (LI) as the
independent variable. Multiple assessment measures in reading, writing, and language were employed to test the null hypotheses presented in Chapter III (pp. 56-57).

Observations of each school as described in Chapter III and summarized in Appendix B were conducted by the researcher to identify any structural differences in the integrated curriculum as it was implemented by the three separate intermediate schools. As noted in Chapter III, the schools were identified as School A (HI), School B (MI), and School C (LI). The classroom observations and interviews with district administration, school principals, teachers, and students were undertaken to confirm differences among the three schools as to the degree of integration but were not formally synthesized for this project.

**Analysis of Results - School A (HI)**

Table 5 summarizes the comparison of reading scores between paired groupings (pp. 42-43) of students in the highly integrated curriculum group and students in the traditional curriculum, or control group, grades four, five, and six.
### Table 5

**Comparison of Reading Scores - School A (HI)**

<table>
<thead>
<tr>
<th>Grade 4</th>
<th>Reading Total</th>
<th>Integrated Mean</th>
<th>Control Mean</th>
<th>t</th>
<th>p</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>14.82</td>
<td>15.41</td>
<td>-1.127</td>
<td>0.276</td>
</tr>
<tr>
<td>N=17 (Pairs)</td>
<td>SD</td>
<td>1.94</td>
<td>1.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literal Comprehension</td>
<td>Mean</td>
<td>5.24</td>
<td>5.59</td>
<td>-1.461</td>
<td>0.164</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>0.83</td>
<td>0.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inferential Comprehension</td>
<td>Mean</td>
<td>4.79</td>
<td>4.91</td>
<td>-0.474</td>
<td>0.642</td>
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<tr>
<td></td>
<td>SD</td>
<td>0.83</td>
<td>0.78</td>
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<table>
<thead>
<tr>
<th>Grade 5</th>
<th>Reading Total</th>
<th>Integrated Mean</th>
<th>Control Mean</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>15.31</td>
<td>13.54</td>
<td>1.791</td>
<td>0.099</td>
</tr>
<tr>
<td>N=13 (Pairs)</td>
<td>SD</td>
<td>2.93</td>
<td>2.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literal Comprehension</td>
<td>Mean</td>
<td>5.23</td>
<td>5.15</td>
<td>0.322</td>
<td>0.753</td>
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<tr>
<td></td>
<td>SD</td>
<td>0.93</td>
<td>0.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inferential Comprehension</td>
<td>Mean</td>
<td>5.04</td>
<td>4.19</td>
<td>1.556</td>
<td>0.146</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>1.36</td>
<td>1.11</td>
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</table>

<table>
<thead>
<tr>
<th>Grade 6</th>
<th>Reading Total</th>
<th>Integrated Mean</th>
<th>Control Mean</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>15.35</td>
<td>13.75</td>
<td>2.610</td>
<td>0.017*</td>
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<tr>
<td>N=20 (Pairs)</td>
<td>SD</td>
<td>1.75</td>
<td>2.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literal Comprehension</td>
<td>Mean</td>
<td>5.55</td>
<td>5.30</td>
<td>1.045</td>
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<td>SD</td>
<td>0.60</td>
<td>0.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inferential Comprehension</td>
<td>Mean</td>
<td>4.90</td>
<td>4.22</td>
<td>2.286</td>
<td>0.034*</td>
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<tr>
<td></td>
<td>SD</td>
<td>7.88</td>
<td>0.97</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant at p < .05

** Significant at p < .01
School A - Grade 4

The mean Reading Total score for the integrated group was 14.82 as compared to a mean score of 15.41 for the control group. From these tabulations, standard deviations of 1.94 for the integrated group and 1.54 for the control group were obtained. This resulted in a t-value of -1.127 which was not significant as indicated by a p-value of .276. The mean Literal Comprehension score for the integrated group was 5.24 as compared to a mean score of 5.59 for the control group. From these tabulations, standard deviations of .83 and .62 were obtained respectively. This resulted in a t-value of -1.461 which was not statistically significant as indicated by a p-value of .164. The mean Inferential Comprehension score for the integrated group was 4.79 as compared to a mean score of 4.91 for the control group. From these mean scores, standard deviations of .83 and .78 were obtained respectively. This resulted in a t-value of -.474 which was not statistically significant as indicated by a p-value of .642.

School A - Grade 5

The mean Reading Total score for the integrated group was 15.31 as compared to a mean score of 13.54 for the control group. From these tabulations, standard deviations of 2.93 for the integrated group and 2.15 for the control group were obtained. This resulted in a t-value of 1.791 which was not statistically significant as indicated by a p-value of .099. The mean Literal Comprehension score for the integrated group was 5.23 as compared to a mean score of 5.15 for the control group. From these tabulations, standard deviations of .93 and .90 were obtained respectively. This resulted in a t-value of .322 which was not statistically significant as indicated by a p-value of .753. The
mean Inferential Comprehension score for the integrated group was 5.04 as compared to a mean score of 4.19 for the control group. From these tabulations, standard deviations of 1.36 and 1.11 were obtained respectively. This resulted in a t-value of 1.556 which was not statistically significant as indicated by a p-value of .146.

School A - Grade 6

The mean Reading Total score for the integrated group was 15.35 as compared to a mean score of 13.75 for the control group. From these tabulations, standard deviations of 1.75 for the integrated group and 2.02 for the control group were obtained. This resulted in a t-value of 2.610 which was statistically significant in favor of the integrated group as indicated by a p-value of .017. The mean Literal Comprehension score for the integrated group was 5.55 as compared to a mean score of 5.30 for the control group. From these tabulations, standard deviations of .60 and .80 were obtained respectively. This resulted in a t-value of 1.045 which was not statistically significant as indicated by a p-value of .309. The mean Inferential Comprehension score for the integrated group was 4.90 as compared to a mean score of 4.22 for the control group. From these scores, standard deviations of 7.88 and .97 were obtained respectively. This resulted in a t-value of 2.286 which was statistically significant favoring the integrated group as indicated by a p-value of .034.

Analysis of the scores demonstrates that no statistical differences exist between the experimental group and the control group of students in the areas of Total Reading, Literal Comprehension and Inferential Comprehension in grades four and five. However, in grade six, a statistical difference at the .05 level exists between the experimental and
the control groups favoring achievement in the integrated curriculum group in Reading Total and Inferential Comprehension. Owing to the particular manner in which the Reading section of the assessment tool was scored (Chapter III, pp. 52-53), this significant difference points to an increase in student achievement in the area of inferential comprehension.

Therefore, the null hypothesis, "(t)here are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of reading," is not rejected for grades 4 and 5 and is rejected for grade 6 in School A (HI).

Table 6 summarizes the comparison of writing and language scores from the literature prompt between paired groupings of students in the highly integrated curriculum group and students in the traditional curriculum, or control group, grades four, five, and six.

**School A - Grade 4**

The mean Holistic score for the integrated group was 4.56 as compared to a mean score of 4.91 for the control group. From these tabulations, standard deviations of 1.58 and 1.05 were obtained. This resulted in a t-value of -1.322 which was not statistically significant as indicated by a p-value of .205. The mean Content score for the integrated group was 4.71 as compared to a mean score of 5.06 for the control group. From these tabulations, standard deviations of 1.16 and .83 were obtained respectively. This resulted in a t-value of -1.244 which was not statistically significant as indicated by a p-value of .231. The mean Organization score for the integrated group was 4.82 as compared to a
### Table 6

#### Comparison of Writing and Language Scores from Literature Prompt - School A (HI)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Holistic</th>
<th>Integrated</th>
<th>Control</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Pairs)</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td></td>
<td>N=17</td>
<td>4.56</td>
<td>1.58</td>
<td>4.91</td>
<td>1.05</td>
</tr>
<tr>
<td>Grade 4</td>
<td>Content</td>
<td>4.71</td>
<td>1.16</td>
<td>5.06</td>
<td>0.83</td>
</tr>
<tr>
<td></td>
<td>Organization</td>
<td>4.82</td>
<td>1.01</td>
<td>5.24</td>
<td>1.03</td>
</tr>
<tr>
<td></td>
<td>Usage/Sentence Structure</td>
<td>4.59</td>
<td>1.23</td>
<td>4.82</td>
<td>1.19</td>
</tr>
<tr>
<td></td>
<td>Mechanics</td>
<td>4.41</td>
<td>1.06</td>
<td>4.76</td>
<td>0.97</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade 5</th>
<th>Holistic</th>
<th>Mean</th>
<th>SD</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Pairs)</td>
<td>5.23</td>
<td>0.56</td>
<td>4.96</td>
<td>0.63</td>
<td>1.047</td>
<td>0.316</td>
</tr>
<tr>
<td>Grade 5</td>
<td>Content</td>
<td>5.23</td>
<td>0.60</td>
<td>4.92</td>
<td>0.64</td>
<td>1.298</td>
<td>0.219</td>
</tr>
<tr>
<td></td>
<td>Organization</td>
<td>5.46</td>
<td>0.66</td>
<td>4.92</td>
<td>0.95</td>
<td>1.534</td>
<td>0.151</td>
</tr>
<tr>
<td></td>
<td>Usage/Sentence Structure</td>
<td>4.92</td>
<td>0.64</td>
<td>4.77</td>
<td>0.83</td>
<td>0.485</td>
<td>0.636</td>
</tr>
<tr>
<td></td>
<td>Mechanics</td>
<td>4.85</td>
<td>0.69</td>
<td>4.62</td>
<td>0.87</td>
<td>0.674</td>
<td>0.513</td>
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</table>

<table>
<thead>
<tr>
<th>Grade 6</th>
<th>Holistic</th>
<th>Mean</th>
<th>SD</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Pairs)</td>
<td>4.47</td>
<td>0.73</td>
<td>4.03</td>
<td>1.03</td>
<td>1.774</td>
<td>0.921</td>
</tr>
<tr>
<td>Grade 6</td>
<td>Content</td>
<td>4.60</td>
<td>0.75</td>
<td>4.00</td>
<td>1.03</td>
<td>2.108</td>
<td>0.047*</td>
</tr>
<tr>
<td></td>
<td>Organization</td>
<td>4.30</td>
<td>0.73</td>
<td>4.25</td>
<td>1.12</td>
<td>0.165</td>
<td>0.871</td>
</tr>
<tr>
<td></td>
<td>Usage/Sentence Structure</td>
<td>4.20</td>
<td>0.62</td>
<td>3.85</td>
<td>0.88</td>
<td>1.324</td>
<td>0.201</td>
</tr>
<tr>
<td></td>
<td>Mechanics</td>
<td>4.30</td>
<td>0.66</td>
<td>4.10</td>
<td>0.97</td>
<td>0.809</td>
<td>0.428</td>
</tr>
</tbody>
</table>

*Significant at p < .05
**Significant at p < .01
mean score of 5.24 for the control group. From these tabulations, standard deviations of 1.01 and 1.03 were obtained respectively. This resulted in a t-value of 1.595 which was not statistically significant as indicated by a p-value of .130. The mean Usage/Sentence Structure score for the integrated group was 4.59 as compared to a mean score of 4.82 for the control group. From these tabulations, standard deviations of 1.23 and 1.19 were obtained respectively. This resulted in a t-value of -.846 which was not statistically significant as indicated by a p-value of .410. The mean Mechanics score for the integrated group was 4.41 as compared to a mean score of 4.76 for the control group. From these tabulations, standard deviations of 1.06 and .97 were obtained respectively. This resulted in a t-value of -1.191 which was not statistically significant as indicated by a p-value of .251.

School A - Grade 5

The mean Holistic score for the integrated group was 5.23 as compared to a mean score of 4.96 for the control group. From these tabulations, standard deviations of .56 and .63 were obtained respectively. This resulted in a t-value of 1.047 which was not statistically significant as indicated by a p-value of .316. The mean Content score for the integrated group was 5.23 as compared to a mean score of 4.92 for the control group. From these tabulations, standard deviations of .60 and .64 were obtained. This resulted in a t-value of 1.298 which was not statistically significant as indicated by a p-value of .219. The mean Organization score for the integrated group was 5.46 as compared to a mean score of 4.92 for the control group. From these tabulations, standard deviations of .66 and .95 were obtained respectively. This resulted in a t-value of 1.534 which was not
statistically significant as indicated by a p-value of .636. The mean Mechanics score for the integrated group was 4.85 as compared to the mean score of 4.62 for the control group. From these tabulations, standard deviations of .69 and .87 were obtained respectively. This resulted in a t-value of .674 which was not statistically significant as indicated by a p-value of .513.

School A - Grade 6

The mean Holistic score for the integrated group was 4.47 as compared to a mean score of 4.03 for the control group. From these tabulations, standard deviations of .73 and 1.03 were obtained respectively. This resulted in a t-value of 1.774 which was not statistically significant as indicated by a p-value of .921. The mean Content score for the integrated group was 4.60 as compared to a mean score of 4.00 for the control group. From these tabulations, standard deviations of .75 and 1.03 were obtained respectively. This resulted in a t-value of 2.108 which was statistically significant as indicated by a p-value of .047. The mean Organization score for the integrated group was 4.30 as compared to a mean score of 4.25 for the control group. From these tabulations, standard deviations of .73 and 1.12 were obtained respectively. This resulted in a t-value of .165 which was not statistically significant as indicated by a p-value of .871. The mean Usage/Sentence Structure score for the integrated group was 4.20 as compared to a mean score of 3.85 for the control group. From these tabulations, standard deviations of .62 and .88 were obtained respectively. This resulted in a t-value of 1.324 which was not statistically significant as indicated by a p-value of 2.01. The mean Mechanics score for the integrated group was 4.30 as compared to the mean score of 4.10 for the control
group. From these tabulations, standard deviations of .66 and .97 were obtained respectively. This resulted in a t-value of .809 which was not statistically significant as indicated by a p-value of .428.

Analysis of the scores reveals no significant statistical differences in scores between the two groups across all grade levels, four, five, and six.

Therefore, the null hypothesis, "(t)here are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of writing," is not rejected for grades four, five, and six in the writing areas designated as Holistic, Content and Organization for School A (HI).

The null hypothesis, "(t)here are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of language," is also not rejected for grades four, five, and six in the language areas designated as Usage/Sentence Structure and Mechanics for School A (HI).

