

## ABSTRACT

Williams, Judith Uhler. The Relationship Between North Carolina Middle School Academic Growth And The Implementation Level Of Key Middle School Practices: A Study For Middle School Decision Makers (Under the direction of Dr. Kenneth H. Brinson, Jnr.)

Without hard data on the impact on student academic achievement, decision-makers are wary of fully implementing key middle school practices. To provide hard data for middle school decision-makers, this study was conducted. The aim of this study was to provide an accurate description of the status of middle schools in the state of North Carolina and to determine the relationship that exists between the degree of implementation of key middle school practices and student academic growth when controlling for school location, school size, student body race/ethnicity, and student body socioeconomic status.

Four hundred and four (404) North Carolina middle school principals were asked to complete the *Survey of Middle School Implementation Levels*, which was developed to measure the degree of implementation of key middle school practices. Responses from 123 North Carolina middle school principals were recorded. School expected academic growth data were calculated for five years using North Carolina reading and mathematics End-of-Grade testing data, which were obtained from the North Carolina Department of Public Instruction (NCDPI). The data for three of the control variables were also collected from NCDPI. The fourth control variable was collected online at the U.S. Census Bureau. Correlational, regression, and ANOVA techniques were used to analyze the data that included the testing data, control variables, and the results from the survey responses.

Study findings revealed that North Carolina middle schools with grade configurations 5-8 or 6-8 are located in urban communities and have low diversity. While there is considerable variation in school sizes and student body socioeconomic status, the typical

North Carolina middle school in this study is medium in size with a little less than half of its student body receiving free or reduced priced meals. Further analysis of the data revealed that despite the large range of responses on the administered survey, North Carolina middle schools are implementing many of the key middle school practices as outlined in middle school literature. The majority of the North Carolina middle schools in this study indicated that they have been implementing key middle school practices over five years.

In addition, two findings were identified by statistical analyses. First, dichotomized analyses revealed that North Carolina middle schools that met expected academic growth over five years also implemented key middle school practices at a high level (as defined in this study) and North Carolina middle schools that did not meet expected academic growth across the five years had a low implementation level of key middle school practices. These data were interesting, yet additional analyses indicated that the implementation level and the number of years a North Carolina middle school met expected academic growth was not statistically significant. An additional variable was added to this analysis, the socioeconomic status percentage for a North Carolina middle school. This variable was statistically significant when controlled for the number of years a North Carolina middle school met expected academic growth. That is, the free/reduced lunch percentage was inversely proportional to student achievement. As the number of students receiving free or reduced price meals increases, the number of years a North Carolina middle school met expected academic growth decreased.

The second and most important finding was that the degree of implementation of key middle school practices was a predictor of expected academic growth for one of the years in this study. The implementation level did not show to be a good predictor for other years of

expected academic growth. Although other programs for that school year might have played into the middle schools expected academic growth rates, this finding is relevant to North Carolina middle school decision makers. One year of testing data can be explored to see what key middle school practices were implemented that led to the increase of student academic achievement for one year.

THE RELATIONSHIP BETWEEN NORTH CAROLINA MIDDLE SCHOOL ACADEMIC  
GROWTH AND THE IMPLEMENTATION LEVEL OF KEY MIDDLE SCHOOL  
PRACTICES: A STUDY FOR MIDDLE SCHOOL DECISION MAKERS

by  
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A dissertation submitted to the graduate faculty  
of North Carolina State University  
in partial fulfillment of the requirements  
For the Degree of  
Doctor of Education  
Educational Leadership

Raleigh, NC  
2005

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## DEDICATION

I dedicate this dissertation to the one person who had to live with me during the years of my doctoral program, the writing of this dissertation, and with whose support was given when I needed it the most. To my husband, Mark, I love you and thank you for all of your support.

## BIOGRAPHY

A native of West Virginia, Judith Lynn Uhler Williams was born July 11, 1960 in South Charleston and spent her first 20 years in West Virginia. After completing high school in 1978, Judy attended West Virginia University and West Virginia State College studying elementary and special education. After two years, Judy left West Virginia to follow her husband, who was enlisted in the U.S. Army to Oklahoma, Panama, North Carolina, Germany, and Pennsylvania. During these years, Judy worked as a swimming instructor, pool manager and attended college on the military bases working toward a secondary mathematics degree in education. Judy completed her Bachelor of Science degree in Mathematics Education in 1994 at Shippensburg University in Shippensburg, PA.

In 1994, Judy was hired by Chatham County Schools in Chatham County, North Carolina as an eighth grade mathematics/science teacher. From 1994-1998, Judy taught middle school mathematics and/or science in Chatham, Moore, and Lee County schools. During these years, Judy attended Pfeiffer University working towards a Masters in Business Administration. In 1997, Judy graduated from Pfeiffer University and became a Testing/SIMS Specialist for Chatham County Schools. Judy continued to work for Chatham County from 1998-1999. In 1999, Judy accepted an Education Consultant position with the North Carolina Department of Public Instruction (NCDPI) in the Accountability Division, Reporting section. Judy worked for NCDPI for three years.

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## ACKNOWLEDGMENTS

Completion of this doctoral program would not have been possible without the support, understanding, and encouragement of many persons. My sincerest appreciation is extended:

To my doctoral committee chair, Dr. Kenneth Brinson, who was there to encourage, offer guidance, and to communicate long distance as I completed this study.

To my committee members, Dr. Paul Bitting, Dr. Peter Hessling, and Dr. Michael Vasu. Each of you provided insightful guidance during my work on this project and, in each of your classes you prepared me for this challenge. I take with me the “circle” of knowledge from Dr. Bitting, the enthusiasm of qualitative research from Dr. Hessling, and the insightful knowledge I gained from the readings I completed in Dr. Vasu’s course. Each of you contributed to the new knowledge I now have and knowledge I will use to guide others and enhance the field of education.

To my fellow classmates with whom I shared, laughed, and collaborated during those “tough” times. Thanks for being there!

To my former coworkers at North Carolina Department of Public Instruction (NCDPI) who encouraged me to start this degree. I especially want to mention Dr. Johnny Wilson who would ask about my classes and projects and would encourage me when I felt I was in over my head, and also, Dr. Helmut Feif who kept reminding me that I was doing “the right thing.” With both of you encouraging me forward, I saw the light at the end of the tunnel.

To Dr. Brian Pritchard, “Thanks!”

To my sisters, brothers, and Mom and Dad who always asked, “How are you doing?” and understood when I would disappear to work on projects during family visits.

In addition, to my niece Jennifer who is finishing her doctoral degree. We encouraged each other and kept seeing the end at the same time.

I dedicate this dissertation to my husband Mark and my children Kimberli, Jon-Robert, T.J., and my new son-in-law, Gary. Their love and support served as my rock to lean on and my life preserver when I felt like I was drowning. My family was so understanding when I attended sporting and band events, and choral concerts toting my book bag with projects and reading assignments that needed some of my attention. Their personal sacrifices and assistance in the running of our household provided me with the much needed time to complete this program.

Thanks to all of you!

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## CHAPTER 1: INTRODUCTION

Calls for accountability and improved test scores heightened by the provisions of the *No Child Left Behind Act of 2001* have led middle level educators to seek ways to increase student achievement and accountability (Trimble, 2004). Various approaches to increasing middle school students' achievement have emerged to address the issue of increased accountability (Trimble, 2004). States across the nation have been working to meet the demands of *No Child Left Behind* with some states ahead of the others. North Carolina has been recognized nationally as a leader in student accountability and has recently noted higher student academic achievement (North Carolina Department of Public Instruction (NCDPI), 2004). Yet, North Carolina middle schools are not always the schools making the grade.

Since 1995-1996 the North Carolina Department of Public Instruction (NCDPI) has implemented a statewide accountability model: *The ABCs of Public Education*. This model emphasizes accountability at the school level and instruction in basic core subjects. To measure student academic growth, the North Carolina ABCs model uses End-of-Grade (EOG) tests in reading and mathematics in grades 3-8 and prediction formulas for End-of-Course (EOC) tests for growth. Student academic growth is defined as the amount of growth that would be reasonably expected over a years time. This expected growth is calculated for a school based on its student body previous test performance, statewide average growth, and a statistical adjustment (regression to the mean), which is needed whenever test scores of the same students are compared from one year to the next. The North Carolina ABCs model has focused both on schools meeting academic growth expectations for student achievement and on the overall percentage of students who score at grade level or better. Schools are recognized in several categories in a yearly report released by NCDPI. This report, *The*

*ABCs of Public Education* provides academic performance results for all North Carolina public schools.

Analysis of the NCDPI ABCs data has shown that North Carolina middle schools with grade configurations 5-8 or 6-8 have achieved inconsistent academic growth expectations since 1999 (Appendix A). Additional analyses have shown that sixth grade middle school students have not met academic growth expectations in reading for five years (1999-2003). In 2003, 94.3% of all North Carolina public schools met academic growth expectations. However, of the 5.7% not meeting academic growth expectations, 63% were middle schools.

Dr. Thelma Isaacs (2001) conducted research in the state of West Virginia on the relationship between the degree of implementation of key middle school practices (e.g., interdisciplinary teaming, advisee/advisory, etc) and middle school academic achievement with additional school demographics considered. Dr. Isaacs used a *Survey of Middle School Implementation Levels* that asked middle school principals to indicate the level of implementation of key middle school practices in their schools. Dr. Isaacs compared the level of implementation of key middle school practices to the corresponding student academic achievement data. Her analysis showed that the implementation level of key middle school practices did not have an effect on West Virginia middle school student academic achievement (Isaacs, 2001).

In spite of the fine work of the NCDPI, Dr. Isaacs, and others, important gaps of information on middle schools exist. North Carolina decision makers need answers to the following questions: Are North Carolina middle schools implementing key middle school practices? If so, are the key middle school practices a possible indicator of high student

academic growth in North Carolina middle schools? To answer these questions, this study assessed the relationship between the degree of implementation of key middle school practices and school academic achievement. In addition, this study included specific school demographics such as school location, school size, student body race/ethnicity, and student body socioeconomic status.

### Gaps in Middle School Studies

Linking the implementation of key middle school practices to higher student academic achievement is not new; however, attempts to ascertain this relationship have yielded ambiguous and conflicting results (Anfara & Lipka, 2003). For example, Alexander and McEwin (1989) found in a national study from 1968 to 1988 that specific key middle school practices (i.e. interdisciplinary organization and advisory programs) demonstrated positive outcomes in academic achievement. The Maine Educational Assessment in 1991 indicated that students who were in a middle school where key middle school practices were in place consistently outscored other students by a wide margin in all tested areas of mathematics, writing, science, social studies, and humanities (George & Shewey, 1994). Yet, Lipsitz, Mizell, Jackson, and Austin (1997) commented that “sustainable middle level school reform is achievable but that many middle schools have not moved to the next step to develop students who perform well academically, with the intellectual wherewithal to improve their life conditions” (p. 3).

### The Beginning of the Middle School Reform

The middle school reform began in the 1960's as dissatisfaction with the junior high school structure resulted in a demand for a new approach (Alexander and McEwin, 1989; George and Alexander, 1993; Romano & Georgiady, 1997; Dougherty, 2002). The junior

high school program introduced in the first decade of the twentieth century started with a vision to provide a unique plan of education for the 10-15 year old adolescent. Within two decades, loud and insistent calls for improvement sounded as the junior highs went from dropout-preventing, job-market preparing, and adolescent-saving institutions to miniature high schools criticized for improperly educating teenagers (Cuban, 1992).