Table 7 outlines the comparison of writing and language scores from a student-selected prompt between paired groupings of students in the highly integrated curriculum group and students in the traditional curriculum, or control group, grades four, five, and six.
### Table 7

**Comparison of Writing and Language Scores - Student-Selected Prompt - School A (HI)**

<table>
<thead>
<tr>
<th>Grade 4 Holistic</th>
<th>Integrated</th>
<th>Control</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=14 (Pairs)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>4.82</td>
<td>4.82</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>0.93</td>
<td>1.05</td>
<td></td>
</tr>
<tr>
<td>Content</td>
<td>Mean</td>
<td>4.93</td>
<td>4.86</td>
<td>0.249</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>0.73</td>
<td>0.95</td>
<td></td>
</tr>
<tr>
<td>Organization</td>
<td>Mean</td>
<td>4.64</td>
<td>4.64</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>0.93</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Usage/Sentence Structure</td>
<td>Mean</td>
<td>4.86</td>
<td>4.86</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>0.86</td>
<td>1.17</td>
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</tr>
<tr>
<td>Mechanics</td>
<td>Mean</td>
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<td>4.50</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>1.02</td>
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<table>
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<th>Control</th>
<th>t</th>
<th>p</th>
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<td>Mean</td>
<td>5.35</td>
<td>4.42</td>
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<tr>
<td>Content</td>
<td>Mean</td>
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<td>4.54</td>
<td>2.521</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>0.78</td>
<td>1.05</td>
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</tr>
<tr>
<td>Organization</td>
<td>Mean</td>
<td>5.46</td>
<td>4.46</td>
<td>2.550</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>0.66</td>
<td>1.05</td>
<td></td>
</tr>
<tr>
<td>Usage/Sentence Structure</td>
<td>Mean</td>
<td>5.23</td>
<td>4.15</td>
<td>2.809</td>
</tr>
<tr>
<td></td>
<td>SD</td>
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<td>0.80</td>
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</tr>
<tr>
<td>Mechanics</td>
<td>Mean</td>
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<td>4.08</td>
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<tr>
<td></td>
<td>SD</td>
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<td>0.86</td>
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<table>
<thead>
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<th>t</th>
<th>p</th>
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</thead>
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</tr>
<tr>
<td></td>
<td>Mean</td>
<td>5.03</td>
<td>4.42</td>
<td>2.610</td>
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<td></td>
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<td>0.93</td>
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<td>Mean</td>
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<td>4.33</td>
<td>2.486</td>
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<td>SD</td>
<td>0.77</td>
<td>1.08</td>
<td></td>
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<tr>
<td>Organization</td>
<td>Mean</td>
<td>5.22</td>
<td>4.72</td>
<td>1.932</td>
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<tr>
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<td>Mechanics</td>
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<td>SD</td>
<td>0.87</td>
<td>1.14</td>
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</table>

* Significant at p < .05
** Significant at p < .01
School A - Grade 4

The mean Holistic score for the integrated group was 4.82 as compared to a mean score of 4.82 for the control group. From these tabulations, standard deviations of .93 and 1.05 were obtained respectively. This resulted in a t-value of .000 which was not statistically significant as indicated by a p-value of 1.000. The mean Content score for the integrated group was 4.93 as compared to a mean score of 4.86 for the control group. From these tabulations, standard deviations of .73 and .95 were obtained respectively. This resulted in a t-value of .249 which was not statistically significant as indicated by a p-value of .807. The mean Organization score was 4.64 for the integrated group as compared to a mean score of 4.64 for the control group. From these tabulations, standard deviations of .93 and 1.00 were obtained respectively. This resulted in a t-value of .000 which was not statistically significant as indicated by a p-value of 1.000. The mean Usage/Sentence Structure score was 4.86 for the integrated group as compared to a score of 4.86 for the control group. From these tabulations, standard deviations of .86 and 1.17 were obtained respectively. This resulted in a t-value of .000 which was not statistically significant as indicated by a p-value of 1.000. The mean Mechanics score was 4.50 for the integrated group as compared to a score of 4.50 for the control group. From these tabulations, standard deviations of 1.02 and .85 were obtained respectively. This resulted in a t-value of .000 which was not statistically significant as indicated by a p-value of 1.000.
School A - Grade 5

The mean Holistic score for the integrated group was 5.35 as compared to a score of 4.42 for the control group. From these tabulations, standard deviations of .72 and .95 were obtained respectively. This resulted in a t-value of 2.462 which was statistically significant favoring the integrated group as indicated by a p-value of .030. The mean Content score for the integrated group was 5.46 as compared to a mean score of 4.54 for the control group. From these tabulations, standard deviations of .78 and 1.05 were obtained respectively. This resulted in a t-value of 2.521 which was statistically significant favoring the integrated group as indicated by a p-value of .027. The mean Organization score for the integrated group was 5.46 as compared to a mean score of 4.46 for the control group. From these tabulations, standard deviations of .66 and 1.05 were obtained respectively. This resulted in a t-value of 2.550 which was statistically significant favoring the integrated group as indicated by a p-value of .026. The mean Usage/Sentence Structure score for the integrated group was 5.23 as compared to a mean score of 4.15 for the control group. From these tabulations, standard deviations of .72 and .80 were obtained respectively. This resulted in a t-value of 2.809 which was statistically significant favoring the integrated group as indicated by a p-value of .016. The mean Mechanics score for the integrated group was 5.00 as compared to the mean score of 4.08 for the control group. From these tabulations, standard deviations of .82 and .86 were obtained respectively. This resulted in a t-value of 2.222 which was statistically significant favoring the integrated group as indicated by a p-value of .046.
School A - Grade 6

The mean Holistic score for the integrated group was 5.03 as compared to a mean score of 4.42 for the control group. From these tabulations, standard deviations of .80 and .93 were obtained respectively. This resulted in a t-value of 2.610 which was statistically significant favoring the integrated group as indicated by a p-value of .018.

The mean Content score for the integrated group was 5.00 as compared to a mean score of 4.33 for the control group. From these tabulations, standard deviations of .77 and 1.08 were obtained respectively. This resulted in a t-value of 2.486 which was statistically significant favoring the integrated group as indicated by a p-value of .024.

The mean Organization score for the integrated group was 5.22 as compared to a mean score of 4.72 for the control group. From these tabulations, standard deviations of .81 and .90 were obtained respectively. This resulted in a t-value of 1.932 which was not statistically significant as indicated by a p-value of .070.

The mean Usage/Sentence Structure score for the integrated group was 5.11 as compared to a mean score of 4.39 for the control group. From these tabulations, standard deviations of .83 and .98 were obtained respectively. This resulted in a t-value of 2.718 which was statistically significant favoring the integrated group as indicated by a p-value of .015.

The mean Mechanics score for the integrated group was 4.94 as compared to a mean score of 4.33 for the control group. From these tabulations, standard deviations of .87 and 1.14 were obtained respectively. This resulted in a t-value of 2.01 which was not statistically significant as indicated by a p-value of .061.
The resulting statistics reveal no significant differences between the two groups for grade four in the writing areas designated as holistic, content, and organization. However, statistically significant differences at the .05 level exist between the two groups in the writing areas of Holistic, Content and Organization which favor the integrated curriculum group in grades five and six. In Language, a statistical difference at the .05 level favors the integrated curriculum group in the areas of Usage/Sentence Structure and Mechanics in grade five and usage/sentence structure in grade six.

Therefore, the null hypothesis, "(t)here are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of writing is not rejected for grade four and rejected for grades five and six in School A (HI).

The null hypothesis, "(t)here are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of language," is also not rejected for grade four and rejected for grades five and six in School A (HI).

Summary - School A (HI)

Analysis of the data provides evidence of a statistical difference favoring students in the integrated program in School A (HI) in several areas. An increase in writing and language scores from a student-selected prompt were indicated in grades five and six. In grade four, no significant differences were noted between the two groups, therefore resulting in the acceptance of the three null hypotheses of this study in School A (HI).
Evidence of the effect of integration, while positive in some circumstances, was not uniform.

**Analysis of Results - School B (MI)**

Table 8 presents the comparison of reading scores between paired groupings of students in the moderately integrated curriculum group and students in the traditional curriculum, or control group in grades four, five, and six.

**School B - Grade 4**

The mean Reading Total score for the integrated group was 16.45 as compared to a mean score of 14.09 for the control group. From these tabulations, standard deviations of 2.08 and 2.37 were obtained respectively. This resulted in a t-value of 3.397 which was statistically significant as indicated by a p-value of .003. The mean Literal Comprehension score for the integrated group was 5.59 as compared to a mean score of 5.50 for the control group. From these tabulations, standard deviations of .73 for the integrated group and .67 for the control group were obtained. This resulted in a t-value of .400 which was not statistically significant as indicated by a p-value of .693. The mean Inferential Comprehension score was 5.23 for the integrated group as compared to a mean score of 4.29 for the control group. From these tabulations, standard deviations of .85 and 1.10 were obtained respectively. This resulted in a t-value of 3.742 which was statistically significant favoring the integrated group as indicated by a p-value of .001.
Table 8

Comparison of Reading Scores - School B (MI)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Reading Total</th>
<th>Integrated</th>
<th>Control</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 4</td>
<td></td>
<td>16.45</td>
<td>14.09</td>
<td>3.397</td>
<td>0.003**</td>
</tr>
<tr>
<td>N=22</td>
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<td>2.08</td>
<td>2.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Pairs)</td>
<td>Literal Comprehension</td>
<td>5.59</td>
<td>5.50</td>
<td>0.400</td>
<td>0.693</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>0.73</td>
<td>0.67</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inferential Comprehension</td>
<td>5.23</td>
<td>4.29</td>
<td>3.742</td>
<td>0.001**</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>0.85</td>
<td>1.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 5</td>
<td>Reading Total</td>
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<td>Mean</td>
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<td>2.03</td>
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<tr>
<td>(Pairs)</td>
<td>Literal Comprehension</td>
<td>5.69</td>
<td>5.62</td>
<td>0.368</td>
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<td>Mean</td>
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<td>0.62</td>
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<td>Inferential Comprehension</td>
<td>5.22</td>
<td>4.94</td>
<td>0.747</td>
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</tr>
<tr>
<td></td>
<td>Mean</td>
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<td>0.81</td>
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</tr>
<tr>
<td>Grade 6</td>
<td>Reading Total</td>
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<td>14.29</td>
<td>-0.288</td>
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<td>Mean</td>
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<tr>
<td>(Pairs)</td>
<td>Literal Comprehension</td>
<td>5.57</td>
<td>5.43</td>
<td>0.694</td>
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<td></td>
<td>Mean</td>
<td>0.65</td>
<td>0.94</td>
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</tr>
<tr>
<td></td>
<td>Inferential Comprehension</td>
<td>4.29</td>
<td>4.43</td>
<td>-0.479</td>
<td>0.640</td>
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<tr>
<td></td>
<td>Mean</td>
<td>0.61</td>
<td>0.96</td>
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<td></td>
</tr>
</tbody>
</table>

* Significant at p <.05
** Significant at p <.01
School B - Grade 5

The mean Reading Total score for the integrated group was 16.12 as compared to a mean score of 15.50 for the control group. From these tabulations, standard deviations of 2.71 and 2.03 were obtained respectively. This resulted in a t-value of .739 which was not statistically significant as indicated by a p-value of .471. The mean Literal Comprehension score for the integrated group was 5.69 as compared to a mean score of 5.62 for the control group. From these tabulations, standard deviations of .48 and .62 were obtained respectively. This resulted in a t-value of .368 which was not statistically significant as indicated by a p-value of .718. The mean Inferential Comprehension score for the integrated group was 5.22 as compared to a mean score of 4.94 for the control group. From these tabulations, standard deviations of 1.24 and .81 were obtained respectively. This resulted in a t-value of .747 which was not statistically significant as indicated by a p-value of .466.

School B - Grade 6

The mean Reading Total score for the integrated group was 14.14 as compared to a mean score of 14.29 for the control group. From these tabulations, standard deviations of 1.46 and 1.98 were obtained respectively. This resulted in a t-value of -.288 which was not statistically significant as indicated by a p-value of .824. The mean Literal Comprehension score was 5.57 for the integrated group as compared to a mean score of 5.43 for the control group. From these tabulations, standard deviations of .65 and .94 were obtained respectively. This resulted in a t-value of .694 which was not statistically significant as indicated by a p-value of .500. The mean Inferential Comprehension score
was 4.29 for the integrated group as compared to a mean score of 4.43 for the control group. From these tabulations, standard deviations of .61 and .96 were obtained respectively. This resulted in a t-value of -.479 which was not statistically significant as indicated by a p-value of .640.

Results of the t-test demonstrate that a significant difference at the .01 level exists between the experimental and the control group scores in grade four favoring achievement in the integrated program in Total Reading and Inferential Comprehension. Owing to the particular manner in which the Reading section of the assessment tool was scored, (Chapter III, pp. 52-53) this significant difference points to an increase in student achievement in the area of inferential comprehension. However, in grades five and six, no statistical difference exists between the integrated group and the control group in Total Reading.

Therefore, the null hypothesis, "(t)here are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of reading," may be rejected for grade four and is not rejected for grades five and six in School B (MI).

Table 9 summarizes the comparison of writing and language scores from the literature prompt between paired groupings of students in the moderately integrated curriculum group and students in the traditional curriculum, or control program, grades four, five, and six.
### Table 9

**Comparison of Writing and Language Scores from Literature Prompt - School B (MI)**

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<th>p</th>
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<tr>
<td><strong>Holistic</strong></td>
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<td>4.34</td>
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<td>Mean</td>
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<tr>
<td><strong>Organization</strong></td>
<td>Mean</td>
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<td>4.46</td>
<td>2.628</td>
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<td>1.15</td>
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<tr>
<td><strong>Usage/Sentence Structure</strong></td>
<td>Mean</td>
<td>4.82</td>
<td>4.41</td>
<td>2.247</td>
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<tr>
<td></td>
<td>SD</td>
<td>0.96</td>
<td>0.85</td>
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<tr>
<td><strong>Mechanics</strong></td>
<td>Mean</td>
<td>5.04</td>
<td>4.46</td>
<td>2.751</td>
</tr>
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<td></td>
<td>SD</td>
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<td>0.91</td>
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<td><strong>Grade 5</strong></td>
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<tr>
<td><strong>Holistic</strong></td>
<td>Mean</td>
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<td>4.72</td>
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<td><strong>Content</strong></td>
<td>Mean</td>
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<tr>
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<td>4.62</td>
<td>2.522</td>
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<tr>
<td><strong>Usage/Sentence Structure</strong></td>
<td>Mean</td>
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<td>4.75</td>
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<tr>
<td></td>
<td>SD</td>
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<td>1.00</td>
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</tr>
<tr>
<td><strong>Mechanics</strong></td>
<td>Mean</td>
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<td>4.69</td>
<td>-0.488</td>
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<tr>
<td></td>
<td>SD</td>
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<td>1.01</td>
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<td><strong>Grade 6</strong></td>
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<tr>
<td><strong>Holistic</strong></td>
<td>Mean</td>
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<td>4.18</td>
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<td><strong>Content</strong></td>
<td>Mean</td>
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<td>0.458</td>
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<td><strong>Organization</strong></td>
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<td><strong>Usage/Sentence Structure</strong></td>
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<tr>
<td><strong>Mechanics</strong></td>
<td>Mean</td>
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<td>4.36</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>0.63</td>
<td>1.08</td>
<td></td>
</tr>
</tbody>
</table>

* Significant at p < .05  
** Significant at p < .01
School B - Grade 4

The mean Holistic score for the integrated group was 5.00 as compared to a mean score of 4.34 for the control group. From these tabulations, standard deviations of .90 and .97 were obtained respectively. This resulted in a t-value of 3.467 which was statistically significant favoring the integrated group as indicated by a p-value of .002.