Dr. William Alexander, often referred to as the “father” of middle schools, wrote an article titled *The Junior High School: A Changing View*, in which he outlined the characteristics of the middle school educational concept (Alexander, 1995). In this seminal work, Alexander listed the following seven characteristics of the middle school:

- 1). easing the transition of students between elementary and high school,
- 2). meeting the unique needs of the young adolescent,
- 3). providing exploratory experiences,
- 4). offering a strong foundation of general education,
- 5). emphasizing individualization,
- 6). allowing students to progress at different rates, and
- 7). organizing students and personnel to support both educational practices and sound moral values (integrity, etc.) (p. 20-24).

The middle school movement grew rapidly in the 1970s (Alexander and McEwin, 1989). In the 2000 school year the National Middle School Association (NMSA) had reported 14,107 middle schools nationwide (2003). Of this number, 1,379 schools were 5-8 schools and 8,371 were 6-8 schools, representing approximately 70% of the middle schools nationwide.

### The Development of Key Middle School Practices

Early studies on the middle school reform showed that many middle schools started with a name and grade configuration change but continued with an education philosophy similar to the junior high school (MacIver & Epstein, 1992). Research continued to support the need to change the middle school philosophy and practices (MacIver & Epstein, 1992). In 1968, Alexander and Williams published *The Emergent Middle School*, which became an influential book outlining a middle school philosophy. This book, *The Emergent Middle School* described middle school programs built on the positive contributions of the junior high school (i.e., core curriculum, guidance programs, exploratory education, and home arts) as well as unique new strategies such as interdisciplinary teaming and teaching (Alexander and Williams, 1968).

As early as 1965, educators were surveying middle schools to summarize their unique practices (George and Alexander, 1993). Studies by Alexander (1968), Kealy (1971), Compton (1976), and Brooks and Edwards (1978) [sited in Cunningham, 1996) continued the search for practices that met the unique needs of the middle school age group.

The National Middle School Association (NMSA), the major organization for middle level education in the United States, sought to clarify a vision that would guide the decisions of those responsible for determining young adolescent educational programs. In 1992, NMSA released *This We Believe*, which provided a comprehensive statement that seemed to crystallize the educational beliefs inherent in the emerging educational middle school reform effort (NMSA, 1992). This positional paper was revised in 1995 expanding the key middle school practices from seven to twelve. In November 2003, NMSA released a third edition *This We Believe: Successful Schools for Young Adolescents*. It posits that when key middle

school practices are implemented simultaneously, they lead to responsive, developmentally middle schools for young adolescents (NMSA, 2003).

In 1989, the Carnegie Council on Adolescent Development published a report on middle schools titled *Turning Points: Preparing American Youth for the 21<sup>st</sup> Century*. This report presented a comprehensive approach to educating middle school students. *Turning Points* described eight key middle school practices. In 2000, a sequel was published, *Turning Points 2000: Educating Adolescents in the 21<sup>st</sup> Century*. This publication reduced the middle school practices from eight to seven. *Turning Points 2000* emphasizes that the key middle school practices must be implemented together to be effective.

There are remarkable parallels between the design elements in *Turning Points 2000* and the twelve characteristics of developmentally responsive middle schools as noted by the NMSA (Table 1). Although shown as parallel lists, these elements constitute a system of interrelated parts that function to support each other towards the goal of academic success for every middle school student (NMSA, 1995).

Table 1. Comparison Between Key Middle School Practices

| <b>Key Middle School Practices</b> | <b>National Middle School Association “This We Believe” Middle School Practices</b> | <b>Turning Points 2000 Educating Adolescents in the 21<sup>st</sup> Century Middle School Practices</b>  |
|------------------------------------|---|--|
| Curriculum & Assessment            | 1. Curriculum that is challenging, integrative, and exploratory                     | 2. Assessment and evaluation that promote learning   |
| Instructional Methods              | 3. Varied teaching and learning approaches  | 1. Teach a curriculum grounded in rigorous, public academic standards for what students should know and be able to do, relevant to the concerns of adolescents and based on how students learn best. |
| Flexible, Advisee & Community      | 4. Flexible organizational structures   | 2. Use instructional methods designed to prepare all students to achieve higher standards and become lifelong learners   |
| Vision, Expectations, & Climate    | 7. A shared vision.   | 3. Organize relationships for learning to create a climate of intellectual development and a caring community of shared educational purpose.   |
| Educators                          | 10. Educators committed to young adolescents  | 4. Govern democratically, through direct or representative participation by all school staff members, the adults who know the students best.   |
| Health & Wellness                  | 11. Programs and policies that foster health, wellness and safety                   | 5. Staff middle grades schools with teachers who are expert at teaching young adolescents, and engage teachers in on going, targeted professional development opportunities.                         |
| Parents & Communities              | 12. Family and community partnerships   | 6. Provide a safe and healthy school environment as part of improving academic performance and developing caring and ethical citizens.   |
|                                    |   | 7. Involve parents and communities in supporting student learning and healthy development  |

### Where Are Middle Schools Today?

After 44 years of middle school reforms and over a decade and a half of attempting to implement the recommendations set forth in *Turning Points*, *Turning Points 2000*, and by the NMSA, educators are still trying to evaluate the impact of implementing key middle school practices. Critical questions have been asked of educators since results of the Third International Mathematics and Science Study (TIMSS) set off alarms among policy makers when middle school students’ scores were below the international average in reading and mathematics and only slightly above in science (Bradley and Manzo, 2000; Anfara & Lipka,

2003). Reports were written after the TIMSS scores were released that referred to the scores as a “middle-grade slump” and contributed it to a “cultural problem” (Manzo, 2000; Anfara & Lipka, 2003). Two articles published in Education Week, *A Crack in the Middle* (March 1998) and *Muddle in the Middle* (April 1998) referred to middle schools as “the wasteland of our primary and secondary landscape.” The data indicate they are failing to help the student for whom they were designed (Anfara, 2001).

Middle school educators know what kinds of educational experiences young adolescents need. Now, the challenge is to move forward to refine practices and fend off attacks by critics by lifting academic achievement (Manning, 2000). Quoted in an article written by Manzo (2000), Joan Lipsitz, an early promoter of middle schools and a founder of the National Forum to Accelerate Middle Grades Reform, said, “We have the structure right, and we have the climate right, and some [schools] have even diversified their instructional techniques so that the classes are very interesting. But they still haven’t looked at why they’re teaching what they’re teaching” (p.15). Higher academic standards, as well as American students’ disappointing performance on state and national tests and in international comparisons, are now forcing that examination (Manzo, 2000).

#### Statement of the Problem

Without hard data on the impact on student academic achievement, decision-makers are wary of fully implementing key middle school practices. According to an article by Anfara & Lipka (2003), “the inconclusive nature of the findings related to the effects of key middle school practices on student achievement has been documented and there is an urgency regarding research in this area” (p. 23). Erb (2000) echoes this need for research. Extreme care needs to be taken to protect and support the organizational plan of middle

schools (Rottier, 2000). However, with assessing the effectiveness of middle school programs, it is important to examine some type of student-based measure (Isaacs, 2001).

### Purpose of the Study

As the North Carolina Department of Public Instruction (NCDPI) continues to test students in reading and mathematics and report each North Carolina schools academic growth, middle schools across the state should be questioning why they consistently fall below academic growth expectations. Some research on middle school programs indicate that full implementation of key middle school practices has a direct impact on student academic achievement (Romano & Georgiady, 1997). Yet, middle school experts continue to report the lack of research confirming this.

The purpose of this study was to determine the level of implementation of key middle school practices in North Carolina middle schools with grade configurations 5-8 or 6-8 and to see if the level of implementation had an effect on expected student academic growth on North Carolina EOG reading and mathematics tests. The following research questions were addressed:

1. What is the level of implementation of key middle school practices in North Carolina middle schools with grade configurations 5-8 or 6-8 as reported in the 2002-2003 school year?
2. If North Carolina middle schools are consistently making at least expected academic growth, are those middle schools implementing key middle school practices? If so, what level of implementation is in those middle schools?
3. When using additional school demographic variables (i.e. school location, school size, student body race/ethnicity, and student body socioeconomic status) as part of the analyses, is there an effect on reaching expected academic growth with any amount of implementation of key middle school practices?

### Significance of the Study

Middle school proponents and critics have recognized that too many middle schools have failed to find their academic way (Bradley and Manzo, 2000). According to Anfara (2001),

Middle schools are at a crossroads. We must step back and evaluate where we have and are focusing our energies. We need to strive for higher levels of implementation of middle level reform so that middle schools are more than just a name above the school door (p. xvii).

The standards and accountability movement, specifically the *No Child Left Behind Act of 2001*, is placing unprecedented demands on middle schools and many do not have acceptable levels of student achievement (Bradley and Manzo, 2000). The accountability movement is now forcing administrators and teachers to re-evaluate where they are channeling their energies (Bradley and Manzo, 2000). According to Smith and Andrews (1989), the principal should be seen as the instructional leader of the school, who has a direct impact on the academic achievement of students in reading and mathematics. The principal has the opportunity to make fundamental, structural change in the school setting, and a study on whether or not the implementation of key middle school practices increases student academic achievement centers on the participation of educational administrators (Isaacs, 2001).

The data from this study may serve as an impetus for school administrators to move forward with key middle school practices that improve student performance and to retreat from practices that do not seem to enhance learning. As principals learn of a possible correlation between levels of implementation of middle school key practices and student achievement, they will have some knowledge on which to base decisions about the organizational structure of the school (Isaacs, 2001).

### Research Design and Analysis

This non-experimental correlation study examined the relationship among the level of implementation of key middle school practices, student academic achievement, and school demographic variables - school location, school size, student race/ethnicity, and student socio-economic indicator. This type of research used careful observation and description through a survey (Isaacs, 2001). The results of this quantitative study utilized:

- measures of central tendency: mean, median, mode, range and in addition, the standard deviation, variance, and skewness for independent and dependent variables, and
- regression analyses among the independent and dependent variables.

### Assumptions of the Study

1. Middle school principals can accurately assess the implementation of key middle level practices at their school.
2. The North Carolina Accountability ABCs EOG Reading and Mathematics test is a fair indicator and valid assessment of student achievement.
3. The *Survey of Middle School Implementation Levels* is a valid assessment of the implementation of key middle school practices.

### Limitations of the Study

Only North Carolina middle schools with grade levels of 5-8 or 6-8 were studied, thus, limiting the interpretations and inferences that could be generalized. For example, schools that have additional grade levels such as K-8 schools or fewer grade levels, such as 7-8 schools may not benefit from the findings. Also, principals' knowledge and honesty, as well as their willingness to be a part of the study created additional boundaries. Some principals elected not to complete the online survey instrument without giving a reason and

others did not respond at all. In addition, having only the principal indicate the level of implementation of key middle school practices for their middle school was limiting.

The survey instrument, *Survey of Middle School Implementation Levels*, was re-created by the researcher through many hours of research, reviews by middle school experts, revisions, and a pilot study. Pilot study analyses indicated a moderate to high reliability indicator yet the n-count was low, which proved to be problematic. Additional analyses of the collected survey results also indicated a moderate to high reliability indicator which was considered adequate but still problematic for the study. In addition, the North Carolina End-of-Grade reading and mathematics test scores were the only test data used to measure school level academic growth (student academic achievement indicator).

#### Specialized Terms to be Used in this Research Study

A consensus of specific key middle school practices delineated by the literature and outlined by the California Schools to Watch Taking Center Stage School Self-Rating, Drs. Ken McEwin, Thomas Dickinson, and Doris Jenkins' survey instrument (*National Middle School Survey 2001*), and Dr. Thelma Isaacs (2001) and Dr. Michael Cunningham (1996) dissertations were used:

1. Advisory activities: Students belong to a group which meets on a regular basis with one member of the school staff for the purpose of discussing issues that confront young adolescents (sometimes called Advisor/Advisee).
2. Exploratory/Mini-courses: Courses offered to students based on developing their individual interests.

3. Interdisciplinary teams: Organization of the faculty so that a team of teachers from different disciplines plan and deliver instruction to a common group of students.
4. Common planning time for teams: A time is set aside within the school day for all the teachers on a team to share ideas, plan and evaluate units, and discuss other common concerns.
5. Flexible scheduling: A time schedule that allows the instructional time needs to dictate the length and frequency with which teachers work with a given group of students.
6. Teachers, parents, students, and community working together: Offering meaningful roles and opportunities to teachers, parents, students, and the community to share talents and skills in school governance, teaching, and activities.
7. Student-centered curriculum: The curriculum results in students who are literate in the academic disciplines, the arts, and in health and wellness, and who know how to think critically, lead a healthy life, behave ethically, and have a high level of self-esteem.
8. Educators knowledgeable about young adolescents: Educators have been specially prepared to teach at the middle school and are knowledgeable about the impact of developmental needs of the young adolescent on instruction and curriculum.
9. Teacher, administrator, and student empowerment: Teachers, administrators, and where possible, students have creative control over the instructional programs, scheduling, budgeting, and school-wide programs.

10. Safety and Classroom management: The school employs effective policies that rely on collaborative and shared responsibility between everyone in the school for sustaining a climate conducive for learning.
11. Student assessment process: Students are assessed with continuous, authentic, and developmentally responsive methods and are able to revise their work based on continuous feedback.
12. Variety of appropriate instructional methods: Teachers used varied instructional delivery systems with high levels of interaction among students and teachers.

Additional terms used in this study are described or defined below:

Degree of implementation of key middle school practices

Score on the *Survey of Middle School Implementation Levels* (questions 1-21) completed by North Carolina Middle School principals.

Expected Academic Growth Indicator

Growth expectation score received for the school using the North Carolina EOG Reading and Mathematics tests (1999-2003) and the North Carolina ABCs Accountability regression formulas (1999-2003).

Expected Growth

The expected growth for a school is based on (1) its previous performance, (2) statewide average growth, and (3) a statistical adjustment (regression to the mean) which is needed whenever test scores of the same students are compared from one year to the next. A formula is used to generate expected growth for each school. Sometimes this is called “reasonable growth.” It is the expected growth rate over a year’s worth of time.

### Middle School

A school with grade configuration 5-8 or 6-8 during the 2003 school year.

### School location

Each County in North Carolina is identified on the U.S. Census Bureau's web site as rural or urban. In most cases, counties are identified as both. In this study, the largest amount of the counties' population designated as either rural or urban is the identified demographic variable used for this study (Appendix E).

### School size

The count of students enrolled in a school on the first day of testing in 2003. The North Carolina testing program requires all students enrolled on the first day of testing to be in the schools testing data whether or not they participate in testing. Using these data, the school size can be calculated.

### Student body socioeconomic status

The percentage of the student body qualifying for the U.S.D.A. free and reduced lunch program as identified in the North Carolina testing data in 2003.

### Student body race/ethnicity

The percentage of the student body that is identified in the six race/ethnicity categories: American Indian, Asian, Black, Hispanic, Multi-Racial, and White in the North Carolina testing data in 2003.

### *Survey of Middle School Implementation Levels*

Survey form developed to ascertain the degree of implementation of key middle school practices.

Principal's years of experience

Identified on the *Survey of Middle School Implementation Levels*.

Summary

This study investigated the level of implementation of key middle school practices in North Carolina Middle Schools with 5-8 or 6-8 grade configurations and whether these practices had an effect on students' academic achievement. Chapter 1 defined the need and potential contribution of the study. A review of relevant literature is presented in Chapter 2. The methodology and the study framework is the focus of Chapter 3. Chapter 4 contains the study's findings, and the summary, conclusions, recommendations, and reflections are discussed in Chapter 5.

## CHAPTER 2: LITERATURE REVIEW

### Introduction

Schools serve a purpose in society. They help students become good citizens, lifelong learners, and healthy, caring, ethical, and intellectually reflective individuals. The skills, knowledge, and personal competence that students acquire in school should enable them to be successful now and in the future (NMSA, 1995).

An effective middle school program must meet the diverse needs of young adolescents, ages 10-15 (NMSA, 1995). According to middle school philosophy, all young adolescents must acquire a durable basis for self-esteem, flexible and inquiring minds, reliable and close human relationships, a sense of belonging in a valued group, and a way of being useful beyond one's self (Jackson & Davis, 2000). As noted by Lounsbury (2000), it is:

. . . because of this philosophical approach to middle level education that there are groups in society whose values conflict with the middle school concept and when these opponents make arguments against the middle school, unsatisfactory test scores serve as their biggest weapon (p. 190).

Middle school researchers argue that groups in society should look at multiple student learning measures when assessing the success of a program. When student learning measures, such as test scores, are the only focus of a school's data analysis efforts, school personnel end up using their time figuring out how to look better on the student learning measures (Bernhardt, 2003). This narrow approach has caused school leaders to overlook the key factors that improve academic success. In contrast, looking at student achievement results in the context of the school and the processes that create them gives teachers and administrators important information about what they need to do to improve learning for all students (Bernhardt, 2003).

Today questions abound regarding the implementation and effectiveness of middle school education. Simply stated, it is unclear whether the middle school philosophy of program and practice enhances student academic achievement, or if the accountability alarmists' claims that the middle school lacks academic rigor are correct (Rottier, 2000). This absence of clarity can be blamed partially on the poorly designed research that has been carried out including schools that have only begun to change or that have only made pseudo-changes but call themselves a middle school (Erb, 2000).

According to middle school experts, there is an urgency regarding research about student achievement and middle school reform implementation. Acknowledging this urgency, Felner, Jackson, Kasak, Mulhall, Brand & Flowers (1997) wrote:

“Although a better-developed research base does not, by itself, ensure more successful reform efforts, without such a foundation the progress and fruits of reform efforts will continue to be disappointing” (p. 2).

Research on the effects of implementing key middle school practices has been documented with inconclusive findings (Anfara & Lipka, 2003). As educators look to the research when making decisions, these inconclusive results should not be the rationale for inaction or refusal to move forward in the restructuring of middle schools, since there is research that demonstrates positive effects of restructuring (Anfara & Lipka, 2003).

This chapter will begin with a discussion on the literature relating to the development of the middle school model, including the needs of young adolescents, key middle school practices, and implementation of recommended practices. In addition, research on the relationship between implementation of key middle school practices as defined in *Turning Points* and *Turning Points 2000* and by the National Middle School Association (NMSA),

and student academic achievement will be explored. Finally, research on the accountability movement, including the North Carolina ABCs Accountability model and the *No Child Left Behind Act of 2001* will be reviewed with an emphasis on achievement scores and concern about North Carolina middle schools not making the grade.

### Development of the Middle Level Schools

#### *Creation of the junior high school*

At the turn of the twentieth century educators and psychologists recognized the young years of adolescence, as a “distinct stage of life” (McIver & Epstein, 1992; Dougherty, 2002; Harnett, 1991). It is identified with significant physical, developmental, emotional, and social growth (Knowles & Brown, 2000; Romano & Georgiady, 1997; Harnett, 1991; Wells, 1989). Educators and psychologists voiced concern about the education of young adolescents as they enter this “stage” (Harnett, 1991). It was felt that young adolescents did not belong in the elementary or secondary grades, but needed an educational situation more appropriate to their needs, interests, and learning abilities (Harnett, 1991; Miller & Rotter, 1985). School systems during this time usually divided the schools into elementary (K–8) and secondary (9–12) schools (Knowles & Brown, 2000; Miller & Rotter 1985).

During the early part of the 20<sup>th</sup> century, The Committee of Ten, a group that consisted of representatives from major colleges and secondary schools throughout the United States, released a report supporting a six-year secondary program that encouraged college entrance requirement courses in the secondary schools (Miller & Rotter, 1985; Knowles & Brown, 2000; MacIver & Epstein, 1992). The committee suggested moving 7<sup>th</sup> and 8<sup>th</sup> graders to the secondary level as the committee felt students wasted time in their last years of elementary school (MacIver & Epstein, 1992; Knowles & Brown, 2000). Educators

were voicing their concerns about the number of students dropping out of school after the eighth grade and the overcrowding in K-8 schools (MacIver & Epstein, 1992; Miller & Rotter, 1985). These problems and suggestions from the Committee of Ten justified the move of 7<sup>th</sup> and 8<sup>th</sup> graders to secondary schools (MacIver & Epstein, 1992; Miller & Rotter, 1985; Knowles & Brown, 2000).

In the 1920's a critical mass of secondary schools were overcrowded and in need of repair. Psychologists documented that adolescents between the ages of 10 and 15 had needs that differed significantly from those of students in elementary and secondary schools (Miller & Rotter, 1985; MacIver & Epstein, 1992). To alleviate these concerns, junior high schools with grades 7–9 were started. (Miller & Rotter, 1985; Knowles & Brown, 2000)

Junior high schools were opened to alleviate overcrowding at the senior high schools and to get students between the ages of 10 and 15 into a different school setting (MacIver & Epstein, 1992). These schools focused on the young adolescents (Miller & Rotter, 1985). Their goals included guidance-oriented activities, differentiated curricula to replace the common curriculum offered to young adolescents in an eight-year elementary school, elective classes, and prevocational courses (Miller & Rotter, 1985; MacIver & Epstein, 1992). As junior high schools evolved many issues developed that were problematic (Miller & Rotter, 1985). Teachers employed at junior high schools had secondary certification and did not always know how to implement junior high school curriculum focused on the young adolescent (Harnett, 1991; Jackson & Davis, 2000). Many junior high school teachers used methods similar those of their counterparts in the senior high school, which led junior high schools to be modeled after them (MacIver & Epstein, 1992). Junior high schools became miniature high schools instead of the dropout-prevention, job-market preparing, adolescent-

saving institutions educators had proposed (Cuban, 1992). This phenomenon even included other imports from the high schools such as graduation, junior proms, interscholastic sports, cheerleaders, and bands (Cuban, 1992).

Although dissatisfaction of educators and parents became evident, junior high schools remained a major component of education for over 60 years. Nevertheless, researchers were continually studying important characteristics about young adolescents (Romano & Georgiady, 1997). Research showed that a different type of school was needed; a school that is not elementary and not secondary, one that is “in the middle” and focused on young adolescent characteristics (Romano & Georgiady, 1997).

#### *The Emerging Middle School Model*

The concerns expressed by educators and parents over the lack of congruency between the needs of young adolescents and the junior high school model marked the beginning of the middle school reform movement (Clark & Clark, 1993). This dissatisfaction with the junior high school led to the renaming of some schools as middle schools and in some instances intermediate schools (Hechinger, 1993). William Alexander, who is often referred to as the “father” of middle schools, put forth the idea and vision of a school with unique characteristics for the teaching of young adolescents and introduced the new middle school organizational structure (Lounsbury, 1996; Bailey, 1998). Alexander wanted to create a school “in the middle” with unique characteristics (Lounsbury, 1996; Bailey, 1998). These unique characteristics consisted of

- (1) providing a program to ease the transition of students between elementary and high school,
- (2) providing a program that meets the unique needs of the young adolescent,

- (3) providing a program that includes exploratory experiences,
- (4) providing a foundation of general education,
- (5) providing a program which emphasized individualization,
- (6) emphasizing the planning of the middle school as a middle unit of education allowing students to progress at different rates, and
- (7) organizing students and personnel in a way that supports the middle level concepts and includes an emphasis on values (Alexander, 1995 pXXX).