The mean Content score for the integrated group was 5.00 as compared to a mean score of 4.46 for the control group. From these tabulations, standard deviations of 1.05 and 1.10 were obtained respectively. This resulted in a t-value of 2.751 which was statistically significant favoring the integrated group as indicated by a p-value of .012.

The mean Organization score for the integrated group was 5.91 as compared to a mean score of 4.46 for the control group. From these tabulations, standard deviations of 1.15 and .96 were obtained respectively. This resulted in a t-value of 2.628 which was statistically significant favoring the integrated program as indicated by a p-value of .016.

The mean Usage/Sentence Structure score for the integrated group was 4.82 as compared to a mean score of 4.41 for the control group. From these tabulations, standard deviations of .96 and .85 were obtained respectively. This resulted in a t-value of 2.247 which was statistically significant favoring the integrated group as indicated by a p-value of .356.

The mean Mechanics score for the integrated group was 5.04 as compared to a mean score of 4.46 for the control group. From these tabulations, standard deviations of .95 and .91 were obtained respectively. This resulted in a t-value of 2.751 which was statistically significant favoring the integrated group as indicated by a p-value of .012.
School B - Grade 5

The mean Holistic score for the integrated group was 5.09 as compared to a mean score of 4.72 for the control group. From these tabulations, standard deviations of .78 and .98 were obtained respectively. This resulted in a t-value of 1.910 which was not statistically significant as indicated by a p-value of .075. The mean Content score for the integrated group was 5.31 as compared to a mean score of 4.75 for the control group. From these tabulations, standard deviations of .87 and .78 were obtained respectively. This resulted in a t-value of 2.522 which was statistically significant favoring the integrated group as indicated by a p-value of .024. The mean Organization score for the integrated group was 5.19 as compared to a mean score of 4.62 for the control group. From these tabulations, standard deviations of .83 and 1.02 were obtained respectively. This resulted in a t-value of 2.522 which was statistically significant favoring the integrated group as indicated by a p-value of .024. The mean Usage/Sentence Structure score for the integrated group was 4.56 as compared to a mean score of 4.75 for the control group. From these tabulations, standard deviations of .73 and 1.00 were obtained respectively. This resulted in a t-value of -.824 which was not statistically significant as indicated by a p-value of .423. The mean Mechanics score for the integrated group was 4.56 as compared to a mean score of 4.69 for the control group. From these tabulations, standard deviations of .81 and 1.01 were obtained respectively. This resulted in a t-value of -.488 which was not statistically significant as indicated by a p-value of .633.
School B - Grade 6

The mean Holistic score for the integrated group was 4.07 as compared to a mean score of 4.18 for the control group. From these tabulations, standard deviations of .65 and 1.08 were obtained respectively. This resulted in a t-value of -.335 which was not statistically significant as indicated by a p-value of .743. The mean Content score for the integrated group was 4.50 as compared to a means score of 4.36 for the control group. From these tabulations, standard deviations of .65 and 1.08 were obtained respectively. This resulted in a t-value of .458 which was not statistically significant as indicated by a p-value of .655. The mean Organization score for the integrated group was 4.07 as compared to a mean score of 4.43. From these tabulations, standard deviations of .92 and 1.09 were obtained respectively. This resulted in a t-value of -1.046 which was not statistically significant as indicated by a p-value of .315. The mean Usage/Sentence Structure score for the integrated group was 4.21 as compared to a mean score of 4.29 for the control group. From these tabulations, standard deviations of .70 and 1.07 were obtained respectively. This resulted in a t-value of -.268 which was not statistically significant as indicated by a p-value of .793. The mean Mechanics score for the integrated group was 4.36 as compared to a mean score of 4.36 for the control group. From these tabulations, standard deviations of .63 and 1.08 were obtained respectively. This resulted in a t-value of .000 which was not statistically significant as indicated by a p-value of 1.000.
Results of the t-test indicate that significant differences in scores between achievement of the experimental and the control groups favored the integrated group in all writing and language areas in grade four and in two writing areas in grade five. In grade six, no significant differences emerge between the integrated curriculum group and the traditional curriculum group.

Therefore, the null hypothesis, "(t)here are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of writing," may be rejected for grade four based on a significant difference at the .01 level in the area designated as Holistic and at the .05 level for grades four and five in the areas designated as Content and Organization. The null hypothesis is not rejected for grade six in the writing areas of Holistic, Content, and Organization for School B (MI).

The null hypothesis, "(t)here are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of language," may be rejected for grade four based on a statistical difference at the .05 level and is not rejected for grades five and six in the language areas of Usage/Sentence Structure and Mechanics.

Table 10 summarizes the comparison of writing and language scores from the student-selected prompt between paired groupings of students in the moderately integrated curriculum group and students in the traditional curriculum, or control group in grades four, five, and six.
<table>
<thead>
<tr>
<th>Grade</th>
<th>Domain</th>
<th>Mean (Integrated)</th>
<th>Mean (Control)</th>
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<th>p</th>
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<td>0.66</td>
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* Significant at p < .05
** Significant at p < .01
School B - Grade 4

The mean Holistic score for the integrated group was 4.33 as compared to a mean score of 4.42 for the control group. From these tabulations, standard deviations of 1.01 and 1.07 were obtained respectively. This resulted in a t-value of -.368 which was not statistically significant as indicated by a p-value of .716. The mean Content score for the integrated group was 4.67 as compared to a mean score of 4.79 for the control group. From these tabulations, standard deviations of .96 and 1.18 were obtained respectively. This resulted in a t-value of -.461 which was not statistically significant as indicated by a p-value of .649. The mean Organization score for the integrated group was 4.75 as compared to a mean score of 4.54 for the control group. From these tabulations, standard deviations of .99 and 1.10 were obtained respectively. This resulted in a t-value of .926 which was not statistically significant as indicated by a p-value of .364. The mean Usage/Sentence Structure score for the integrated group was 4.46 as compared to a mean score of 4.38 for the control group. From these tabulations, standard deviations of .98 and 1.06 were obtained respectively. This resulted in a t-value of .371 which was not statistically significant as indicated by a p-value of .714. The mean Mechanics score for the integrated group was 4.08 as compared to a mean score of 4.21 for the control group. From these tabulations, standard deviations of 1.02 and 1.02 were obtained respectively. This resulted in a t-value of -.592 which was not statistically significant as indicated by a p-value of .560.
School B - Grade 5

The mean Holistic score for the integrated group was 5.18 as compared to a mean score of 4.55 for the control group. From these tabulations, standard deviations of .85 and .94 were obtained respectively. This resulted in a t-value of 2.650 which was statistically significant favoring the integrated group as indicated by a p-value of 1.63.

The mean Content score for the integrated group was 5.37 as compared to a mean of 4.84 for the control group. From these tabulations, standard deviations of .68 and .96 were obtained respectively. This resulted in a t-value of 2.535 which was statistically significant as indicated by a p-value of .021.

The mean Organization score for the integrated group was 5.32 as compared to a mean score of 4.47 for the control group. From these tabulations, standard deviations of .75 and 1.07 were obtained respectively. This resulted in a t-value of 3.281 which was statistically significant favoring the integrated group as indicated by a p-value of .004.

The mean Usage/Sentence Structure score for the integrated group was 5.16 as compared to a mean score of 4.32 for the control group. From these tabulations, standard deviations of .90 and .82 were obtained respectively. This resulted in a t-value of 3.437 which was statistically significant favoring the integrated group as indicated by a p-value of .003.

The mean Mechanics score for the integrated group was 4.74 as compared to a mean score of 4.05 for the control group. From these tabulations, standard deviations of 1.24 and .78 were obtained respectively. This resulted in a t-value of 2.974 which was statistically significant favoring the integrated group indicated by a p-value of .008.
The mean Holistic score for the integrated group was 4.27 as compared to a mean score of 4.40 for the control group. From these tabulations, standard deviations of .56 and .57 were obtained respectively. This resulted in a t-value of -.695 which was not statistically significant as indicated by a p-value of .499. The mean Content score for the integrated group was 4.07 as compared to a mean score of 4.80 for the control group. From these tabulations, standard deviations of .70 and .78 were obtained respectively. This resulted in a negative t-value of -2.750 which was significant favoring the control group as indicated by a p-value of .016. The mean score of Organization for the integrated group was 4.60 as compared to a mean score of 4.67 for the control group. From these tabulations, standard deviations of .83 and .90 were obtained respectively. This resulted in a t-value of -.211 which was not statistically significant as indicated by a p-value of .839. The mean Usage/Sentence Structure score for the integrated group was 4.20 as compared to a mean score of 4.20 for the control group. From these tabulations, standard deviations of .56 and .56 were obtained respectively. This resulted in a t-value of .000 which was not statistically significant as indicated by a p-value of 1.000. The mean Mechanics score for the integrated group was 4.00 as compared to a mean score of 4.00 for the control group. From these tabulations, standard deviations of .54 and .66 were obtained respectively. This resulted in a t-value of .000 which was not statistically significant as indicated by a p-value of 1.000.

No significant differences exist between the two groups in grade four in the writing areas designated as Holistic, Content, and Organization. However, statistically
significant differences exist between the two groups in grade five writing areas, Holistic and Content at the .05 level and in Organization at the .01 level. These differences favor the integrated curriculum group. In grade six, a significance at the .05 level favors the control group.

Therefore, the null hypothesis, "(t)here are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of writing," is not rejected for grade four and rejected for grades five and six in School B (MI).

The null hypothesis, "(t)here are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of language," is not rejected for grades four and six and rejected for grade five in the language areas of Usage/Sentence Structure and Mechanics in School B (MI).

Summary - School B (MI)

Analysis of the data from the multiple assessment measures in reading, writing, and language for School B (MI) revealed statistical differences favoring the integrated students in grade four. In grade five, significant differences also favoring students in the integrated curriculum were noted in writing and language development. Therefore, two of the three hypotheses presented in this study may be rejected for School B (MI).

Evidence of the positive effect of an integrated curriculum is therefore present in two of the three grades tested. Since no significant differences can be noted between the two groups in grade six, the three null hypotheses of this study are not rejected. Clearly,
evidence of the effect of integration, while positive in some circumstances, was not uniform.

**Analysis of Results - School C (LI)**

Table 11 presents the comparison of reading scores between paired groupings of students in the low integrated curriculum group and students in the traditional curriculum, or control group, grades four, five, and six.

**School C - Grade 4**

The mean Reading Total score for the integrated group was 13.77 as compared to a mean score of 14.88 for the control group. From these tabulations, standard deviations of 3.07 and 2.12 were obtained respectively. This resulted in a t-value of -1.135 which was not statistically significant as indicated by a p-value of .273. The mean Literal Comprehension score for the integrated group was 4.82 as compared to a mean score of 5.29 for the control group. From these tabulations, standard deviations of 1.24 and .69 were obtained respectively. This resulted in a t-value of -1.461 which was not statistically significant as indicated by a p-value of .164. The mean Inferential Comprehension score for the integrated group was 4.47 as compared to a mean score of 4.79 for the control group. From these tabulations, standard deviations of 1.24 and .90 were obtained respectively. This resulted in a t-value of -.710 which was not statistically significant as indicated by a p-value of .488.
Table 11

Comparison of Reading Scores - School C (LI)

<table>
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<tr>
<th>Grade</th>
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<th>Control</th>
<th>t</th>
<th>p</th>
</tr>
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<td></td>
<td>Mean</td>
<td>13.77</td>
<td>14.88</td>
<td>-1.135</td>
<td>0.273</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>3.07</td>
<td>2.12</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>Mean</td>
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<td>5.29</td>
<td>-1.461</td>
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<td>SD</td>
<td>1.24</td>
<td>0.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inferential Comprehension</td>
<td>Mean</td>
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<td>4.79</td>
<td>-0.710</td>
</tr>
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<td>SD</td>
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<tr>
<td>Grade 5</td>
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</tr>
<tr>
<td></td>
<td>Literal Comprehension</td>
<td>Mean</td>
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<td>5.26</td>
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</tr>
<tr>
<td></td>
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<td>Mean</td>
<td>4.21</td>
<td>4.42</td>
<td>-0.709</td>
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<td></td>
</tr>
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<td>Grade 6</td>
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<td>SD</td>
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<td>3.23</td>
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</tr>
<tr>
<td></td>
<td>Literal Comprehension</td>
<td>Mean</td>
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<td>5.05</td>
<td>-1.371</td>
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<tr>
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<td>Inferential Comprehension</td>
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<td>4.05</td>
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</table>

* Significant at p < .05
** Significant at p < .01
School C - Grade 5

The mean Reading Total score for the integrated group was 13.63 as compared to a mean score of 14.11 for the control group. From these tabulations, standard deviations of 2.14 and 2.26 were obtained respectively. This resulted in a t-value of -.784 which was not statistically significant as indicated by a p-value of .443. The mean Literal Comprehension score for the integrated group was 5.21 as compared to a mean score of 5.26 for the control group. From these tabulations, standard deviations of .92 and .56 were obtained respectively. This resulted in a t-value of -.236 which was not statistically significant as indicated by a p-value of .816. The mean Inferential Comprehension score for the integrated group was 4.21 as compared to a mean score of 4.42 for the control group. From these tabulations, standard deviations of .85 and 1.07 were obtained respectively. This resulted in a t-value of -.709 which was not statistically significant as indicated by a p-value of .487.

School C - Grade 6

The mean Reading Total score for the integrated group was 12.90 as compared to a mean score of 13.15 for the control group. From these tabulations, standard deviations of 3.11 and 3.23 were obtained respectively. This resulted in a t-value of -.356 which was not statistically significant as indicated by a p-value of .726. The mean Literal Comprehension score for the integrated group was 4.60 as compared to a mean score of 5.05 for the control group. From these tabulations, standard deviations of 1.50 and 1.23 were obtained respectively. This resulted in a t-value of -1.371 which was not statistically significant as indicated by a p-value of .186. The mean Inferential
Comprehension score for the integrated curriculum was 4.15 as compared to a mean score of 4.05 for the control group. From these tabulations, standard deviations of 1.15 and 1.42 were obtained respectively. This resulted in a t-value of .291 which was not significant as indicated by a p-value of .774.

Analysis of the scores demonstrates that no statistical differences exist between scores of the experimental group of students and the control group of students in the areas of reading designed as Total Reading, Literal Comprehension and Inferential Comprehension across all grade levels four, five, and six.

Therefore, the null hypothesis, "(t)here are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of reading," is not rejected for grades four, five, and six in School C (LI).