The middle school reform grew rapidly in the 1970's with the number of schools having a 6-8 grade pattern increasing 160% by 1986 (Alexander and McEwin, 1989). Studies of early so-called middle schools showed that many were actually similar to the junior high schools and that what changed most in the new middle schools were the policy talk, the formal names of schools, and the vocabulary of educators (Cuban, 1992; MacIver & Epstein, 1992).

In 1989, a research paper was released by the Carnegie Council on Adolescent Development from its Task Force on the Education of Young Adolescents *Turning Points: Preparing American Youth for the 21<sup>st</sup> Century*. This report indicated that:

. . .by age 15 substantial numbers of American youth are at risk of reaching adulthood unable to meet adequately the requirements of the workplace, the commitments of relationships in families and with friends, and the responsibilities of participation in a democratic society (p.8).

The report contended “middle grade schools are potentially society’s most powerful force to recapture millions of youth adrift . . . yet all too often these schools exacerbate the problems of young adolescents” (p.8). In 2000, a sequel to this report was published, “*Turning Points 2000: Educating Adolescents in the 21<sup>st</sup> Century*.” The sequel was:

. . . an in-depth examination of how to improve middle grades education. The original *Turning Points* provided a valuable framework . . . *Turning Points 2000* provides much more “flesh on the bone” to guide practitioners in their efforts to implement the middle school model (p. xi).

The growth of middle schools has continued. In 2000, NMSA reported 14,107 middle schools of which, 8,371 had grade configurations of 6-8 (NMSA, 2003).

NMSA projected that by the 2002-03 school year there would be approximately 18,948 middle schools in the United States.

#### *The Establishment of Key Middle School Practices*

As early as 1965, educators were conducting formal and informal surveys to determine the unique characteristics associated with effective middle schools (George and Alexander, 1993; Cunningham, 1996). Middle school advocates wanted a list of viable programs and practices that effective middle schools were utilizing (Isaacs, 2001). The growing literature on the middle school movement during the 1970’s and 1980’s was replete with statements pertaining to the desirable characteristics of middle schools (George and Alexander, 1993). Based on experiences of observing numerous middle schools, researchers Moss, Reigle, and George and Oldaker developed lists of 15, 18, and 11 particular characteristics respectively found in effective middle schools (Cunningham, 1996). Further listing of desirable characteristics continued in publications of the Association for Supervision and Curriculum Development (ASCD), the National Association of Secondary School Principals (NASSP), and the NMSA (George and Alexander, 1993). Although there were differences among the various listings, most were variations of the same themes, stressing curriculum, instructional organization, teacher guidance, instructional methodology, and middle school orientation and articulation that had been persistent in the sources already cited (George and Alexander, 1993).

In 1989, *Turning Points* was published outlining eight key middle school practices. Its sequel, *Turning Points 2000* reduced the eight key middle school practices to seven. The design in *Turning Points 2000* shows how the key middle school practices work together to meet the ultimate goal.

### *Implementation of Key Middle School Practices*

While there is substantial literature indicating that fully implementing key middle school practices will produce effective middle schools, the literature should be reviewed as to the nature of how commonly these practices are actually implemented, the level of implementation, and if student academic achievement is affected. Early studies in the 1970's conducted by Alexander, Brooks, Kealy, Binko, and Lawlor concluded that there were significant gaps between the recommendations of middle school advocates and the programs featured in many middle schools (Cunningham, 1996). Alexander and McEwin (1989) also concluded in a 1988 study that there were still significant gaps in the implementation of key middle school practices. Today, questions abound regarding the implementation of key middle school practices as well as the effectiveness of the middle school reform (Anfara & Lipka, 2003).

Looking at the effects of teaming on achievement, two studies conducted by Cotton (1982) and Armstrong (1977) concluded that neither interdisciplinary team organization nor traditional departmental organization promoted greater student achievement (NMSA, 2002). However, Bradley's experimental study of 78 pairs of seventh graders, matched in interdisciplinary and departmental organizations, showed mathematics gains and equal reading achievement gains for both groups (Bradley, 2000; NMSA, 2003).

Felner and associates (1997) conducted significant and compelling research that acknowledges the value of implementing key middle school practices (as defined in *Turning Points*) in a comprehensive reform initiative (Kasak, 1997). This team of researchers studied 31 middle schools in Illinois (1991-92 school years). Results of this longitudinal study indicated that middle schools where the key middle school practices were fully implemented had higher student academic achievement (as measured by the Iowa Test of Basic Skills) than did traditional middle schools and had substantially better achievement than middle schools where the practices were partially implemented (Anfara & Lipka, 2003).

In Michigan, Mertens, Flowers, and Mulhall (1998) assessed 155 middle schools with high numbers of economically disadvantaged students that were participating in the Middle Start Initiative funded in 1994 by the W.K. Kellogg Foundation. Two surveys were conducted, one in the 1994-95 school year and one in the 1996-97 school year. The focus of these studies was on trends related to teaching practices and learning environments and the relationship of this environment to middle school students' achievement, behaviors, and attitudes. Of the 155 middle schools that started in this study, 21 were more highly involved in the Middle Start Initiative. These 21 middle schools were compared to the other 134 middle schools. Mertens, Flowers, and Mulhall (1998) found that Middle Start schools had improved significantly in both reading and mathematics achievement over the three-year period as measured by the Michigan Educational Assessment of Progress (p. 102).

In Indianapolis, Indiana and seven of its surrounding townships, a carefully planned set of middle school initiatives to increase educational opportunities for young adolescents was supported by a Lilly Endowment grant (Lipsitz, 1997). The program, Middle Grades Improvement Program (MGIP) was targeted toward some of the poorest, most populous, and

most racially diverse public education systems in Indiana (Lipsitz, 1997). The endowment's grants (two sets) targeted middle-grades schools because many young people in these schools were falling desperately behind their more affluent peers academically and high numbers were dropping out (Lipsitz, 1997). The Lilly Foundation used the following five intervention strategies (Lipsitz, 1997):

- 1) Establish a warmer, more adolescent-centered environment
- 2) Support sustainable communities of learners marked by high student achievement and creativity
- 3) Reduce disparities caused by race and class
- 4) Achieve developmentally responsive and academically excellent curriculum and instruction
- 5) Increase the involvement of parents and community organizations.

As a result of the MGIP program, teachers, parents, students, and other community members agreed that the schools established a warmer, more adolescent centered environment. Also, the schools began to practice school-based, data-driven decision-making. The emphasis on data drew stakeholders together around reality rather than around guesses, personal projection, and wishful thinking (Lipsitz, 1997). However, questions remained as to the impact on student academic achievement as a result of the warmer school climate.

In Minneapolis, Minnesota middle school education improved as the community collaborated to implement key middle school practices in all of the city's middle schools (Desjean-Perrotta, 2003). The vision for this program was based on middle school research and recommendations from the Carnegie Council on Adolescent Development. Shadow studies were conducted along with data gathering. The results of the studies showed more teacher awareness of the middle school practices, more parents understanding of their roles in their children's lives and improved awareness of the challenges middle schools face to achieve academic success for their students (Desjean-Perrotta, 2003).

The evidence in Minneapolis showed that middle schools implementing the key middle school practices enjoyed higher student academic achievement. Referencing the Minneapolis experiences, the *NMSA's Research Summary #12: Academic Achievement (2002)* noted that: (1) the issue of implementing key middle school practices is complex; (2) schools which implement more of *Turning Points'* recommendations usually show greater gains in student outcomes; (3) the aim is equitable high achievement for all types of students; (4) the interrelationship of many factors affects student outcomes; and (5) there is a strong link between socioeconomic status and achievement (p 4).

The research confirms that we cannot lose sight of what the middle school reform is all about – developing schools to meet the needs of young adolescents. As student academic achievement is the key emphasis in all educational contexts as well as in today's political context, we must reaffirm our commitment to the desired results of improved academic performance and socio-emotional growth for all middle school students. The question still remains though: “Does the implementation of key middle school practices work?”

### The Accountability Movement

#### *The North Carolina Accountability Program*

The North Carolina Department of Public Instruction (NCDPI) has followed legislation to implement an accountability program that monitors the academic performance of all North Carolina public schools. Its ABCs Accountability model sets academic growth and performance standards for all schools (NCDPI, 1996). The growth model uses previous testing performance, statewide average growth, and statistical adjustment (regression to the mean) to generate an expected academic growth rate for each school. Reasonable growth is the expected academic growth rate that would be reasonable over a year's worth of time

(NCDPI, 1996). The growth rate calculated each school year summarizes student academic growth in reading, mathematics, writing (1999; 2000) and in selected high school subjects. The growth rate provides a picture of a school's overall growth. Each school has its own local standards for meeting expected growth standards. Individual school improvement plans (required by the North Carolina General Assembly) include strategies for improving student performance.

In the 2002-03 school year, North Carolina stayed the course on school improvement efforts beginning in 1995 when the *ABCs of Public Education* was first approved. Although NCDPI is reporting that the *ABCs of Public Education* is paying off in student academic achievement, middle school students are not showing the consistent improvement (Appendix A) that the elementary and high school counterparts enjoy.

In the 2002-03 school year, there were 404 middle schools in North Carolina with a grade configuration of 5-8 or 6-8 (excluding charter schools). This figure represents approximately 18.0% of all North Carolina schools and 63.0% of all students in grades 5-8. The middle schools administered reading and mathematics End-of-Grade (EOG) tests at the end of the 2002-03 school year. Reports from NCDPI showed that 84.9% of the North Carolina middle schools met their academic growth expectations, 15.1% did not. Strikingly, in the three previous school years (1999-2002), 40.0% of North Carolina middle schools with 5-8 or 6-8 grade configurations did not meet their academic growth expectations. For the 2002-03 school year, 94.3% of all North Carolina public schools met at least expected academic growth. Of the 5.7% public schools that did not meet growth standards, 63.0% of them were middle schools with 5-8 or 6-8 grade configurations (NCDPI, 2003).

### *The No Child Left Behind Act of 2001*

The national accountability movement, specifically the *No Child Left Behind Act of 2001* (NCLB) is forcing all educators to do things they should have been doing all along, namely data-driven decisions based on student achievement outcomes (Gerwertz, 2003). *The NCLB's* accountability requirements bring real consequences to schools that fail to improve student achievement.

In 2002, the U.S. Department of Education's Institute of Education Sciences (IES) established the *What Works Clearinghouse* to provide a central, independent, and trusted source of scientific evidence on what works in education for parents, educators, and policymakers. All of the research collected and conducted by the clearinghouse follows high scientific standards and is available via the Internet from the clearinghouse or through the IES Department's Website. Parents may be able to use this information to find out about the programs and curricula selection at their child's school. The seven topics chosen for systematic review in the first year of the *What Works Clearinghouse's* operation reflect a wide range of our nation's most pressing education issues. Of those seven, two reflect middle school programs: middle school mathematics and dropout intervention programs.

### Summary

In summary, a review of relevant literature that led to the creation of middle schools shows that educating young adolescents has been a concern for over a century. However, just opening schools for young adolescents does not change academic achievement. Proper procedures and implementation of key middle school practices that are designed to improve young adolescents' academic achievement should be established. As this review discussed, there are practices that have been established in middle schools that have shown to increase

student academic achievement. Other research shows inconclusive information. Therefore, the research remains inconclusive and further analyses on what works for middle schools is needed.

In North Carolina, there are middle schools that continually meet and exceed academic growth standards and some that do not. If North Carolina middle schools are implementing key middle school practices, are they the schools that meet or exceed the standards consistently? To answer this question, research on the level of implementation of key middle school practices in North Carolina middle schools was conducted. This study involved North Carolina middle schools with grade configurations of 5-8 or 6-8 and the level of implementation of key middle school practices as reported on an online survey. In the following chapter, the research methodology that was used for this study is explained and in subsequent chapters, results of the study are presented and discussed.

## CHAPTER 3: METHODOLOGY

This chapter describes the research procedures utilized for this study. A description of the research design, population, survey instrument and implementation, data collection processes, and data analyses are included.

### Research Design

This non-experimental correlation study examined the relationship between the level of implementation of key middle school practices and expected student academic growth when additional school demographic variables were considered - school location, school size, student body race/ethnicity, and student body socio-economic indicator. It involved collecting data in order to determine whether and to what degree a relationship between two or more variables existed (Johnson, 2001). This type of study also used the relationships between variables to make predictions (Ravid, 2000).

In education, non-experimental quantitative research is an important method because there are so many important but non-manipulable independent variables needing further study (Johnson, 2001). According to Kerlinger (1986), “most social, scientific, and educational research problems do not lend themselves to experimentation, although many of them do lend themselves to controlled inquiry of the non-experimental kind” (p. 359-360).

The level of implementation of key middle school practices was one of the independent variables in this study. It was defined as the aggregate score on the *Survey of Middle School Implementation Levels* (questions 1-21). In addition, four additional independent variables were included: school location, school size, student body race/ethnicity, and student body socio-economic indicator (percentage of students receiving free or reduced lunch). This information was obtained from the *North Carolina ABCs*

*Accountability* data, the North Carolina Department of Public Instruction (NCDPI), and the U.S. Census Bureau data.

The dependent variables for this study were the 1999-2003 expected academic growth rates for North Carolina middle schools with grade configurations 5-8 or 6-8 that participated in this study. The expected academic growth for these schools was obtained by applying the North Carolina ABCs Accountability model (1999-2003) to North Carolina test data. This model calculated schools' expected academic growth by using End-of-Grade (EOG) test results in reading and mathematics for a cohort of students who had current and past EOG test scores. All rules and regulations as defined by NCDPI ABCs Accountability model were used when running the analyses except the study did not include any End-of-Course (EOC) test results in a North Carolina middle schools' expected academic growth. The NCDPI Accountability Division provided the EOG data used for this study.

#### Population

The population for this study was North Carolina middle schools with grade configurations 5-8 or 6-8, excluding charter schools. In the 2002-03 school year, North Carolina had 404 middle schools with such grade configurations.

#### Survey Instrument

In this study, the *Survey of Middle School Implementation Levels* (Appendix B) produced numbers that indicated the level of implementation of key middle school practices in a North Carolina middle school. A dissertation completed by Dr. Thelma Isaacs (2001) *Putting West Virginia Middle Schools to the Test: Implementation of Key Practices as a Predictor of School Achievement* included a survey instrument that was administered to West

Virginia middle school principals. Dr. Isaacs created this survey instrument by conducting in-depth reviews of the middle school literature programs and practices (Isaacs, 2001).

For this study, a new survey instrument was created following an in-depth review of key middle school practices and following descriptions Dr. Isaacs used in development of her survey instrument. Each question on Dr. Isaac's survey was modified to reflect current middle school practices as defined in the literature. Additional references used in the creation of the *Survey* included:

- California's School Self-Rating survey that used National Forum to Accelerate Middle-Grades Reform *Schools to Watch* criteria
- Drs. Ken McEwin, Thomas Dickinson, and Doris Jenkins' survey instrument (*National Middle School Survey 2001*) that was used to assess middle school practices in middle schools across the nation,
- Survey questions from other survey instruments, such as the NMSA *A 21<sup>st</sup> Century Research Agenda* that have been used to assess implementation levels of key middle school practices in middle schools throughout the United States.

In addition, questions on the *Survey of Middle School Implementation Levels* (Survey) asked North Carolina middle school principals their area of certification, how many years they felt their middle school had been implementing key middle school practices, if they had their staff complete a self-study on implementing key middle school practices, and if available, the teacher retention percentage from the previous school year. Each participating principal was asked to use their unique school number for identification purposes in matching school EOG test data to the principal's responses on the *Survey*.

The *Survey* consisted of 27 items. Twenty-one items addressed the key middle school practices directly and six items probed other relationship issues like principal certification, self study, and retention of teachers. The *Survey* asked principals to indicate the level of implementation for 21 of the 27 items using a four-point rating scale (3 = high level of implementation; 2 = medium level of implementation; 1 = low level of implementation; or 0 = not implemented). The other six questions were yes/no and multiple choice answers type questions, with one open-ended response question and an additional comment section was provided.

Prior to the use in this study, the *Survey* was reviewed by four middle school experts (Appendix C). Three complimented the *Survey* and looked forward to the results. The fourth posited that the *Survey* would not accurately assess a schools' implementation of key middle school practices based on current middle school literature. After further research, the *Survey* was revised and resent to the four experts. Three again sent approving comments so the *Survey* was released.

After review by the middle school experts, the *Survey* and the directions for North Carolina middle school principals to access the online survey and the information on confidentiality were sent via email to the North Carolina State University's Institutional Review Board (IRB) office. The IRB office indicated that the survey instrument did not need an IRB certificate and that the study could continue (Appendix D).

AxisCreations, a computer programming company started by two high school students in Harnett County, North Carolina, programmed the *Survey* online. The programming included an online viewer for the researcher to see the survey results in real time, which helped to monitor the response rate. Once the online survey was programmed,

21 people were contacted who were a principal, teacher, or central office administrator who had worked at a middle school or are currently working at a middle school to pilot test the *Survey* (Appendix C). Thirteen of the 21 completed the pilot study with recommendations given on adding more certification areas to question 22 for a principal to choose and for more clarification on the directions (Appendix E) for the principals to access and to complete the online survey.

Although the pilot study resulted in 13 responses, a reliability test (coefficient alpha) was conducted<sup>1</sup>. The Cronbach's alpha raw score was .95 and the standardized was .96. These numbers indicated that there was a low chance of a type I error. Yet, as the study proceeded, these results were noted as a limitation in the study due to a low n-count for this reliability test.

### Survey Implementation

The *Survey* was available online July 26 to September 19, 2004. Responses were monitored daily with emails being sent every few days to remind principals. A raffle (\$100, \$75, \$50, and \$25) was included as an incentive for completing the survey instrument. Four principals were winners of the raffle.

During the implementation of the *Survey*, the computer processing shut down for 16 days and the researcher was traveling without Internet access to check the survey. During this time, any North Carolina middle school principal that submitted their survey responses did not show up in the computer database. The computer problem was caused by a lightning storm that damaged the server. After 14 days, an email was sent to principals not shown to have participated in the study as of August 27, 2004, asking them to try again to submit

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<sup>1</sup> The Cronbach's alpha was used in this study as the error factors associated with the use of different items are of interest. The coefficient alpha takes into account variance attributable to subjects and variance attributable to the interaction between subjects and items (Cortina, 1993).

responses with an explanation of the computer malfunction. Sixteen North Carolina middle school principals responded to this email by completing the online survey and an additional 20 North Carolina middle school principals responded by asking to be removed from the email list as they were too busy to complete the survey or did not want to participate. With the 16 new responses, the response rate increased from 26% to 31% by September 19, 2004. On September 26, 2004, the online *Survey* was taken off-line as there were no more responses submitted. The online responses were saved into an Excel file for analysis and a reliability test was conducted. The Cronbach's alpha raw score was .88 and the standardized was .88. With these results, the researcher proceeded with this study, noting that reliability of the survey instrument was still a limitation.

#### Student Achievement Data

To measure student academic achievement, five years (1999-2003) of North Carolina EOG test data in reading and mathematics on students in grades 5-8 were obtained from the North Carolina Department of Public Instruction (NCDPI) Accountability division. The data for this study are collected each year as part of the North Carolina *ABCs Accountability* program. The NCDPI reports that developmental scale scores on EOG tests can be used to chart average educational growth of students as they progress through the grades. The way the developmental scales were designed, EOG reading and mathematics scale scores can provide a standard for comparing average growth across grade levels in future years (NCDPI, 1996). The developmental scale scores can be used, according to NCDPI, to compare mean scale scores to the state average, and they can be averaged with comparisons made within each subject and across groups including schools. NCDPI warns researchers that it is inappropriate to compare developmental scale scores across subjects (e.g., reading versus

mathematics) because the typical growth across grades for each subject differs. NCDPI initially normed the North Carolina EOG reading and mathematics tests for grades 3-8 in 1993. The tests were later renormed using the state statistical distribution scores from the 1998-99 statewide administration. The EOG reading and mathematics scale scores were used independently in the NCDPI *ABCs Accountability* model (1999-03) to obtain five years of expected academic growth for each school in this study. The expected academic growths for 1999-03 were used as the dependent variables in this study.

#### Data Collection Procedures

The 404 North Carolina middle school principals in middle schools with grade configurations of 5-8 or 6-8 were mailed a packet of information (Appendix E) about the research study. This packet contained (a) details of the research study, (b) instructions to access the online *Survey of Middle School Implementation Levels*, (c) definitions of the implementation levels, (d) description of a raffle for participants, and (e) the promise of confidentiality. Addresses for the principals were obtained from the North Carolina Department of Public Instructions website. The letter that was mailed explained that each principal should use his/her unique North Carolina school number so that survey responses could be matched to EOG test data.

After the survey was online for two weeks, the researcher created an email listing of all North Carolina middle school principals that had not responded to the survey. Using the NCDPI website that contains web links to all North Carolina schools, an email list was created for approximately 300 of the North Carolina middle schools. Emails were sent to the North Carolina middle school principals who had not responded to the survey, every few days for the next four weeks. Each time the emails were sent, responses increased. A second

mailing was sent on August 27, 2004 to approximately 100 North Carolina middle school principals whose emails were not available. This also increased response rates. A return rate of at least 25 percent was sought prior to data analyses.

Collection of student achievement data for five years (1999-2003) was obtained from the NCDPI Accountability Division. This division maintains databases of EOG test data that are available to researchers with student identification variables removed. These data contain students' race/ethnicity and student socioeconomic status variable (free/reduced lunch). In addition, school size can be calculated using these databases, as all students must be included in the testing database on the first day of testing for a respective school year. Additional data were collected from the U.S. Census Bureau website on the rural and urban setting for each school.

#### Analysis of the Data

The Statistical Analysis Software 8.0 (SAS) and the Statistical Package for the Social Sciences 12.0 (SPSS) were used to analyze and present the findings of the data. Data were analyzed to determine the following: (a) the level of implementation of key middle school practices in the North Carolina middle schools that responded to the *Survey*, (b) the association between the level of implementation of key middle school practices and expected academic growth, and (c) the association between the level of implementation of key middle school practices and expected academic growth when controls were introduced. The dependent variables were expected academic growth rates (1999-2003) as calculated using the NCDPI ABCs regression formulas. These averages were calculated using SAS software programming that was created to check the North Carolina regression formulas. The independent variables were the level of implementation of key middle school practices (as

measured from the responses principals gave on the *Survey*), school location, school size, student body race/ethnicity, and student body socioeconomic status.