Table 12 outlines the comparison of writing and language scores between paired groupings of students in the low integrated curriculum group and students in the traditional curriculum, or control group from the literature prompt in grades four, five, and six.
Table 12

Comparison of Writing and Language Scores from Literature Prompt - School C (LI)

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<td>4.18</td>
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<td>5</td>
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* Significant at p < .05
** Significant at p < .01
The mean Holistic score for the integrated group was 4.50 as compared to a mean score of 4.56 for the control group. From these tabulations, standard deviations of .77 and .75 were obtained. This resulted in a t-value of -.179 which was not statistically significant as indicated by a p-value of .860. The mean Content score for the integrated group was 4.59 as compared to a mean score of 4.65 for the control group. From these tabulations, standard deviations of .80 and .86 were obtained respectively. This resulted in a t-value of -.194 which was not statistically significant as indicated by a p-value of .848. The mean Organization score for the integrated group was 4.41 as compared to a mean score of 4.59 for the control group. From these tabulations, standard deviations of .71 and .87 were obtained respectively. This resulted in a t-value of -.614 which was not statistically significant as indicated by a p-value of .548. The mean Usage/Sentence Structure score for the integrated group was 4.06 as compared to a mean score of 4.35 for the control group. From these tabulations, standard deviations of .66 and .61 were obtained respectively. This resulted in a t-value of -1.231 which was not statistically significant as indicated by a p-value of .236. The mean Mechanics score for the integrated group was 4.35 as compared to a mean score of 4.18 for the control group. From these tabulations, standard deviations of .86 and .64 were obtained respectively. This resulted in a t-value of .614 which was not statistically significant as indicated by a p-value of .548.
School C - Grade 5

The mean Holistic score for the integrated group was 4.61 as compared to a mean score of 4.55 for the control group. From these tabulations, standard deviations of .81 and .98 were obtained respectively. This resulted in a t-value of .215 which was not statistically significant as indicated by a p-value of .832. The mean Content score for the integrated group was 4.68 as compared to a mean score of 4.53 for the control group. From these tabulations, standard deviations of .75 and .84 were obtained. This resulted in a t-value of .900 which was not statistically significant as indicated by a p-value of .380. The mean Organization score for the integrated group was 4.42 as compared to a mean score of 4.26 for the control group. From these tabulations, standard deviations of 1.02 and .93 were obtained respectively. This resulted in a t-value of .512 which was not statistically significant as indicated by a p-value of .615. The mean Usage/Sentence Structure score for the integrated group was 4.37 as compared to a mean score of 4.47 for the control group. From these tabulations, standard deviations of .95 and .96 were obtained respectively. This resulted in a t-value of -.399 which was not statistically significant as indicated by a p-value of .695. The mean Mechanics score for the integrated group was 4.42 as compared to the mean score of 4.37 for the control group. From these tabulations, standard deviations of .84 and .95 were obtained respectively. This resulted in a t-value of .213 which was not statistically significant as indicated by a p-value of .834.
School C - Grade 6

The mean Holistic score for the integrated group was 4.05 as compared to a mean score of 4.12 for the control group. From these tabulations, standard deviations of 1.28 and 1.31 were obtained respectively. This resulted in a t-value of -.212 which was not statistically significant as indicated by a p-value of .835. The mean Content score for the integrated group was 4.10 as compared to a mean score of 4.10 for the control group. From these tabulations, standard deviations of 1.17 and 1.34 were obtained respectively. This resulted in a t-value of .000 which was not statistically significant as indicated by a p-value of 1.000. The mean Organization score for the integrated group was 4.35 as compared to a mean score of 4.15 for the control group. From these tabulations, standard deviations of 1.27 and 1.35 were obtained respectively. This resulted in a t-value of .525 which was not statistically significant as indicated by a p-value of .606. The mean Usage/Sentence Structure score for the integrated group was 3.75 as compared to a mean score of 4.25 for the control group. From these tabulations, standard deviations of 1.25 and 1.41 were obtained respectively. This resulted in a t-value of -1.910 which was not statistically significant as indicated by a p-value of .248. The mean Mechanics score for the integrated group was 3.75 as compared to the mean score of 4.30 for the control group. From these tabulations, standard deviations of 1.25 and 1.49 were obtained respectively. This resulted in a t-value of -1.421 which was not statistically significant as indicated by a p-value of .172.
No significant differences are apparent in scores between the two groups across all grades and assessment areas of writing, i.e., Holistic, Content, Organization, and language, i.e., Usage/Sentence Structure and Mechanics in School C (LI).

Therefore, the null hypothesis, "(t)here are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of writing," is not rejected for grades four, five, and six for School C (LI).

The null hypothesis, "(t)here are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of language," is also not rejected for grades four, five, and six for School C (LI).

Table 13 presents the comparison of writing and language scores from a student-selected prompt between paired groupings of students in the low integrated curriculum group and students in the traditional curriculum, or control group in grades four, five, and six.
### Table 13

Comparison of Writing and Language Scores - Student-Selected Prompt - School C (LI)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Type</th>
<th>Integrated Mean</th>
<th>Control Mean</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Holistic</td>
<td>4.41</td>
<td>4.50</td>
<td>-0.418</td>
<td>0.680</td>
</tr>
<tr>
<td>N=21</td>
<td>(Pairs) Content</td>
<td>4.57</td>
<td>4.29</td>
<td>1.064</td>
<td>0.300</td>
</tr>
<tr>
<td></td>
<td>Organization</td>
<td>4.67</td>
<td>4.48</td>
<td>0.940</td>
<td>0.358</td>
</tr>
<tr>
<td></td>
<td>Usage/Sentence Structure</td>
<td>4.24</td>
<td>4.52</td>
<td>-1.142</td>
<td>0.267</td>
</tr>
<tr>
<td></td>
<td>Mechanics</td>
<td>4.05</td>
<td>4.33</td>
<td>-1.142</td>
<td>2.669</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Type</th>
<th>Integrated Mean</th>
<th>Control Mean</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Holistic</td>
<td>4.67</td>
<td>4.67</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>N=21</td>
<td>(Pairs) Content</td>
<td>4.76</td>
<td>4.52</td>
<td>1.420</td>
<td>0.171</td>
</tr>
<tr>
<td></td>
<td>Organization</td>
<td>4.62</td>
<td>4.67</td>
<td>-0.224</td>
<td>0.825</td>
</tr>
<tr>
<td></td>
<td>Usage/Sentence Structure</td>
<td>4.48</td>
<td>4.52</td>
<td>-0.204</td>
<td>0.841</td>
</tr>
<tr>
<td></td>
<td>Mechanics</td>
<td>4.38</td>
<td>4.24</td>
<td>0.679</td>
<td>0.505</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Type</th>
<th>Integrated Mean</th>
<th>Control Mean</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Holistic</td>
<td>4.42</td>
<td>4.45</td>
<td>-0.116</td>
<td>0.909</td>
</tr>
<tr>
<td>N=19</td>
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<td>4.58</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>Organization</td>
<td>4.53</td>
<td>4.79</td>
<td>-1.000</td>
<td>0.331</td>
</tr>
<tr>
<td></td>
<td>Usage/Sentence Structure</td>
<td>4.37</td>
<td>4.37</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td></td>
<td>Mechanics</td>
<td>4.00</td>
<td>4.32</td>
<td>-1.242</td>
<td>0.230</td>
</tr>
</tbody>
</table>

* Significant at p < .05
** Significant at p < .01
School C - Grade 4

The mean Holistic score for the integrated group was 4.41 as compared to a mean score of 4.50 for the control group. From these tabulations, standard deviations of .89 and .52 were obtained. This resulted in a t-value of -.418 which was not statistically significant as indicated by a p-value of .680. The mean Content score for the integrated group was 4.57 as compared to a mean score of 4.29 for the control group. From these tabulations, standard deviations of .98 and .56 were obtained respectively. This resulted in a t-value of 1.064 which was not statistically significant as indicated by a p-value of .300. The mean Organization score for the integrated group was 4.67 as compared to a mean score of 4.48 for the control group. From these tabulations, standard deviations of .80 and .51 were obtained respectively. This resulted in a t-value of .940 which was not statistically significant as indicated by a p-value of .358. The mean Usage/Sentence Structure score for the integrated group was 4.24 as compared to a mean score of 4.52 for the control group. From these tabulations, standard deviations of .99 and .60 were obtained respectively. This resulted in a t-value of -1.142 which was not statistically significant as indicated by a p-value of .267. The mean Mechanics score for the integrated group was 4.05 as compared to a mean score of 4.33 for the control group. From these tabulations, standard deviations of .86 and .80 were obtained respectively. This resulted in a t-value of -1.142 which was not statistically significant as indicated by a p-value of 2.669.
School C - Grade 5

The mean Holistic score for the integrated group was 4.67 as compared to a mean score of 4.67 for the control group. From these tabulations, standard deviations of .87 and .98 were obtained respectively. This resulted in a t-value of .000 which was not statistically significant as indicated by a p-value of 1.000. The mean Content score for the integrated group was 4.76 as compared to a mean score of 4.52 for the control group. From these tabulations, standard deviations of .70 and .75 were obtained. This resulted in a t-value of 1.420 which was not statistically significant as indicated by a p-value of .171. The mean Organization score for the integrated group was 4.62 as compared to a mean score of 4.67 for the control group. From these tabulations, standard deviations of .86 and .97 were obtained respectively. This resulted in a t-value of -.224 which was not statistically significant as indicated by a p-value of .825. The mean Usage/Sentence Structure score for the integrated group was 4.48 as compared to a mean score of 4.52 for the control group. From these tabulations, standard deviations of 1.03 and .93 were obtained respectively. This resulted in a t-value of -.204 which was not statistically significant as indicated by a p-value of .841. The mean Mechanics score for the integrated group was 4.38 as compared to the mean score of 4.24 for the control group. From these tabulations, standard deviations of 1.07 and .89 were obtained respectively. This resulted in a t-value of .679 which was not statistically significant as indicated by a p-value of .505.
School C - Grade 6

The mean Holistic score for the integrated group was 4.42 as compared to a mean score of 4.45 for the control group. From these tabulations, standard deviations of .80 and .81 were obtained respectively. This resulted in a t-value of -.116 which was not statistically significant as indicated by a p-value of .909. The mean Content score for the integrated group was 4.58 as compared to a mean score of 4.58 for the control group. From these tabulations, standard deviations of .77 and .90 were obtained respectively. This resulted in a t-value of .000 which was not statistically significant as indicated by a p-value of 1.000. The mean Organization score for the integrated group was 4.53 as compared to a mean score of 4.79 for the control group. From these tabulations, standard deviations of 1.02 and .85 were obtained respectively. This resulted in a t-value of -1.000 which was not statistically significant as indicated by a p-value of .331. The mean Usage/Sentence Structure score for the integrated group was 4.37 as compared to a mean score of 4.37 for the control group. From these tabulations, standard deviations of .76 and .83 were obtained respectively. This resulted in a t-value of .000 which was not statistically significant as indicated by a p-value of 1.000. The mean Mechanics score for the integrated group was 4.00 as compared to the mean score of 4.32 for the control group. From these tabulations, standard deviations of .94 and .89 were obtained respectively. This resulted in a t-value of -1.242 which was not statistically significant as indicated by a p-value of .230.
Once again, no significant differences exist between the two groups across all grades and assessment areas of writing, i.e., Holistic, Content and Organization, and language, i.e., Usage/Sentence Structure and Mechanics, for School C (LI).

Therefore, the null hypothesis, "(t)here are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of writing is not rejected for grades four, five, and six in School C (LI).

The null hypothesis, "(t)here are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of language," is also not rejected for grades four, five, and six in School C (LI).

Summary - School C (LI)

Analysis of the data from the multiple assessment measures in reading, writing, and language for School C (LI) resulted in the acceptance of the three null hypotheses conceptualized for this study. Across all grade levels, as had been originally proposed, no significant differences between the achievement of students in the integrated instructional program and students in the non-integrated instructional program in the areas of reading, writing and language development were noted in School C (LI).

Summary

The data analysis presented in this chapter support the conclusion that an integrated curriculum had a positive effect on student learning and achievement in several areas of reading, writing, and language. In School A (HI), grades five and six, clear
evidence of the favorable effect of an integrated curriculum on student achievement emerged in several areas of reading, writing and language. In School B (MI), a favorable effect was noted in grades four and five. Analysis of the data for School C (LI) resulted in acceptance of the three null hypotheses for grades four, five, and six. Thus, the integrated curriculum group that contained many of the features of the traditional curriculum group showed no statistical differences between the experimental group and the control group.

Chapter V will offer final observations based on the data analysis detailed in this chapter and observations noted by the researcher. Limitations of this study and recommended areas of future research will also be presented.
CHAPTER V

FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to determine whether an integrated curriculum at an intermediate school level, grades four, five, and six, influenced student achievement in the areas of reading, writing, and language development. The students were judged to be comparable in achievement in these areas previous to their inclusion in the integrated program based on data collected from the California Test of Basic Skills (CTBS) administered by the school district in the second semester of the 1993-1994 school year. Differences in achievement were based on comparison of scores from reading, writing and language development assessment tools administered by the school district in the spring of 1995. Observations of each school were conducted by the researcher to identify any structural differences in the integrated program as it was implemented by the three separate intermediate schools. A more detailed summary of the observations can be found in Appendix B.

During the course of observations and interviews, it became apparent to the researcher that the three schools were characterized by separate and distinct approaches to the implementation of the integrated curriculum established by the district. The differences and similarities in implementation were noted through observation as well as through candid interviews with staff. These perceived differences between the programs
at each school site led to the determination that each school was included in the study design as a separate experiment. From the results of these observations, the researcher placed each school on a theoretical continuum ranging from high integration (HI) to moderate integration (MI) to low integration (LI) according to the manner in which the curriculum plan had been implemented.

In all the schools, faculty and administration agreed that the time frame for implementation of the integrated program in their district was a two- to three-year process that culminated in the summer of 1994. They also conceded with unanimity that this period allowed insufficient time to plan, train staff and appropriately implement the integrated program for the 1994-1995 school year.

**Findings**

A summary of the findings drawn from the data analysis along with the null hypotheses of this study are presented in the following sections.

School A (HI)

The null hypothesis, "There are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of reading," is not rejected for grades four and five and rejected for grade six.

The null hypothesis, "There are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of writing," is not rejected for grade four and rejected for grades five and six.
Finally, the null hypothesis, "There are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of language," is not rejected for grade four and rejected for grades five and six.

The data analysis reveals evidence of statistical differences favoring students in the highly integrated program in several reading, writing, and language areas. Increases in writing and language scores from a student-selected prompt were indicated in grades five and six. In grade four, no significant differences were noted between the two groups. Therefore, evidence of the effect of a highly integrated instructional program, while positive in some circumstances, was not uniform.

School B (MI)

The null hypothesis, "There are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of reading," may be rejected for grade four and is not rejected for grades five and six.

The null hypothesis, "There are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of writing," may be rejected for grade four and five and is not rejected for grade six.

Finally, the null hypothesis, "There are no significant differences between the achievement of students in an integrated instructional program and non-integrated
instructional program in the area of language," may be rejected for grades four and five and is not rejected for grade six.

Data analysis from the multiple assessment measures in reading, writing, and language reveal statistical differences favoring the students in the moderately integrated instructional program in grade four. Significant differences also favoring students in the moderately integrated curriculum were noted in writing and language development in grade five. Since no significant differences can be noted between the two groups in grade six, the three null hypotheses of this study are not rejected for grade six. Clearly, evidence of the effect of moderate integration, while positive in some circumstances, was not uniform.