Using SAS, the researcher combined *Survey* scores, school expected academic growth indicators, school location (rural = 1, urban = 0), school size, student body race/ethnicity percentages, and percentage of students receiving free or reduced lunch (SES variable) for the schools with grade levels 5-8 or 6-8 that responded to the online survey.

Using SPSS, the researcher first calculated measures of central tendency (mean, median, mode, range) and measures of variability (standard deviation, variance) for the independent and dependent variables on the North Carolina middle schools that participated in the study. This information provided an overall picture of the schools' organizational patterns and contextual situations for the schools in this study.

Second, the researcher examined the responses from the *Survey* with the number of years a North Carolina middle school met expected academic growth during the five-year span (1999-2003) of this study. The relationship between the number of years met (0-5) and the level of implementation of key middle school practices (0-63) were also examined with the socioeconomic status variable (free/reduced lunch percentage). This analysis provided information on the effect of the implementation level (as indicated by the North Carolina middle school principal) in the meeting of expected academic growth. While looking at this relationship, a socioeconomic indicator was included to help put the results in perspective<sup>2</sup>.

Third, relationships among all the variables were analyzed. Using SAS and SPSS, simple and multiple regression analyses were conducted. Each independent variable was analyzed with the dependent variables first in a series of simple regression analyses. Then,

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<sup>2</sup> Research has shown that socioeconomic status has an impact on student academic achievement, which could be another reason for a middle school to meet or not meet expected academic growth (CDD, 2003).

all independent variables were analyzed with the dependent variables. Each of these regression analyses was conducted to see if there was any significant relationship between the independent variables and the dependent variables. That is, the analyses were used to statistically identify, isolate, or nullify variance in a dependent variable that is presumably “caused” by one or more independent variables (Pedhazur, 1997).

In the following chapter, the results for this study are presented, and the summary, conclusions, recommendations, and reflections are discussed in Chapter 5.

## CHAPTER 4: FINDINGS

### Introduction

The purpose of this study was to determine first the degree of implementation of key middle school practices in North Carolina middle schools and second the relationship, if any, between the degree of implementation and school academic achievement with additional school demographics considered. Degree of implementation of key middle school practices was measured by principals' responses on the *Survey of Middle School Implementation Levels (Survey)* and school achievement was measured using the 1999-2003 North Carolina End-of-Grade (EOG) reading and mathematics tests. Additional school demographics included school location, school size, student body race/ethnicity, and student body socioeconomic status (free/reduced lunch) obtained from the North Carolina Department of Public Instruction and U.S. Census Bureau.

In this chapter the results of the study, including statistical analyses of the testing and survey data, are presented in four sections: (a) population and sample, (b) demographic data, (c) research questions 1-3, and (d) EOG testing data and survey data.

### Population and Sample

The population for this study consisted of 404 North Carolina middle schools with grade levels 5-8 or 6-8, excluding charter schools. Of the 404, 123 middle school principals responded or 31% of the middle schools. In addition, these schools represented 69% (70/101) of the North Carolina local education agencies (LEA) that have 5-8 or 6-8 middle schools.

The principals were sent a letter asking them to complete the survey online and were also reminded through emails of the online survey. A return rate graph is presented in Figure 1.

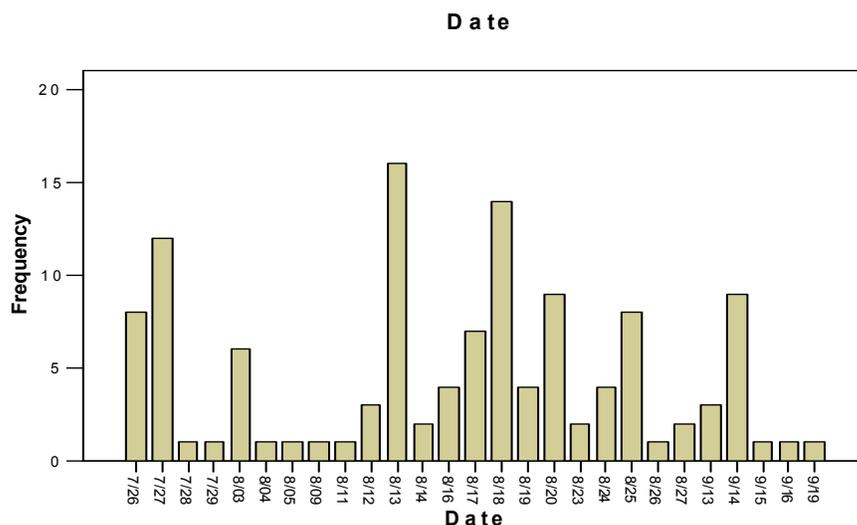


Figure 1. Return Rate Graph

### Demographic Data

Contacting the NCDPI Accountability Division and accessing the U.S. Census Bureau website enabled the collection of demographic data on school location, school size, student body race/ethnicity, and student body socioeconomic status. This section provides a summary of the data collected for measures of central tendency (mean, median, and mode), and measures of variability (variance and standard deviation) on each demographic variable.

#### *School Location*

The first demographic variable examined was the size of the communities in which the participating schools were located. Data were collected from the 2002 U.S. Census Bureau web link for community population. Using the U.S. Census Bureau's "Quick Facts" website, each county in North Carolina was identified as urban or rural. Of the 123 middle

schools participating in the study, 70 (56.9%) were classified as urban and 53 (43.1%) were categorized as rural. Table 2 and Figure 2 display the information related to school location.

Table 2. Frequency Distribution of School Location

### Rural

|               | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------------|-----------|---------|---------------|--------------------|
| Valid 0 Urban | 70        | 56.9    | 56.9          | 56.9               |
| 1 Rural       | 53        | 43.1    | 43.1          | 100.0              |

### Rural

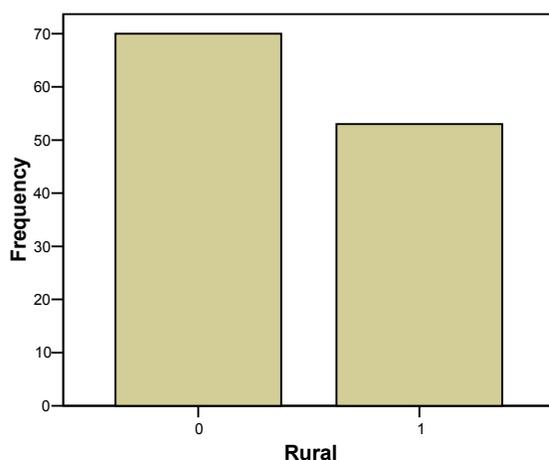


Figure 2. Bar Graph of School Location Data

### *School Size*

The second demographic variable, school size, was calculated using the 2003 North Carolina testing data files. School size ranged from 161 to 1666 students. The range score of 1505 indicates vast differences in terms of size. However, the two smallest schools (161 and 168) and the three largest (1666, 1567, 1535) could be considered outliers, as the next closest enrollments are approximately 100 students in difference for the small schools and approximately 200 students in difference for the large school. The mean enrollment was 724 students and the median was 700. Variance and standard deviation scores were 81,307 and

285 respectively. These large variance and standard deviation scores also revealed that the sizes were spread out (heterogeneous). While there does appear to be quite a bit of diversity in enrollment, the slightly high positive skewness score (.688) revealed that the distribution is stretched some to the right, which was due to the outliers.

In addition, 86 (69.9%) of the participating middle schools had student enrollments within one standard deviation from the mean (439 – 1009 students); the mean, median, and mode were also very close. This indicates a possible normal curve. Table 3 and Figure 3 display the information related to school size.

Table 3. Measures of Central Tendency and Variability for School Size

### Statistics

#### School Size

|                        |         |           |
|------------------------|---------|-----------|
| N                      | Valid   | 123       |
|                        | Missing | 0         |
| Mean                   |         | 724.37    |
| Median                 |         | 700.00    |
| Mode                   |         | 766       |
| Std. Deviation         |         | 285.144   |
| Variance               |         | 81307.334 |
| Skewness               |         | .688      |
| Std. Error of Skewness |         | .218      |
| Range                  |         | 1505      |
| Minimum                |         | 161       |
| Maximum                |         | 1666      |

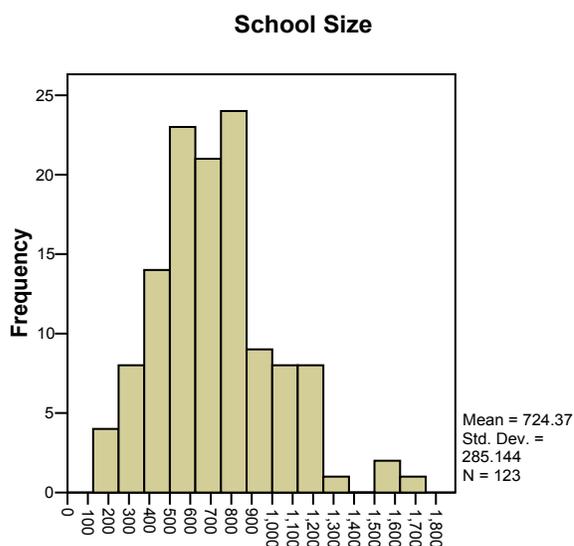


Figure 3. Histogram of School Size Data

### *Student Body Race/Ethnicity*

The percentage of students' race/ethnicity was the third demographic variable.

NCDPI Accountability Division reports on student body race/ethnicity in six categories:

American Indian, Asian, Black, Hispanic, Multi-Racial, and White. The percentage of White students in the 123 schools ranged from approximately 2.5% to 98.7%. Similar percentages were found among the Black students (0.0% to 93.9%). The smallest percentage was in the Multi-Racial race/ethnicity category (0.0% to 5.7%).

The mean percentage scores of American Indian (0.7%), Asian (1.6%), Hispanic (5.9%), and Multi-Racial (1.5%) students totaled approximately ten percent of the student body race/ethnicity representation. Thus, the student body race/ethnicity diversity was low. It was predominately White (61.7%) with Black students (28.6%) and other race/ethnicity groups (10%) accounting for the rest. Table 4 and Figures 4-9 display the information for student body race/ethnicity.

Table 4. Measures of Central Tendency and Variability for Student Body Race/Ethnicity

## Statistics

|                        | American Indian | Asian   | Black    | Hispanic | Multi-Racial | White    |
|------------------------|-----------------|---------|----------|----------|--------------|----------|
| N Valid                | 123             | 123     | 123      | 123      | 123          | 123      |
| Missing                | 0               | 0       | 0        | 0        | 0            | 0        |
| Mean                   | .6502           | 1.6241  | 28.6166  | 5.8885   | 1.5144       | 61.7063  |
| Median                 | .2506           | .7220   | 21.8415  | 3.7736   | 1.3055       | 66.0679  |
| Mode                   | .00             | .00     | 55.35    | 21.93    | .00          | 19.32    |
| Std. Deviation         | 2.49800         | 2.09654 | 22.95082 | 6.74597  | 1.06058      | 24.91691 |
| Variance               | 6.240           | 4.395   | 526.740  | 45.508   | 1.125        | 620.853  |
| Skewness               | 9.971           | 1.888   | .728     | 2.978    | .881         | -.497    |
| Std. Error of Skewness | .218            | .218    | .218     | .218     | .218         | .218     |
| Range                  | 27.12           | 10.34   | 93.86    | 43.09    | 5.69         | 96.26    |
| Minimum                | .00             | .00     | .00      | .28      | .00          | 2.45     |

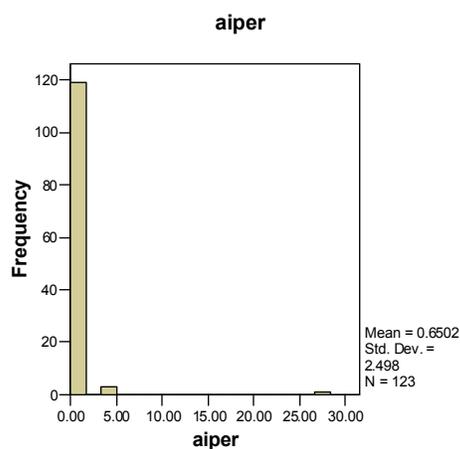


Figure 4. Histogram of American Indian Student Body Race/Ethnicity

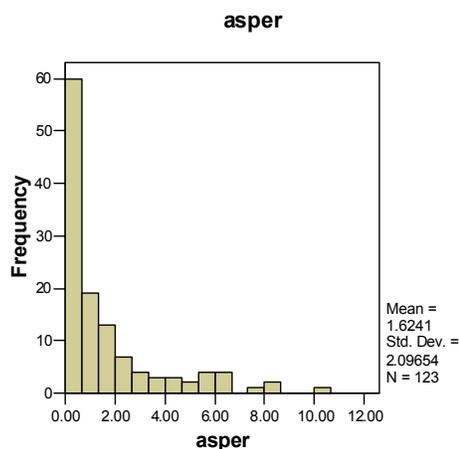


Figure 5. Histogram of Asian Student Body Race/Ethnicity

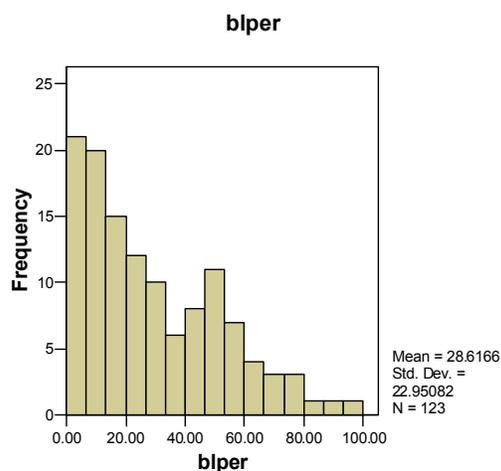


Figure 6. Histogram of Black Student Body Race/Ethnicity

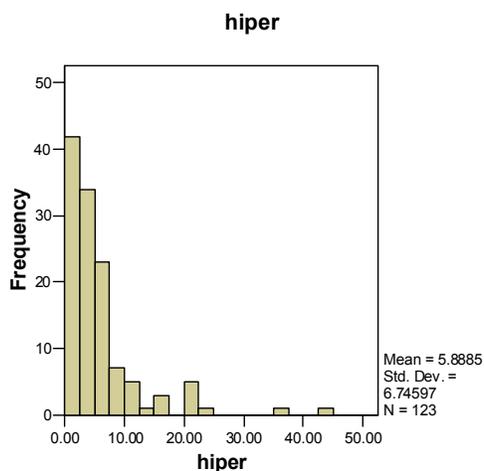


Figure 7. Histogram of Hispanic Student Body Race/Ethnicity

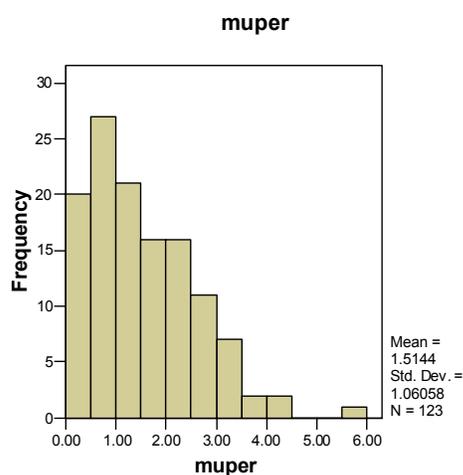


Figure 8. Histogram of Multi-Racial Student Body Race/Ethnicity

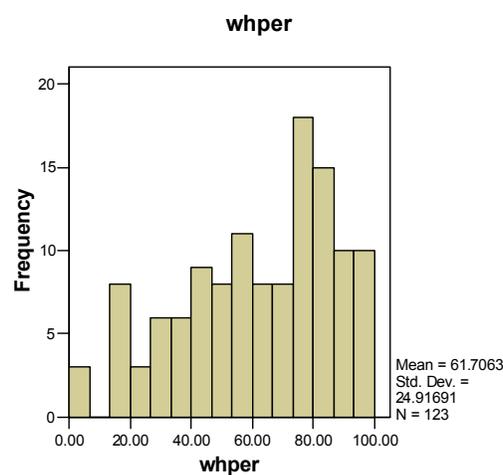


Figure 9. Histogram of White Student Body Race/Ethnicity

### *Student Body Socioeconomic Status*

The percentage of students receiving free or reduced price meals (socioeconomic status) was the fourth demographic variable for each school and was obtained from the NCDPI Accountability Division data. The percentage of students receiving free or reduced price meals in the 123 schools ranged from 5.4% to 91.1% with a mean percentage of 41.1%

and a median score of 38.6%. The largest number of schools reported their percentage of free or reduced price meals at 65.4% (n = 3). These measures of central tendency and the small skewness score (.405) suggested that the student body socioeconomic status was evenly distributed. Variance and standard deviation scores were 339.3 and 18.4, further substantiating this assertion.

For the student body socioeconomic status in North Carolina middle schools that responded to this study, three standard deviations encompassed 96.7% of the possible range of scores, indicating a few outliers. Table 5 and Figure 10 display the information related to student body socioeconomic status.

Table 5. Measures of Central Tendency and Variability for Student Body Socioeconomic Status.

#### Statistics

##### Free/Reduced Lunch Percent

|                        |         |          |
|------------------------|---------|----------|
| N                      | Valid   | 123      |
|                        | Missing | 0        |
| Mean                   |         | 41.0749  |
| Median                 |         | 38.5661  |
| Mode                   |         | 65.40    |
| Std. Deviation         |         | 18.41975 |
| Variance               |         | 339.287  |
| Skewness               |         | .405     |
| Std. Error of Skewness |         | .218     |
| Range                  |         | 85.71    |
| Minimum                |         | 5.42     |
| Maximum                |         | 91.13    |

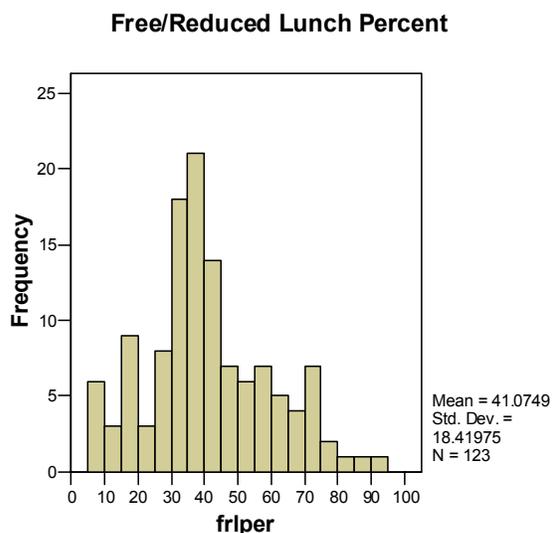


Figure 10. Histogram of Student Body Socioeconomic Status Data

### Research Question 1

#### **To what degree are North Carolina middle schools implementing key middle school practices?**

The *Survey* completed by principals was utilized to determine the degree to which schools with grade configurations of 5-8 or 6-8 were implementing the key middle school practices as outlined in the literature. The possible range of scores was from a low of zero to a high of 63 on questions 1-21 that were used for the implementation level scores. Questions 22-27 asked questions on years of implementing middle school practices, principals' certification area, self-study information, teacher retention, and general comments.

The 123 schools' mean implementation level score on the *Survey* was 50.2, the median was 51.0, and the modes were 52.0 & 57.0. These high scores indicated that the schools were implementing many of the key middle school practices. However, despite the fact that the returned scores were concentrated toward the high end of the survey scale, the measures of central tendency were very close in number, suggesting a normal curve

distribution. Furthermore, the small negative skewness score (-.455) indicated that the distribution was only slightly skewed to the left. Implementation survey scores ranged from 31.0 to 62.0, with variance and standard deviation scores at 49.7 and 7.1 respectively.

Despite the overall high mean score on the survey, these measures of variability indicate that the scores were fairly heterogeneous. Thus, there is still quite a bit of diversity among the individual schools. Table 6 and Figure 11 show the cumulative descriptive statistics and a histogram for the implementation levels.

Table 6. Descriptive Statistics for the Implementation Scores from the *Survey of Middle School Implementation Levels* (Questions 1-21)

### Statistics

Implementation level

|                        |         |        |
|------------------------|---------|--------|
| N                      | Valid   | 123    |
|                        | Missing | 0      |
| Mean                   |         | 50.24  |
| Median                 |         | 51.00  |
| Mode                   |         | 52(a)  |
| Std. Deviation         |         | 7.048  |
| Variance               |         | 49.678 |
| Skewness               |         | -.455  |
| Std. Error of Skewness |         | .218   |
| Range                  |         | 31     |
| Minimum                |         | 31     |
| Maximum                |         | 62     |

a Multiple modes exist. The smallest value is shown

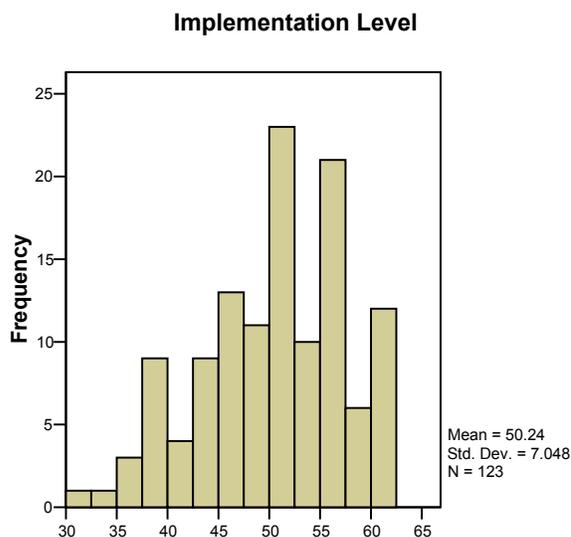


Figure 11. Histogram of the Implementation Scores from *the Survey of Middle School Implementation Levels* (Questions 1-21)

In addition to the implementation scores, each individual question on the survey was analyzed to determine measures of central tendency and measures of variability. By reporting the question data individually, a more descriptive picture of which specific middle school practices were being implemented was created. Frequency distributions and histograms that follow allow a more thorough investigation into the exact nature of the middle school practices and programs for the participating schools.

Scores on questions 1-21 ranged from 0 to 3 with 3 being the highest level of implementation (90–100% of all staff and/or community members participate in the middle school practice), 2 being the medium level of implementation (50-89% of all staff and/or community members participate in the middle school practice), 1 being the low level of implementation (1-49% of all staff and/or community members participate in the middle school practice), and 0 represented the middle school practice not being implemented. Tables 7, 8, 9, and 10 show the individual results for questions 1-21 and are followed by a section providing additional information on each survey question, including questions 22-27.