School C (LI)

The null hypothesis, "There are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of reading," is not rejected for grades four, five and six.

The null hypothesis, "There are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of writing," is not rejected for grades four, five and six.

Finally, the null hypothesis, "There are no significant differences between the achievement of students in an integrated instructional program and non-integrated instructional program in the area of language," is not rejected for grades four, five and six.
Based on the analysis of data from the multiple assessment measures in reading, writing, and language, the three null hypotheses conceptualized for this study is not rejected. Across all grade levels, as originally presented, no significant differences between the achievement of students in the low integration instructional program and students in the non-integrated instructional program in the areas of reading, writing and language development were noted.

Conclusions

School A (HI)

School A (HI) provided an example of the most highly evolved integrated program of the three schools in this study and therefore can be considered at the high end of the integration continuum. In comparison to Schools B and C, School A implemented the characteristics of the district’s vision for an integrated program in the most undiluted fashion. Through interviews with the researcher, teachers were perceived as overtly enthusiastic, sharing an educational philosophy based on the premise that integration of curriculum facilitated the best learning environment for children. The teachers and School A (HI) administration stated that pressure existed from the community and parents to alter the integrated program in the first semester of the 1994-1995 school year. Despite that pressure, the staff and administration maintained the vision established at the beginning of the 1994-1995 school year and continued with the integrated program. The null hypotheses for School A were all rejected, thus indicating a positive effect of integration on student achievement. This conclusion takes into consideration grades four, five, and six as a total integrated group since students in grade four did not exhibit a
positive effect in all assessment areas, i.e., reading, writing, and language. The reasons for this latter situation evident only in grade four were not immediately apparent to the researcher and could form the basis for further study.

School B

School B (MI) should be considered at the midpoint of the integrated education continuum developed for this study since the manner in which it implemented the district's integrated curriculum closely resembled the development of open, project/problem-based classrooms. Students spent their school day organized in multi-grade groups, working on project- and problem-based learning activities. However, students were organized by grade level for math instruction because the teachers judged that students were not receiving adequate amounts of mathematics experience through their projects. The students also assembled by grade to read novels recommended in the district curriculum.

The team of teachers in School B (MI) shared a single vision for their students. In interviews with each teacher and from classroom observations, the researcher determined that the teachers and administration in School B (MI) shared an educational philosophy and worked together with obvious commitment to implement their vision. The teachers shared an open classroom and interacted freely with all students equally, i.e., across grade levels. Thus, the adjustments made to the integrated program for mathematics and reading of novels were made to meet the needs of the students but, unlike the changes made by teachers in School C, were supported through consistent team effort characterized by an overall belief in the value of the integrated curriculum.
Evidence of the effect of integration, while positive for the integrated group in some instances, was not uniform. This conclusion takes into consideration grades four, five, and six as a total integrated group since students in grade six did not exhibit a positive effect in all assessment areas, i.e., reading, writing, and language. The reasons for this latter situation evident only in grade six were not immediately apparent to the researcher and form the basis for further study.

School C

School C (LI) should be considered at one end of the theoretical continuum designated as having the most traditional classroom experience of the three schools. From its original implementation in the fall of 1994 to the spring of 1995, School C (LI) reverted to the traditional schooling practices of separate rooms for separate grades, a half day of discipline-based instruction, district recommended textbooks, and limited team teaching and planning. It should be noted that the school considered this alteration indicative of conformity to the mandate of the district for an integrated curriculum; likewise, the district accepted these changes.

Professional disagreement among the integrated program teachers resulted in the evolution of three separate learning areas, organized according to grade level, i.e., four, five, and six. In interviews with the researcher, teachers expressed their preference for a half-day discipline based, half-day project/problem based format conducted in these separate learning areas, or grade levels. They stated their belief that this combination format exposed students to what could be thought of as "the best of both worlds."

Although these teachers were initially coordinated as a team, they did not share a
common educational philosophy or the district vision for the efficacy of a full-day integrated curriculum and expressed doubts that such a program constituted the ideal educational experience for students. The teachers in School C (LI) therefore altered the integrated program during the 1994-1995 school year to conform to their philosophies and intentionally reshaped the vision developed by the district and initially supported by School C (LI) administration. School C demonstrated statistically equal student achievement in the areas of reading, writing, and language. Therefore, all of the null hypotheses for School C were not rejected. It may be concluded that the similarity in instructional implementation between the low integrated curriculum program and the traditional or non-integrated program, resulted in similar student achievement. This conclusion may also form the basis for further study.

Recommendations for Future Research

The design of this study considered multi-age factors in three levels of integration and used multiple assessments to test the hypotheses presented by the researcher. In light of the findings of this study and already published research in the field of integration and the curriculum, the following areas are recommended for further research:

1. Further analysis to explore why results of reading assessments in the highly and moderately integrated curriculum were uneven across grade levels.

2. Further analysis to explore why results of writing assessments in the highly integrated program were unresponsive to essay writing based on understanding of a literature prompt.
3. Further analysis to explore why results of language assessments in the highly integrated program were unresponsive to language usage based on understanding of a literature prompt.

4. Development of a quantitative study following long-term achievement of the same students throughout several years' experience in an integrated curriculum as implemented in the three schools already studied.

5. Development of both quantitative and qualitative studies based on alternate assessments such as student portfolios in an integrated curriculum.

6. Continuation of quantitative and qualitative studies based on the effect of students' access to technology on achievement in an integrated curriculum.

7. Development of qualitative studies utilizing teacher, staff and student profiles and experiences in an integrated curriculum.

8. Development of quantitative and qualitative studies related to the effect of self concept on achievement in an intermediate school integrated curriculum.

9. Development of quantitative and qualitative studies assessing particular characteristics of schooling such as student negotiation, multi-age grouping, and multi-grade grouping and student development or perception of school.
Limitations of the Study

In this study, student achievement in reading, writing, and language in an integrated program was compared to student achievement in a traditional classroom program. Other academic areas such as math, science, and social studies were not included in the scope of this study. Although the district had a nationally-recognized mathematics program, it also was not addressed by this research.

Conclusions regarding similarity among students at the inception of the study were based on standardized tests administered annually by the school. Assessment tools in reading, writing, and language were the sole instruments used to measure achievement both at the mid-point of the second quarter and the conclusion of the school year. The standardized achievement tests (California Tests of Basic Skills) were not used at the conclusion of the study to provide another measure of progress.

It should also be noted that the integrated classrooms in this study were technology-enriched. Each integrated group had the same number of computers and students had the same access to them. Yet, significant differences in achievement across groups were noted in the data, therefore eliminating the possibility of computers contributing to these differences. The study, however, did not formally control for the effect of technology.

Finally, a limitation of this study concerned time. While the research analyzed the first year of an integrated program, classroom observations and interviews occurred in the second semester. Observations and characteristics of the program may change as it evolves from year to year in each school. Prominent educators such as Tyler (1949) and
Fullan (1991) have suggested that true educational change may take as long as three, five or seven years.

**Confronting Biases about Integration**

Observations of the three schools involved in this study as well as interviews with the participating staff, contributed to the conclusion that efforts to integrate curriculum are confounded when key players revert to comfort zones characterized by more traditional models of teaching and program development. Curriculum integration requires that all significant personnel, from district administrators and staff, to parents, community, and students must discover new ways of working together. The following list of assumptions developed by Drake (1993) must be challenged in order for curriculum integration to occur successfully:

1. *Students will not learn the essential basic skills.* Integration does not ignore the importance of learning basic skills (Slavin, 1994; Drake, 1993; Madden, 1993).

2. *Ideal learning develops from exposure to basics and moves to more complex structures.* This approach is also known as the "layer-cake" curriculum described earlier in this study (Brunkhorst, 1991). For example, students move from biology to chemistry to physics or from nouns and verbs to pronouns and adjectives. However, research has shown that it is better to present students with the whole picture as it exists in real life situations or context (Tchudi, 1991).
3. The most critical subject element is content. Curriculum specialists concur that while content is obviously important, it is not the most important element of curriculum. Rather, content should become the vehicle to essential leanings.

4. Course content will be skipped over in an integrated program. Course content can be covered effectively in an integrated classroom. To accomplish this goal involves utilizing the knowledge component of a course as a vehicle for achieving essential learnings.

   For example, a French teacher was concerned that she couldn't teach the sequential skills in her mandatory 40-minute day class. However, when she let go of her belief in the necessity to sequence skills, she found ample places to make French meaningful to the theme. Students seemed to enjoy her classes more and really were learning French even though she couldn't claim to be on page 14 of the textbook. (Drake, 1993, p. 13)

5. Integrated curriculum lacks depth. Some early attempts at integration were somewhat superficial. However, when implemented appropriately, integration involves learning topics with more depth and relevance.

6. Knowledge belongs in specialized categories. Disciplines are areas that people devised to organize the school experience. While specialists will always be needed to advance knowledge in specific areas, students need to see the whole picture.

7. Math is not covered without great effort by the teacher. Math achievement was an issue in the integrated program in this study. Two of
the three schools reverted to separate math classes while the third school created math workshops. Drake (1993) suggests that math teachers may develop appropriate means by which math will fit the integrated program. However, teachers are typically bound by a district's standardized testing. Therefore, "force-fit" is more an issue mandated by district requirements in math, rather than by the concept of an integrated program.

8. *Teachers cannot know everything.* On the other hand, teachers know a great deal. However, in an integrated program, teachers should relinquish the need to control and know everything. Teachers need not be and are not necessarily the only source of knowledge available to students; it takes a confident teacher to learn along with the students.

9. *Integration is only for the best and the brightest students.* At-risk students benefit from an integrated curriculum on many levels. The increased relevance and real world issues approach of an integrated curriculum increased student motivation. Every teacher in this study agreed that an integrated program was a benefit to all students, especially those with learning disabilities, because in an integrated class there is no "bottom." Students work together to create projects and each can be guided to complete his/her individual contribution with success and pride in their work.

10. *Students are passive learners.* Research in cognitive science prove that learning is an interactive process in which the student is actively
constructing meaning and the teacher is the facilitator who helps the student. Initially, most integrated programs begin with the teacher in charge of choosing themes or meaningful experiences. However, as the integrated program evolves, it should become increasingly more student driven. In this study, the most integrated school, School A (HI) did place the greater amount of curriculum control in the hands of the students.

**Conclusion**

"Understanding is more a matter of what people can do than something they have. Understanding involves action more than possession."

(Perkins, 1991, p. 6)

Through the data analysis and observations constituting this study, evidence exists to support the conclusion that an integrated curriculum has a positive effect on student learning and achievement in the areas of reading, writing, and language at various grade levels. As an integrated curriculum establishes an open forum of information exchange and growth for students and teachers, it leads along a path of positive learning techniques. Based on the transdisciplinary integrated curriculum approach synthesized by Susan Drake (1993), the shift from a traditional to an integrated curriculum entails movement from a focus on essential core learning to what is essential to future living. Life skills become the most important feature of the curriculum. For example, skills that used to be standard such as algebra skills or diagraming sentence skills, are challenged to fit into practical life experience. Therefore, according to Drake (1993), the curriculum focus of the present and future moves to focus on new student skills such as outcomes and assessments based on:
All of the approaches presented in this paper have been highlighted as a way of understanding and implementing curriculum integration. In actual practice, subject boundaries blur and stages of progression may occur. Spady and Marshall (1991) conclude that districts may go through three separate stages of growth while implementing these curriculum changes, from focusing on the content as a foundation, to realizing higher order thinking skills and activities, to broader higher order, life-focused curriculum activities.

Thus, for a successfully integrated program to evolve takes change on the part of everyone involved in the process, especially the teachers who are responsible for implementing any real change in a classroom setting. Personal and professional investment in the integrated curriculum, or any curriculum change, should be long term. For decades educators have alerted schools that any serious change process may take anywhere from three to seven years (Tyler, 1949; Fullan, 1991). As noted by Berlin and Jensen, "Many forces outside of the classroom seek to make...changes in the schools.
However, decisions by a legislature, school board, superintendent, or even a principal do not necessarily cause change in a teacher" (Berlin and Jensen, 1989, p. 115).

A synthesis of change models allowed Berlin and Jensen to develop seven conditions that encourage success in a change process. In this study, the team teachers at each school were placed in a change situation moving from the traditional or non-integrated classroom to a fully-integrated classroom program. Considering each school site and the seven conditions for change presented by Berlin and Jensen further highlights how each of the three schools in this study evolved into three different integrated curriculum programs.

1. Staff Participation. Staff participation was not a hindrance at any of the schools. All of the teachers and administrators were very involved in the development and implementation of the integrated curriculum program.

2. Leadership. Strong leadership was involved in implementing the integrated curriculum. The district administration and school principals were highly committed to the benefits of the integrated program. Every financial resource was also made available for the program. For example, computers were purchased and additional personnel were hired to support the process, including technical advisors for each school. However, a solid central office policy concerning a detailed script of the changes expected at each school was absent. As Berlin and Jensen note, "Obviously, if a district desires the same change in more than one school, central office
coordination of the process is mandatory," (Berlin and Jensen, 1989, p. 118). This lack of central coordination allowed each school the freedom to evolve into three separate levels of integrated curriculum programs.

3. Communication. Each school had a very strong communication network because each school shaped the direction of change.

4. Culture. There were very distinct challenges in this area. The integrated program teachers in School A (HI) and School B (MI) shared a "common vocabulary, a common philosophy, and a consistent view of change," (Berlin and Jensen, 1989, p. 118). School C (LI) was fragmented in these crucial areas, with each of the teachers in the integrated program expressing an inability to work together as a team. In School C (LI), the principal faced the challenge of promoting a change process without all of the central personnel on common ground. It is interesting to note that in School C (LI), the data analysis showed no statistical difference between the achievement of students in the experimental group (in reading, writing and language) compared to the achievement of the students in the control group (in reading, writing, and language). The researcher notes that the outcomes may be similar because the integrated curriculum program closely resembled a non-integrated program. As Berlin and Jensen state, "If the school is fragmented, each segment will go off in a different direction and change is unlikely to result in student learning" (Berlin and Jensen, 1989, p. 119).
5. Support and Follow-Up. There was sufficient support and follow up at each school. Modeling techniques took place during a summer workshop session and the teachers expressed comfort with the support available. Considering this was the first year of the program, the processes of follow-up and correction were just beginning to take shape in the second semester.

6. Adaptation. At this point in the integrated curriculum, program adaptation has not been investigated. Berlin and Jensen (1989) describe it as crucial for lasting change to develop. It must become a part of the individual as well as the organization.

7. Time. The researcher noted that pressure was placed on the administration and teachers seeking proof that the integrated curriculum was indeed beneficial. The community and the parents were actively informed and were actively monitoring the students and their experiences in the integrated program. The modifications made in each program were due in part to these external factors. As noted by Berlin and Jensen, it is unreasonable to expect a fully evolved change such as a curriculum change to take place in a year or less. However, School C (LI) made changes within the first few weeks of the program and School B (MI) and School A (HI) made changes in the second semester.

In conclusion, this researcher does not wish to advocate one integrated curriculum approach as somehow superior to another. This study provides evidence that an
integrated curriculum does have a positive effect on student achievement at the intermediate school level in some areas of reading, writing, and language at various grade levels. It does strongly suggest, however, that prior to any curriculum change and/or innovation, each school district must clearly define the vision. By understanding the constraints within a school, the goals and priorities of the school, the needs of students, and the needs of the staff, implementation of a successful integrated curriculum may be undertaken.
APPENDIX A

DISTRICT CURRICULUM EXPECTATIONS
Reading/Language Arts - Grade 4

Overview
Each Child's educational experience in District X's reading and language arts program will include a wide range of quality literature. Within this experience, every child will read and study the books and genres on the core reading list.

Students differ developmentally; therefore, instruction must meet the needs of each student. Reading/Language Arts concepts, skills, and strategies will be learned through a variety of experiences in the various curricular areas.

In the curriculum overview that follows, concepts, skills, and strategies are classified as being introduced, focused upon, or reinforced. These classifications are defined as follows:

- **Introduce** - General introduction of concepts, skills, and strategies
- **Focus** - Consistent application of concepts, skills, and strategies
  - The goal is thorough understanding
- **Reinforce** - To review and extend knowledge of concepts, skills, and strategies, deepening the student's understanding.

**State Goal #1:** The student will be able to read, comprehend, interpret, evaluate and use written material.

**Outcome:**
1. Reads, comprehends, and interprets written material.

**Objectives:**
1. Students will have an appreciation of the following literary genre:
   - (I) Historical Fiction, Tall Tales, Author/Illustrator Study
   - (F) Realistic Fiction, Non-Fiction: Biography/Autobiography, Poetry, Content Books
   - (R) Traditional: Folk Tale, Legend, Fantasy, Essay, Picture Books, Author/Illustrator Study
2. Students will understand and use the following decoding skills:
   - (I) Rehearsed Oral Reading
   - (F) Structural Analysis (prefixes, suffixes, base words, context clues, and syllabication)
   - (R) Oral Reading Strategies
3. Structural Analysis (Contractions, Compound Words, Plurals, Endings)
4. Students will understand and use the following word identification skills:
   - (F) Schwa
   - (R) Silent Letters, Short Vowels, Long Vowels, Digraphs, (vowels)
   - (R) Controlled Vowels
5. Students will develop and use the following strategies for an appreciation of literature:
   - (F) SSR, Self-Reflection, Read Alouds
6. Students will understand and use the following literary analysis strategies:
   - (I) Mood, Point of View, Tone, Foreshadowing, Dialect, Idioms, Personification, Metaphor, and Simile Nonfiction Analysis
   - (Evaluating Information)
   - (F) Genre Identification, Story Elements (Character Analysis, Setting, Plot, Conflict Resolution, Theme), Exaggeration,
Dialogue, Figurative Language, Notification Analysis
(Fact/Opinion, Cause/Effect, Compare/Contrast)
(R) Story Map
7. Students will use the following skills and strategies in the comprehension process:
(I) Skimming, Scanning
(F) Peer Conferencing (Self-Evaluation)
(R) DLTA, Cloze
8. Students will use strategies for the following purposes of reading:
(F) Following Directions, Content Material, Recreational Reading, Reference Material
9. Students will engage in the following reading activities:
(F) Expanding Background Knowledge, vocabulary, Categorizing, Setting a Purpose for Reading, Checking and Clarifying Comprehension (Telling Main Ideas, Noting Details, Retelling, Paraphrasing, Sequencing, Analyzing Information, Predicting/Confirming before during and after, Drawing Conclusions, Taking Notes)
(R) Visualizing, Reading Illustrations (Noting Illustrations, Using Visual Information, Predicting from Illustrations), Checking and Clarifying, Comprehension (Making Associations, Recalling Information
10. Students will be able to relate literature to their life experiences by doing the following:
(R) Examining Values, Student Response to Literature (projects/activities)
11. Student will use the following study skills and habits:
(I) Research Process, Uses Graphic Organizers (semantic mapping, Outlining, Venn Diagram, and webbing)
(F) Locating and interpreting Information, Choosing Sources, Dictionary Skills, Content Area Texts, (part of a book, table of contents, index, glossary, appendix, uses graphics, visuals aids, maps, graphs, tables, diagrams, charts, and globes), Managing Time, Using Assignment Notebook, Organizing Self & Materials, Preparing for Varying Test

Appropriate Formats
**State Goal #2:** The student will be able to listen critically and analytically.

**Outcome:**
1. Applies listening, observation, and reflective skills appropriately.

**Objectives:**
1. Students will use the following listening strategies:
   (F) Displays Active Listening Behaviors, Listens for various Purpose (for details, for main ideas, to follow directions/sequence, gives peer feedback)

**State Goal #3:** The student will be able to write standard English is a grammatical, well organized and coherent manner for a variety of purposes.

**Outcome:**
1. Understands the functions of the following features of good writing; interrogation, focus, support/elaboration, organization and conventions.

**Objectives:**
1. Students will understand and use the following strategies of process writing:
   (I) Prewriting/Rehearsal (Narrowing a Topic, Develops Story Plan), Paraphrases/Takes Notes
   (F) Prewriting/Rehearsal (Mapping, Listing, Self-Questioning, Determining Purpose and Audience), Revision (Peer Conferences, Self-Evaluation, Rearranges/Substitutes, Sentence Combining/Expanding), Editing (Corrects for spelling, mechanics, and usage, uses proofreader's marks) Publishing (Chooses Piece to Publish, Shares written piece aloud with audience)
   (R) Prewriting/Rehearsal (Studying Literacy Patterns, Brainstorming & Discussing Conferencing), Drafting (Writes First Draft - accepts invented spelling), Revision (Teacher/Student Conferences, Adds/Delete Ideas)

2. Students will be able to write the following forms of writing:
   (I) Dialogues, Letters (business), Interviews, Explaining a Process/How to
   (F) Writing Folders, complete sentences, paragraphs, summaries, story, reports, journals/learning logs
   (R) Lists of Ideas for Future Writing, Letters (friendly)

**Outcome:**
2. Knows the purpose of writing

**Objectives:**
1. Students will be able to write for a variety of purposes.
   (F) Integrated Writing, Biography, Expository (focus, support, organization, conventions), Writing Conventions (Using a variety of sentences, writing topic sentences, adding transition words), Poetry
   (R) Narrative (focus, support, organization, conventions), Using a variety of sentences, Topic Sentence, Transition Words
State Goal #4: The student will be able to use spoken language effectively in formal and informal situations to communicate ideas and information and to ask and answer questions.

**Outcome:** 1. Uses verbal communication in a clear and appropriate manner

**Objectives:** 1. Students will use the following speaking strategies:
   (I) Summarizes Orally
   (F) Participates in Discussion, Presents oral reports and informative talks
   (R) Varies Voice and Speech Technique, Gives Clear Directions

State Goal #5: The student will be able to understand the various forms of significant literature representative of different cultures, eras, and ideas.

**Outcome:** 1. Identifies specific questions of personal importance and answers them through literary genre.

**Objectives:** 1. Students will have an appreciation of the following literary genre:
   (I) Historical Fiction, Tall Tales
   (F) Realistic Fiction, Non-Fiction, Biography/Autobiography, Poetry, Content Books
   (R) Folk tale, Legend, Fantasy, Essay, Picture Books

2. Students will be able to relate literature to their life experiences by doing the following:
   (F) Examining Values, Student Response to Literature (projects/activities)

State Goal #6: The student will be able to understand how and why language functions and evolves.

**Outcome:** 1. Understands the basic principles of grammar usage and mechanics.

**Objectives:** 1. Students will be able to identify the following parts of speech and the following capitalization and punctuation usage:
   (I) Interjections, Conjunctions, Prepositions, Adverbs
   (F) Nouns, Pronouns, Verbs, Adjectives

**Outcome:** 2. Understands basic principles of etymology.

**Objectives:** 1. Students will read, understand, and use the following vocabulary appropriately:
   (I) Homophones, Homographs
   (F) Synonyms, Antonyms
   (R) Alphabetizing, Direction Words
Reading/Language Arts - Grade 5

Each child's educational experience in District X's reading and language arts program will include a wide range of quality literature. Within this experience, every child will read and study the books and genres on the core reading list.

Students differ developmentally; therefore, instruction must meet the needs of each student. Reading/Language Arts concepts, skills, and strategies will be learned through a variety of experiences in the various curricular areas.

In the curriculum overview that follows, concepts, skills, and strategies are classified as being introduced, focused upon, or reinforced. These classifications are defined as follows:

- **Introduce**: General introduction of concepts, skills, and strategies
- **Focus**: Consistent application of concepts, skills, and strategies
- **Reinforce**: To review and extend knowledge of concepts, skills, and strategies, deepening the students understanding

**State Goal #1** The student will be able to read, comprehend, interpret, evaluate and use written material.

**Outcome:**

1. Reads, comprehends, and interprets written material.

**Objectives:**

1. Students will have an appreciation of the following literary genre:
   - (I) Mystery, Drama,
   - (F) Realistic Fiction, Fantasy, Drama, Poetry, Content Books
   - (R) Biography, Autobiography, Essay

2. Students will understand and use the following decoding skills:
   - (I) Rehearsed Oral Reading
   - (F) Context Clues
   - (R) Prefixes, Suffixes, Base words,

3. Students will understand and use the following word identification skills:

4. Students will develop and use the following word identification skills:
   - (F) SSR, Self-Reflection, Reads Aloud

5. Students will understand and use the following literary analysis strategies:
   - (I) Mood, Point of View, Analogies
   - (F) Genre Identification, Character Analysis, Setting, Conflict, Resolution, Theme, Foreshadowing, Dialogue, Dialect, Metaphor, Simile, Personification, Fact/Opinion, Cause/Effect, Compare/Contrast
   - (R) Story Maps

6. Students will use the following skills and strategies in the comprehension process
   - (I) Skimming and Scanning
   - (F) Analyzing Information, Telling The Main Idea, Noting Details, Paraphrasing, Taking Notes, Summarizing
   - (R) Predicting/Confirming (before, during and after), Recalling Information, Retelling, Sequencing
7. Students will use strategies for the following purposes of reading:
   (F) Following Directions, Content Materials, Recreational Reading, Reference Materials.
8. Students will engage in the following reading activities
   (F) Expanding Background Knowledge, Vocabulary, Categorizing, Setting a Purpose for reading
   (R) Visualizing, Using Visual Information
9. Students will be able to relate literature to their life experiences by doing the following:
   (I) Examining Values
   (F) Authentic Projects and Activities
   (R) Telling Main Idea, Noting Details, Retelling
10. Students will use the following study skills and habits:
    (I) Research Process, Graphic Organizers: Semantic Mapping, Venn Diagrams, and Webbing
    (F) Locating and Interpreting Information, Choosing Appropriate Sources, using and Interpreting Graphs, Visual Aids, Maps, Tables, Diagrams, Charts, and Globes.
    Organizational Skills: Setting Goals, Managing Time, Using Assignment Notebook, Organizing Self and Materials
    (R) Using the Library - Accessing Systems, Reference Materials, Library Organization, Content Area Text - Parts of a book, Table of Contents, Index, Glossary, Appendix

**State Goal #2** The student will be able to listen critically and analytically.

**Outcome:** 1. Applies listening, observation, and reflective skills, appropriately.

**Objectives:** 1. Students will use the following listening strategies:
   (I) Listens to take Notes
   (F) Listens for Details, Listen for the Main Idea, Listen to Follow Directions, Display Appropriate Active Listening Behaviors
   (R) Listens to give Peer Feedback

**State Goal #3:** The student will be able to write standard English in a grammatical, well-organized and coherent manner for a variety of purposes.

**Outcome:** 1. Understands the functions of the following features of a good writing; integration, focus, support/elaboration, organization and conventions.

**Objectives:** 1. Students will understand and use the following strategies of process writing.
   (I) Develops a Story Plan, Self-evaluation
   (F) Prewriting, Planning, Determining a Purpose and Audience, Narrowing A Topic, Paraphrasing/Taking Notes, Revision - Self Evaluation, Rearranging/Substituting, Sentence Combining/Expanding, Correcting Spelling, Mechanics and Usage, Chooses Piece To Publish at Least One Piece Per Year, Sharing written Piece Aloud with Audience
   (R) Brainstorming & Discussing, Listing, Peer Conferencing, Teacher/Other Adult Conferencing with Student, Writing First Draft, Teacher/Student Conferences for Revision, Adding/Deleting Ideas
2. Students will be able to write the following forms of writing:
   (I) New Stories, Interviews, Dialogue, Transition Words, Expository
   (F) Using a variety of sentences, Topic Sentences, Paragraphs, Summaries, Stories, Business Letters, Reports, Persuasive, Narrative, Writing in the content areas, and Poetry
   (R) Listing Future Ideas for Writing, Friendly Letters, Autobiographies

**Outcome:** 2. Knows the purposes of writing.
**Objectives:**
1. Students will be able to write for a variety of purposes.
   (I) Persuade
   (F) Retell, Describe, Explain, Inform

**State Goal #4:** The student will be able to use spoken language effectively in formal and informal situations to communicate ideas and information and to ask and answer questions.

**Outcome:**
1. Uses verbal communication in a clear and appropriate manner

**Objectives:**
1. Students will use the following speaking strategies
   (I) Present Persuasive Talks/Arguments (Debates), Summarizes Orally
   (F) Varies Voice and Speech Techniques, Participates in Discussion, Presents Reports and Informative Talks
   (R) Gives Clear Directions

**State Goal #5:** The student will be able to understand the various forms of significant literature representative of different cultures, eras, and ideas.

**Outcome:**
1. Identifies specific questions of personal importance and answers them through literary genre.

**Objectives:**
1. Students will have an appreciation of the following literary genre:
   (I) Mystery, Drama, Essay
   (F) Realistic Fiction, Fantasy, Poetry, Content Books
   (R) Biography/Autobiography
2. Students will be able to relate literature to their life experiences by doing the following:
   (I) Analyzing Information, Examining Values
   (F) Expanding Background Knowledge, Telling Main Idea, Noting Details, Paraphrasing, Sequencing Information, Response Projects and Activities
   (R) Recalling Information, Retelling, Predicting/Confirming Information, Visualizing, Using Visual Information

**State Goal #6:** This student will be able to understand how and why language functions and evolves.

**Outcome:**
1. Understands the basic principles of grammar usage and mechanics.

**Objectives:**
1. Students will be able to identify the following parts of speech and the following capitalization and punctuation usage:
   (I) Prepositions, Applies Literary Devices in Writing, Transition Words
(F) Topic Sentences, Uses a Variety of Sentences
(R) Nouns, Pronouns, Verbs, Adjectives, Types of Sentences: Declarative, Interrogative, Imperative, Exclamatory

**Outcome:** 2. Understands basic principles of etymology

**Objectives:** 1. Students will read, understand, and use the following vocabulary appropriately.
(F) Synonyms, Antonyms, Homonyms/Homophones, Homographs
(R) Direction Words, Prefixes, Suffixes, Base Words
Reading/Language Arts - Grade 6

Each child's education experience in District X's reading and Language arts program will include a wide range of quality literature. Within this experience, every child will read and study the books and genres on the core reading list. Student differ developmentally; therefore, instruction must meet the needs of each student. Reading/Language Arts concepts, skills, and strategies will be learned through a variety of experiences in the various curricular areas.

In the curriculum overview that follows, concepts, skills, and strategies are classified as being introduced, focused upon, reinforced. These classifications are defined as follows:

**Introduce**
- General introduction of concepts, skills, and strategies

**Focus**
- Consistent application of concepts, skills, and strategies
- The goal is thorough understanding

**Reinforce**
- To review and extend knowledge of concepts, skills, and strategies, deepening the student's understanding

**State Goal #1:** The student will be able to read, comprehend, interpret, evaluate and use written material.

**Outcome:**
1. Reads, comprehends, and interprets written material.

**Objectives:**
1. Students will have an appreciation of the following literary genre:
   - (I) Class Fiction (American), Science Fiction, Nonfiction (Editorial)
   - (F) Historical Fiction, Essay, Drama, Content Books
   - (R) Realistic Fiction, Fantasy, Biography/Autobiography, Picture Books

2. Students will understand and use the following decoding skills:
   - (F) Rehearsed Oral Reading
   - (R) Self Corrections

3. Students will understand and use the following word identification skills:
   - (I) Combining Forms (Entomology)

4. Students will develop and use the following strategies for an appreciation of literature:

5. Students will understand and use the following literary analysis strategies:
   - (I) Flashback, Humor, Hyperbole
   - (F) Genre Identification, Story Elements (Character Analysis, Setting, Plot, Conflict Resolution, and Theme), Point of View, Foreshadowing, Dialogue Analogies, Figurative Language, (Metaphor, Simile, Personification)
   - (R) Story Map, Dialect, Idioms

6. Students will use the following skills and strategies in the comprehension process:
   - (F) Analyzing Information, Drawing Conclusions, Taking Notes, Telling Main Idea, Recalling Information, Noting Details, Paraphrasing

7. Students will use strategies for the following purposes of reading:
   - (F) Following Directions, Content Material, Recreational Reading, Reference Material, Skimming Scanning

8. Students will engage in the following reading activities:
State Goal #2: The student will be able to listen critically and analytically.

**Outcome:** 1. Applies listening, observation, and reflective skills appropriately.

**Objectives:** 1. Students will use the following listening strategies:
   (F) Displays Active Listening Behaviors, Listens for Various Purposes (For Details, For Main Ideas, To Follow directions/sequence, To take notes)

State Goal #3: The student will be able to write standard English in a grammatical, well-organized and coherent manner for a variety of purposes.

**Outcome:** 1. Understands the functions of the following features of good writing, integration, focus, support/elaboration, organization and conventions.

**Objectives:** 1. Students will understand and use the following strategies of process writing:
   (F) Rewriting/Rehearsal: Narrowing a Topic, Paraphrases/Take Notes, Develops Story Plan.
   Editing: Corrects spelling, mechanics, and usage.
   Publishing: Chooses Piece to Publish (1 per year), Shares written piece aloud with audience.
   (R) Rewriting/Rehearsal: Brainstorming & Discussing.
   Planning, Self-Questioning, Determining Purpose & Audience, Conferencing (with peers & teachers)
   Drafting: Writes First Draft
   Revisioning: Teacher/Student Conferences, Adds/Deletes Ideas, Sentence Combining and Expanding
   Editing: Uses proofreaders marks.

2. Students will be able to write the following forms of writing:
   (I) News Story
Writing Folders, Writing Conventions, Complete Sentences, Variety of Sentences, Topic Sentences, Paragraphs, Transition Words, Applies Literary Devices, Summaries, Stories, Dialogues, Interviews, Reports

Lists of Ideas for Future Writing, Letters (Friendly, Business, Explaining a process/How to)

**Outcome:** 2. Knows the purposes of writing.

**Objectives:**
1. Students will be able to write for a variety of purposes.
   - Fiction Writing, Content Area Writing, Historical Fiction, Narrative, Expository, Persuasive (focus, support/elaboration, organization, conventions), Poe

**State Goal #4:** The student will be able to use spoken language effectively in formal and informal situations to communicate ideas and information and to ask and answer questions.

**Outcome:** 1. Uses verbal communication in a clear and appropriate manner.

**Objectives:**
1. Students will use the following speaking strategies:
   - (I) Presents Persuasive Talks/Arguments (debates)
   - (F) Participates in Discussion, Presents Persuasive Talks/Arguments (debate), Summarizes Orally

**State Goal #5:** The student will be able to understand the various forms of significant literature representative of different cultures, eras, and ideas.

**Outcome:** 1. Identifies specific questions of personal importance and answers them through literary genre.

**Objectives:**
1. Students will have an appreciation of the following literary genre:
   - (I) American Classics, Science Fiction, Editorial
   - (F) Historical Fiction, Essay, Poetry, Drama, Content Books
   - (R) Realistic Fiction, Fantasy, Biography/Autobiography, Picture Books
2. Students will be able to relate literature to their life experiences by doing the following:
   - (F) Examining Values, Student Response to Literature (projects/activities)

**State Goal #6:** The student will be able to understand how and why language functions and evolves.

**Outcome:** 1. Understands the basic principles of grammar usage and mechanics.

**Objectives:**
1. Students will be able to identify the following parts of speech and the following capitalization and punctuation usage:
   - (F) Prepositions
   - (R) Nouns, Pronouns, Verbs, Adjectives, Adverbs, Interjections, Conjunctions, Types of sentences, (Declarative, Interrogative, Exclamatory, Imperative)

**Outcome:** 2. Understands basic principles of etymology.

**Objectives:**
1. Students will read, understand, and use the following vocabulary appropriately:
(F) Synonyms, Antonyms, Homophones, Homographs
(R) Alphabetizing, Direction Words
APPENDIX B

OBSERVATION QUESTIONS AND SUMMARY
Observation Summary

School A (HI)

1. **What tasks and activities engage the students?**

   Students were engaged in problem and project based learning. Students worked on individual projects as well as small group projects throughout the school day. They actively assisted one another in many ways. For example, students shared computer skills, complimented or encouraged each other and asked for direct help with skills such as spelling or math computation. Because the majority of students are actively engaged the room seems organized, yet, busy. For example, a small group gathered for a book reading on the Civil War while other small groups of 3-4 students prepared presentations. During this time most of the computers are busy as well with students refining individual input for a specific project. During all observations, the researcher noted the teachers moving through each segment of the room guiding students by offering suggestions and feedback.

2. **How are the students grouped?**

   In School A, the students are integrated on all academic levels including math. Students came together by grade level at the beginning of the day which was used as 'advising time' and at the end of the day which was called 'circle time.' During these two times of the day, teacher directed interaction took place. This was the scheduled time to organize and settle business, calendar events, discuss journal assignments or responsibilities. To wrap up the 'circle time' the teacher asks each student to identify "one thing you did today to help someone." Another 'circle time' was used to plan for an end
of the year celebration with a budget of $600. At the end of the 'circle time' each teacher reminds the students to "pick up five pieces of paper and pick up one chair." When all of the students are dismissed the room appeared neat and organized.

Students work in an integrated environment that illustrated the student-teacher negotiation of problem/project based learning. While School B and School C in the district felt compelled to return to a traditional math approach, School A created an integrated approach to math. First, a pretest was given to all students in a given area such as decimals or fractions. Based on the scores of this pretest, students were grouped by their needs and given mini lessons as math workshops.

3. What are the interactions taking place in the classroom?

The teachers work as facilitators. They guide the students and maintain an effort to promote problem solving rather than directing. For example, a group of "World Class Writers" negotiated deadlines and story topics with the advising teacher. The teacher acted as the group facilitator in the writers' circle which proceeded in a very democratic fashion; listening to other students, actively disagreeing about the next assignment and offering suggestions for topics were characteristics of the writers' circle.

Students actively interact with each other as resources in School A. The observer noted that students often arranged time in their calendar to assist other students with homework or with the computer. Thus, sharing was an element of the integrated classroom. It was very interesting to note that there was no sign up for computers, thus, students had to negotiate time with each other in a democratic fashion.
4. **What are the influences in the classroom?**

There are very clear-cut transitions regarding the time and the activity. Each student carried a calendar which outlined the day and its activities. During all observation days, the researcher noted that all transitions occurred quickly and orderly. Each student was responsible for his/her own agenda and organization of time. For example, the afternoon session begins at 1:00 p.m. The observer noted that at 12:50 students began to return from lunch break. By 12:55, there were 18 students actively on task and by 1:00 all of the students except for five to seven children were on task with no teacher direction or call for class beginning. Overall, there was a minimum of teacher intervention regarding the class schedule and overall order of the students. In short, the students appeared accountable for the class and time as established by previous negotiations and discussions with the teacher(s).

5. **What is the nature of engagement and off task behavior?**

The overall nature of engagement is positive. Off task behavior was only evident in five to seven students. The off task students were not pulled back into positive academic activity. Off task behavior was not necessarily disruptive, thus, it went unchecked. The observer noted that the computers were not used as part of the off task behavior such as for game playing because other students wanted to "get on" the system.

6. **Describe the materials being actively used by students and teachers?**

Students and teachers were mostly engaged in technology use i.e. computers, printers, modems. Students also used resource books and materials such as poster board and markers to prepare presentation/project pieces.
Observation Summary

School B (MI)

1. *What tasks and activities engage the students?*

   The students are actively engaged in problem/project based learning. During observation, the students worked on service projects. The projects were initiated by students and groups were formed based on student interest. The subject matter was descriptive and probing. In the integrated class, students held brainstorming sessions to list ideas, acted as group facilitators, worked with computers, read resource books and made posters for specific projects. For example, one group discussed the logistics and the legal ramifications of a walk-a-thon as a fundraiser. As a resource, the students requested the assistance and input of the principal who became an active participant in the small group of seven students (with one student maintaining the facilitator role). Another example of the type of task that engages the student would be the computer projects each student had to generate. One project presented the life of Cleopatra. The student was eager to demonstrate how to create pictures and icons as well as reveal her knowledge of Cleopatra's life. The room seemed to be a very active and interactive learning space.

2. *How are the students grouped?*

   The students in School B are part of an integrated and multi-aged class except for math. During math students are separated by grades and the district recommended textbook is used. During this math period, the students experience a more traditional learning experience. The observer noted that during math sessions the teachers usually
used the chalk board or an over-head projector in relation to the text or handout. It appears to be a direct instruction approach which is teacher-to-student in nature. There are also reading sessions for novels that align with the district's recommendations. Student's also read a variety of other selections and incorporate all reading into the integrated day.

The students are divided into advising groups at the beginning of each day and again at the end of the day. The groups are usually multi grade and they are used to settle business and organize schedules for homework, projects, and activities.

3. **What are the interactions taking place in the classroom?**

The teachers work as facilitators and coaches. For example, a group of students was organizing a neighborhood clean up committee with little teacher intervention. One student was chosen as the facilitator and the others brainstormed ideas. The discussion was lively and productive with very little teacher direction. In this case, the teacher acted as a coach; encouraging the students, offering support and occasional technical advice. The initiator of the interactions usually seemed to be the student. The teachers are an organized team who maintain a problem/project based atmosphere for the greater part of the school day. The students obviously look to the teachers for guidance but most of the interactions that take place are student to student. Observer noted students working well together on computer, with shared resource books, maps and other materials. Also observed many students scheduling to assist each other with homework or projects without teacher direction.
4. What are the influences in the classroom rules and activity transitions?

The teachers discuss the schedule with students so the majority of the time is negotiated. Students are held accountable for punctuality and deadlines. For example, observer noted that the 2:00 p.m. math sessions were organized and rolling within seven minutes. During the math sessions there were seven groups working on service projects all of which were on task. Another example of organizing classroom time was the clean up session. Each day from 2:45-3:00 was clean up time and sure enough all of the students began organizing, picking up papers and putting away materials without teacher direction.

5. What is the nature of engagement and off task behavior?

The nature of engagement for the greater part of the students was positive and focused. Overall, off task behavior was at a minimum. Some students were playing computer games and a few students drifted off task momentarily to gossip. Teachers did not remind students to stay on task. Students are truly held accountable for their own time and behavior during the greater part of the day which is integrated. Teachers are occupied with attending the various groups and students and do not utilized the time to police short drifts from work. The one exception, at various times, each teacher engages in requesting some quiet due to the noise level created by active discussions.

6. Describe the materials being used by students and teachers.

The students and teachers primarily utilized the technology available in the room such as the computers, printers, and modems. During brainstorming sessions or small group discussions, students used large easels and markers to jot down ideas for the
group. The students also utilized the creative materials such as poster board and markers to make signs for their service projects. During the math sessions, teachers utilized overheads and chalk boards.

**Observation Summary**

**School C (LI)**

1. **What tasks and activities engage the students?**

   School C divided the school day into a morning of traditional curriculum and an afternoon of integrated problem/project based curriculum. In the morning sessions, students were grouped according to grade and utilized district recommended textbooks. The students received information with the teacher's role as the expert. The observer noted that all of the teachers worked to make the morning sessions probing and motivating.

   The afternoon session was integrated and problem/project based. Students negotiated work and displayed independent working skills. The afternoon session was also filled with creativity and active learning. In these sessions the teachers functioned as guides and facilitators compared to the mornings which had greater direct instruction. In the integrated program afternoon sessions students worked with computers and were encouraged to draw from many sources, especially primary sources. For example, a research project on the Holocaust incorporated interviews of survivors, newspaper articles, and videos as well as computer graphics.
In summary, the morning activities appeared to be a well developed program of traditional instruction with specific learner outcomes. The afternoon activities appeared to be a well developed program of integrated instruction with a negotiated format and individual learner outcomes anticipated.

2. **How are the students grouped?**

Primarily, the students are grouped by grade. In the integrated sessions the groups are very often separated by grade level.

3. **What are the interactions taking place in the classroom?**

The students are very social, perhaps because they are separated by grades. The observer noted that a family atmosphere existed in each section of the integrated area. Primarily the interaction that takes place between teacher and student was directive in the morning. Teachers very often used commands such as "silence," "sit down," "quiet," "listen," and "stop it."

The morning interaction dynamics shifted when the program became integrated. The students followed their schedules and worked on task, however, this group displayed more teacher direction in the integrated session than the other two schools in this study. Primarily, the teachers were facilitators in the integrated program. They assisted students, worked to maintain small group progress and coached brainstorming sessions in the integrated program.

4. **What are the influences in the classroom rules and activity transitions?**

There are detailed postings for classroom responsibilities which rotate to all the students. The activity transitions are somewhat negotiated and the majority of the
students follow their planned calendar. The greatest influence in the transitions (i.e. when to begin a task, when to begin a class, student responsibility for a certain duty) appeared to be the teacher.

5. **What is the nature of engagement and off task behavior?**

   During the curriculum based morning students are more obviously off task. For example, the observer easily noted several students with their heads down or gazing out the window. This type of off task behavior was much easier to notice in a traditional classroom atmosphere. In the afternoon integrated sessions off task behavior was probably taking place at all three schools however it was less obvious. The projects that encompassed the afternoon sessions required more personal and individual investment. Students appeared more on task, active, and motivated.

6. **Describe the materials being actively used by students and teachers.**

   The students and teachers used a variety of materials such as the chalk board, maps, resource books, creative art materials (such as markers, clay, posters). The computer technology was also actively used by both the students and the teachers. The teachers often used the over-head projector during the morning traditional sessions that were divided by grade and disciplines. One example of the creativity displayed in School C's program was the poetry booklet covers each student designed. Some students used markers, while others used pencil drawings, crayon illustrations or computer graphics to create their cover. Overall, the observer noted the genuine sense of pride and excitement most of the students displayed for this project. In the afternoon sessions most of the
students wanted to share their progress and skills with the observer which is a sure sign of learning.
APPENDIX C

LITERAL COMPREHENSION SCALE
<table>
<thead>
<tr>
<th>Literal Comprehension</th>
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</thead>
<tbody>
<tr>
<td><strong>Scale:</strong></td>
</tr>
<tr>
<td>3.5 or below .......... Does not meet expectations</td>
</tr>
<tr>
<td>4.0 - 5.5 ............. Meets expectations</td>
</tr>
<tr>
<td>6.0 ..................... Exceeds expectations</td>
</tr>
</tbody>
</table>

1. Does not recognize any facts or statements from the reading. Can identify only one fact correctly.

2. Can correctly identify two facts or statements from the reading.

3. Can correctly identify three facts or statements from the reading.

4. Can correctly identify four facts or statements from the reading.

5. Can correctly identify five facts or statements from the reading.

6. Can identify all six facts and statements from the reading demonstrating excellent literal comprehension.
APPENDIX D

INFERENTIAL COMPREHENSION SCALE
**INFERENTIAL COMPREHENSION**

**SCALE:**

- 3.5 OR BELOW ...... DOES NOT MEET EXPECTATIONS
- 4.0 - 5.5 ................. MEETS EXPECTATIONS
- 6.0 ........................ EXCEEDS EXPECTATIONS

1. Misses the main idea.

2. Misses the main idea.
   Cites only what is in the reading.

3. Seems to grasp the main idea, but does not explain.
   Does not transfer ideas to new situations.

4. Grasps the main idea;
   Explains.
   Attempts to transfer ideas to new situations.
   Gives basic support and elaboration.

5. Grasps the main idea;
   Explains.
   Attempts to transfer ideas to new situations.
   Gives logical support.
   Contains some second order elaboration.

6. Grasps the main idea;
   Explains in detail.
   Effectively transfers ideas to new situations.
   Gives logical, Inferential support.
   Contains extensive second order elaboration.
   Demonstrates creative thinking.
APPENDIX E

TOTAL WRITING SCORING SCALE
TOTAL WRITING NUMERIC SCALE

6 EXCELLENT  The paper is superb. The thesis or statement of purpose is clearly stated, it is thoroughly developed with clear ad specific examples, its focus is consistently maintained, and it is virtually free of errors in mechanics and sentence structure. It differs from the 5 paper chiefly in degree. The paper rated as 6 is immediately recognizable as being superb: it has something significant to say about its topic, and it says it well. It demonstrates a sophisticated command of the use of language to achieve its point. It must succeed completely with relation to all four rating criteria.

5 COMMENDABLE  The paper is good and has few shortcomings, although it may have a weakness in one of the four areas for which it is graded. It may, for example be virtually perfect except that it wanders off topic. It may have a clearly stated purpose that is thoroughly developed through specific examples that stay narrowly on topic, but it may suffer difficulties in mechanics and sentence structure. Whatever its weak area, it will have no more than one; furthermore, that one problem will not seriously damage the paper's ability to communicate. Otherwise, it differs from the 6 paper chiefly in that it does not stand out as being superb. It may be nicely written, but it does not command the immediate attention that the 6 paper does. It is, in short, very well written, but it is flawed.

4 ACCEPTABLE  The paper passes the minimum criteria for acceptable writing, but it has deficiencies which prevent it from being more than marginally acceptable. It has serious shortcomings in at least one of the areas for which it is graded; these shortcomings are serious enough that they clearly impair the paper's ability to communicate clearly. The paper may be well written in every respect, for example, except that it has errors in mechanics and sentence structure. Those errors, however, are not so serious and consistent that they prevent
the paper from communicating effectively. Alternatively, the paper may have smaller shortcoming in two of the four criteria which, when considered together, keep the writer from communicating effectively. The essay may, for example, have a clear statement of purpose and good development through examples; but it wanders off topic, and errors in mechanics and sentence structure are commonplace. The 4 paper, however, is clearly acceptable, even it is barely so.

3 MARGINALLY UNACCEPTABLE

The paper fails to meet the minimum criteria for acceptable writing. It either has serious shortcomings in at least two of the criteria for which it is graded or cumulative problems in three or four areas which disqualify it from higher consideration. It is marginally unacceptable because those deficiencies present seriously impair the effectiveness of communication. It may, for example, have a clear purpose and be well written in terms of mechanics and sentence structure; it uses few, if any, examples, and it wanders from topic to topic. It does have some merit, but it doesn't quite meet the standards of acceptable writing.

2 UNSATISFACTORY

The paper is deficient in all of the four criteria for which it is graded. It may succeed somewhat in one of the four criteria, but that strength is clearly insufficient to rescue the paper from its overall problems. It may, for example, state a purpose; but that is all it does. Although it is a completed paper, it clearly fails to come close to passing. It differs from the seriously deficient paper in that it is at least recognizable as an attempt to address a topic and to develop an essay on that topic.

1 SERIOUSLY DEFICIENT

The paper is seriously deficient. It completely fails to meet any of the four criteria for which it is graded. It is barely recognizable as an essay
written on particular topic. There is almost no development whatsoever.

OTHER RATINGS

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OT</td>
<td>OFF TOPIC</td>
</tr>
<tr>
<td>IL</td>
<td>ILLEGIBLE</td>
</tr>
<tr>
<td>FL</td>
<td>FOREIGN</td>
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</table>
APPENDIX F

CONTENT SCORING SCALE
# Diagnostic Scoring Descriptors

The following descriptors are used to delineate essay raters analyses of the diagnostic profile.

## Content

<table>
<thead>
<tr>
<th>Score</th>
<th>Descriptors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>6</td>
</tr>
<tr>
<td>Considerable</td>
<td>5</td>
</tr>
<tr>
<td>Acceptable</td>
<td>4</td>
</tr>
<tr>
<td>Marginally Acceptable</td>
<td>3</td>
</tr>
<tr>
<td>Unsatisfactory</td>
<td>2</td>
</tr>
<tr>
<td>Seriously Deficient</td>
<td>1</td>
</tr>
</tbody>
</table>
APPENDIX G

ORGANIZATION SCORING SCALE
### Organization

**Excellent** 6

The writer's purpose is stated clearly and concisely. The paper is developed logically and clearly throughout. The essay develops major points through carefully unified statements and examples. There is a clear logical order to every sentence in the essay. Every sentence contributes clearly to the stated purpose of the essay. The essay is coherent.

**Commendable** 5

The writer's purpose is clearly stated. Logical development is evident throughout, and although the writer may occasionally wander slightly from his stated purpose, the overall effect of the paper is clearly focused. The writer progresses logically from point to point throughout the essay.

**Acceptable** 4

The writer's purpose is stated or at least clearly implied. While the essay is developed in a logical order, there may be occasional lapses in the logical sequence of ideas. The paper sticks to the stated point but sometimes wanders away from a clear focus. Ideas or examples extraneous to the overall focus are sometimes evident, but they do not prevent the essay from achieving its purpose.

**Marginally Acceptable** 3

There is a sense of purpose, but it is not clearly stated. Such examples are given wander off topic. The order in which ideas are presented detracts somewhat from the clarity of the writer's point. Omissions in the logical order of ideas or extraneous statements or examples hinder the clarity of communication.

**Unsatisfactory** 2

The writer's purpose is not clearly stated. Those examples which are provided seem to have little to do with what the purpose seems to be. Ideas are presented in apparently random order with little sense of unity or coherence.

**Seriously Deficient** 1

There is no statement of purpose. The essay rambles and lacks any clear focus. There is no logical order to the sequence of ideas presented.
APPENDIX H

USAGE/SENTENCE STRUCTURE SCORING SCALE
## Usage and Sentence Structure

<table>
<thead>
<tr>
<th>Grade</th>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>6</td>
<td>Sentences are varied in length and structure; there is a good mix of simple, compound, and complex sentences. Furthermore, the variety is important to conveying with clarity the meaning of the essay. There are virtually no errors in agreement, usage, or grammar. Transitional devices are used effectively to signal the writer’s command of varied and correct sentence constructions enhance the effectiveness of his communication.</td>
</tr>
<tr>
<td>Commendable</td>
<td>5</td>
<td>Sentences are generally constructed correctly. There is evidence that the writer sometimes intentionally carries sentence structure to suit the effectiveness of his message. There are few errors in agreement, usage, or grammar. The occasional presence of transitional devices indicate that the writer knows how to lead his reader in an intended direction.</td>
</tr>
<tr>
<td>Acceptable</td>
<td>4</td>
<td>Sentences are generally constructed correctly, although there is little variety in their construction. Generally, subject-verb-object sentences predominate. There are few run-on sentences or fragments. Transitional devices are not used with any consistency. There are some errors in agreement and usage, but they do not seriously hinder communication.</td>
</tr>
<tr>
<td>Marginally</td>
<td>3</td>
<td>Sentences are generally simple with very little variety. Transitional devices are seldom used. Errors in agreement and usage and sentence fragments and run-ons hamper the effectiveness of communication.</td>
</tr>
<tr>
<td>Unacceptable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unacceptable</td>
<td>2</td>
<td>Sentences are uniformly simple with no evidence of variety. Transitional devices are rarely in evidence. Frequent sentence fragments and run-on seriously hamper communication. Errors in agreement and usage are commonplace.</td>
</tr>
<tr>
<td>Unsatisfactory</td>
<td>1</td>
<td>Sentences are uniformly simple. Frequent sentence fragments and run-ons as well as frequent errors in agreement and usage make communication of the writer’s purpose very difficult to discern.</td>
</tr>
</tbody>
</table>
APPENDIX I

MECHANICS SCORING SCALE
### Mechanics: Capitalization, Punctuation and Spelling

<table>
<thead>
<tr>
<th>Level</th>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>6</td>
<td>There are virtually no errors in capitalization, punctuation or spelling. The writer goes beyond mere correctness, however; he uses punctuation to accentuate the meaning of his message. The writer demonstrates a clear command of mechanics and uses his knowledge to his advantage.</td>
</tr>
<tr>
<td>Commendable</td>
<td>5</td>
<td>There are virtually no errors in capitalization, punctuation or spelling. Those few errors that do occur do not hamper the effectiveness of communication. The writer has an obvious command of the conventions of English mechanics, but he occasionally slips.</td>
</tr>
<tr>
<td>Acceptable</td>
<td>4</td>
<td>There are some errors in capitalization, punctuation, or spelling. These errors, however, do not seriously hamper the effectiveness of communication.</td>
</tr>
<tr>
<td>Marginally</td>
<td>3</td>
<td>There are frequent errors in capitalization, punctuation, and spelling. The consistency of these errors make it clear that the writer could communicate much more effectively if he could remedy the errors.</td>
</tr>
<tr>
<td>Marginally</td>
<td>3</td>
<td>There are frequent errors in capitalization, punctuation, and spelling. The consistency of these errors make it clear that the writer could communicate much more effectively if he could remedy the errors.</td>
</tr>
<tr>
<td>Unsatisfactory</td>
<td>2</td>
<td>There are frequent and serious errors in capitalization, punctuation, and spelling. The consistency of these errors make it clear that the writer could communicate much more effectively if he could remedy the errors.</td>
</tr>
<tr>
<td>Seriously Deficient</td>
<td>1</td>
<td>There are frequent and serious errors in capitalization, punctuation, and spelling. It is often difficult to discern the writer's intentions because the mechanical errors so seriously interfere with communication.</td>
</tr>
</tbody>
</table>
REFERENCES


Kitabachi, G. (1978). Final report for the evaluation of the apple classrooms of tomorrow project: Phase II." Division of Research Services, Memphis City Schools: Memphis, TN.


VITA

The author, Rosa Antonietta Rizzato, is the daughter of Anthony Rizzato and Rosarina Russo Rizzato. She was born March 2, 1960 in Evergreen Park, Illinois. She has one younger brother, Anthony Rizzato. She holds a bachelor of arts degree in English, and a master of education degree in Administration and Supervision, both from Loyola University Chicago. She has been a recipient of several awards including the Ed Whalen Feature Writing Award, Loyola University; Outstanding Journalism and Reporting Award, Loyola University; Ambassador of Chicago Award, presented by former Mayor of Chicago, Jane M. Byrne. Most recently, she was selected as a nominee for Distinguished Teacher of the Year, Glenbrook North High School.

Ms. Rizzato began her career in education as an English and Journalism teacher at Good Counsel High School, Chicago, Illinois, where she taught for two years. While at Good Counsel, she volunteered as a Spiritual Companion for senior students, moderated production of the school newspaper, moderated production of the school yearbook, and was chairperson of journalism with responsibilities for maintaining the department budget and publication schedules. Her guidance earned the Good Counsel newspaper and yearbook a number of awards such as the Quill and Scroll International Second Place Award for outstanding newspaper and the Associated Press First Place Award for Outstanding Newspaper.
Ms. Rizzato also worked for four years at Glenbrook North High School, Northbrook, Illinois, as an English and Journalism teacher where she was a nominee for Glenbrook North Distinguished Teacher of the Year. While at Glenbrook North, Ms. Rizzato moderated the school newspaper, updated the press room to include a computer lab for production and earned numerous first place newspaper awards from organizations such as the Quill and Scroll Society and the Associated Press Society. Ms. Rizzato is certified by the state of Illinois for teaching grades six through twelve and for general administration in elementary and high school. She holds professional memberships in the Phi Delta Kappa Society and the American Education Research Association.

Ms. Rizzato is married to Lee Goldfine, DDS. She pursued her doctor of philosophy in Curriculum and Instruction from Loyola University, Chicago, Illinois, while actively mothering her two young children, Alicia and Daniel.
DISSERTATION APPROVAL SHEET

The dissertation submitted by Rosa A. Rizzato has been read and approved by the following committee:

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Loyola University Chicago

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Assistant Professor, Curriculum, Instruction, and Educational Psychology
Loyola University Chicago

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the committee with reference to content and form.

The dissertation is, therefore, accepted in partial fulfillment of the requirements for the degree of doctor of philosophy.

3/15/96

Date

Director’s Signature