Table 7. Measures of Central Tendency and Variability for Questions 1-5

**Statistics**

|                        |         | num1  | num2   | num3  | num4  | num5  |
|------------------------|---------|-------|--------|-------|-------|-------|
| N                      | Valid   | 123   | 123    | 123   | 123   | 123   |
|                        | Missing | 0     | 0      | 0     | 0     | 0     |
| Mean                   |         | 1.75  | 2.76   | 2.20  | 2.48  | 2.37  |
| Median                 |         | 2.00  | 3.00   | 2.00  | 3.00  | 2.00  |
| Mode                   |         | 2     | 3      | 2     | 3     | 3     |
| Std. Deviation         |         | .902  | .518   | .757  | .578  | .681  |
| Variance               |         | .813  | .268   | .573  | .334  | .463  |
| Skewness               |         | -.296 | -2.422 | -.704 | -.568 | -.609 |
| Std. Error of Skewness |         | .218  | .218   | .218  | .218  | .218  |
| Range                  |         | 3     | 3      | 3     | 2     | 2     |
| Minimum                |         | 0     | 0      | 0     | 1     | 1     |
| Maximum                |         | 3     | 3      | 3     | 3     | 3     |

Table 8. Measures of Central Tendency and Variability for Questions 6-10

**Statistics**

|                        |         | num6  | num7   | num8  | num9   | num10  |
|------------------------|---------|-------|--------|-------|--------|--------|
| N                      | Valid   | 123   | 123    | 123   | 123    | 122    |
|                        | Missing | 0     | 0      | 0     | 0      | 1      |
| Mean                   |         | 2.52  | 2.63   | 2.47  | 2.80   | 2.69   |
| Median                 |         | 3.00  | 3.00   | 3.00  | 3.00   | 3.00   |
| Mode                   |         | 3     | 3      | 3     | 3      | 3      |
| Std. Deviation         |         | .533  | .564   | .577  | .478   | .516   |
| Variance               |         | .284  | .318   | .333  | .229   | .266   |
| Skewness               |         | -.412 | -1.210 | -.537 | -2.812 | -1.365 |
| Std. Error of Skewness |         | .218  | .218   | .218  | .218   | .219   |
| Range                  |         | 2     | 2      | 2     | 3      | 2      |
| Minimum                |         | 1     | 1      | 1     | 0      | 1      |
| Maximum                |         | 3     | 3      | 3     | 3      | 3      |

Table 9. Measures of Central Tendency and Variability for Questions 11-15

### Statistics

|                        |         | num11 | num12 | num13 | num14 | num15 |
|------------------------|---------|-------|-------|-------|-------|-------|
| N                      | Valid   | 122   | 123   | 123   | 123   | 122   |
|                        | Missing | 1     | 0     | 0     | 0     | 1     |
| Mean                   |         | 2.66  | 1.90  | 2.11  | 2.20  | 2.11  |
| Median                 |         | 3.00  | 2.00  | 2.00  | 2.00  | 2.00  |
| Mode                   |         | 3     | 2     | 2     | 2     | 2     |
| Std. Deviation         |         | .477  | .773  | .643  | .636  | .658  |
| Variance               |         | .228  | .597  | .413  | .404  | .433  |
| Skewness               |         | -.664 | .062  | -.106 | -.187 | -.124 |
| Std. Error of Skewness |         | .219  | .218  | .218  | .218  | .219  |
| Range                  |         | 1     | 3     | 2     | 2     | 2     |
| Minimum                |         | 2     | 0     | 1     | 1     | 1     |
| Maximum                |         | 3     | 3     | 3     | 3     | 3     |

Table 10. Measures of Central Tendency and Variability for Questions 16-21

### Statistics

|                        |         | num16 | num17  | num18 | num19 | num20  | num21 |
|------------------------|---------|-------|--------|-------|-------|--------|-------|
| N                      | Valid   | 123   | 123    | 122   | 121   | 120    | 121   |
|                        | Missing | 0     | 0      | 1     | 2     | 3      | 2     |
| Mean                   |         | 2.49  | 2.67   | 2.52  | 2.25  | 2.76   | 2.14  |
| Median                 |         | 3.00  | 3.00   | 3.00  | 2.00  | 3.00   | 2.00  |
| Mode                   |         | 3     | 3      | 3     | 2     | 3      | 2     |
| Std. Deviation         |         | .606  | .520   | .578  | .649  | .467   | .675  |
| Variance               |         | .367  | .270   | .334  | .421  | .218   | .455  |
| Skewness               |         | -.741 | -1.279 | -.716 | -.293 | -1.713 | -.175 |
| Std. Error of Skewness |         | .218  | .218   | .219  | .220  | .221   | .220  |
| Range                  |         | 2     | 2      | 2     | 2     | 2      | 2     |
| Minimum                |         | 1     | 1      | 1     | 1     | 1      | 1     |
| Maximum                |         | 3     | 3      | 3     | 3     | 3      | 3     |

**Question 1. Every student has a mentor, advisory, advocate, or other adult with whom he/she trusts and maintains a long-term relationship.**

Participating principals reported that they did not always implement an advisory type program. The mean score for this question was 1.8 and both the median and mode were 2.0. The majority of the schools (42.3%) indicated that 50-89% of staff and/or the community participate in this practice. Approximately 10% of the schools indicated that they do not participate in this middle school practice.

Table 11. Frequency Distribution of Question 1

**num1**

|         | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------|---------|---------------|--------------------|
| Valid 0 | 12        | 9.8     | 9.8           | 9.8                |
| 1       | 33        | 26.8    | 26.8          | 36.6               |
| 2       | 52        | 42.3    | 42.3          | 78.9               |
| 3       | 26        | 21.1    | 21.1          | 100.0              |

**num1**

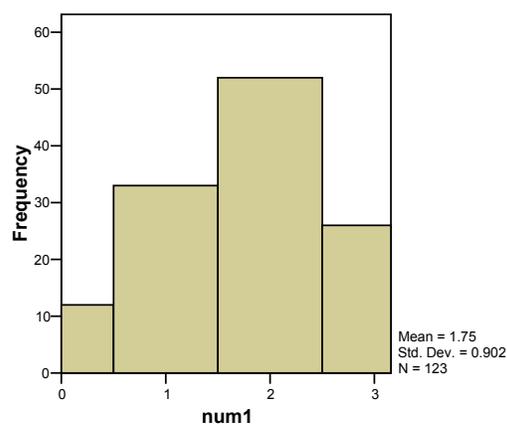


Figure 12. Histogram for Question 1

**Question 2. The school is designed with interdisciplinary teams that include heterogeneous grouping of students, common planning for teachers, formal team leaders with specific responsibilities, team sessions for systemic assessment of student strengths and weaknesses, team organization for effective decision-making, and development of team identity.**

The mean score for interdisciplinary teams in the participating schools was 2.8.

Median and mode scores were 3.0. The majority of the respondents (78.9%) indicated that this middle school practice was highly implemented. That is, 90-100% of the staff and/or the community participated in this middle school practice. Only one school indicated that they did not.

Table 12. Frequency Distribution of Question 2

**num2**

|         | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------|---------|---------------|--------------------|
| Valid 0 | 1         | .8      | .8            | .8                 |
| 1       | 2         | 1.6     | 1.6           | 2.4                |
| 2       | 23        | 18.7    | 18.7          | 21.1               |
| 3       | 97        | 78.9    | 78.9          | 100.0              |

**num2**

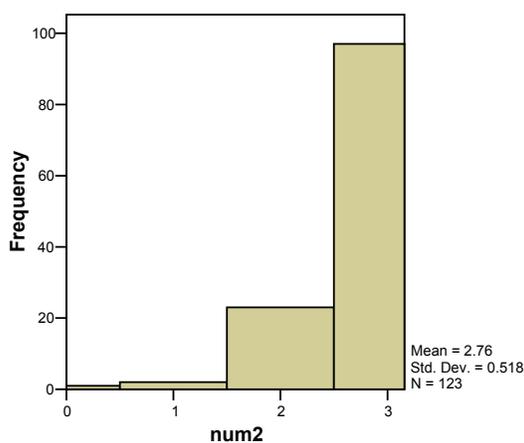


Figure 13. Histogram for Question 2

**Question 3. Flexible scheduling enables students to engage in extended projects, hands-on experiences, and inquiry-based learning. Students can have more time to learn the content, concepts, or skills if they need it.**

Participating principals indicated that 50-89% of their staff and/or the community implemented flexible scheduling. The mean response was a 2.2 with the median and mode also being a 2.0. Three principals indicated that they did not implement this middle school practice.

Table 13. Frequency Distribution of Question 3

**num3**

|         | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------|---------|---------------|--------------------|
| Valid 0 | 3         | 2.4     | 2.4           | 2.4                |
| 1       | 16        | 13.0    | 13.0          | 15.4               |
| 2       | 57        | 46.3    | 46.3          | 61.8               |
| 3       | 47        | 38.2    | 38.2          | 100.0              |

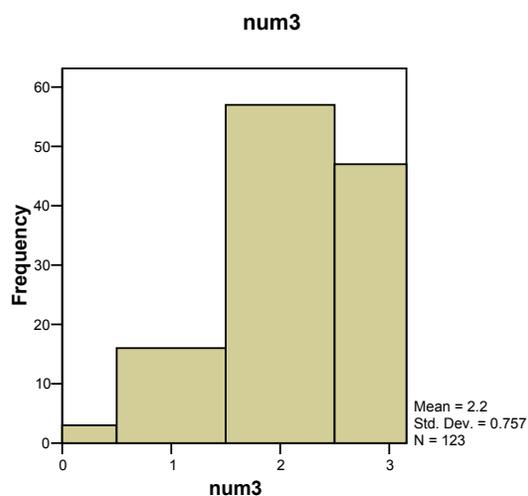


Figure 14. Histogram for Question 3

**Question 4. Teachers use a wide variety of instructional strategies to foster curiosity, exploration, creativity, and the development of social skills.**

The mean score for instructional strategies in participating schools was a 2.5. The median and mode were both a 3.0. Over half of the survey respondents (52.0%) indicated that 90-100% of the staff and/or the community participated in this practice.

Table 14. Frequency Distribution of Question 4

**num4**

|         | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------|---------|---------------|--------------------|
| Valid 1 | 5         | 4.1     | 4.1           | 4.1                |
| 2       | 54        | 43.9    | 43.9          | 48.0               |
| 3       | 64        | 52.0    | 52.0          | 100.0              |

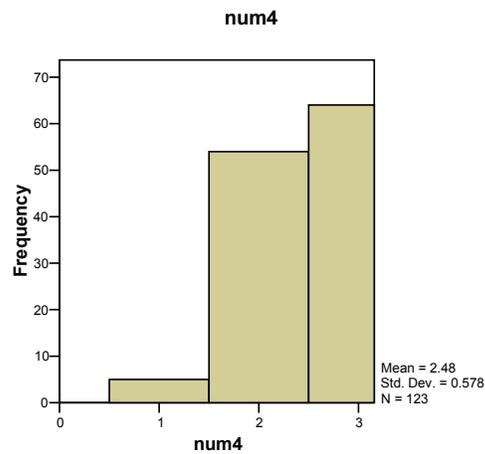


Figure 15. Histogram for Question 4

**Question 5. The school provides multiple opportunities for students to explore a rich variety of topics and interests in order to develop their identity, discover and demonstrate their own competence, and plan for their future.**

Participating principals indicated that 50-89% of their school (staff and/or community) provided multiple opportunities for students to explore a rich variety of topics and interests. The mean response was a 2.4 with the median a 2.0 and the mode a 3.0.

Table 15. Frequency Distribution of Question 5

**num5**

|         | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------|---------|---------------|--------------------|
| Valid 1 | 14        | 11.4    | 11.4          | 11.4               |
| 2       | 50        | 40.7    | 40.7          | 52.0               |
| 3       | 59        | 48.0    | 48.0          | 100.0              |

**num5**

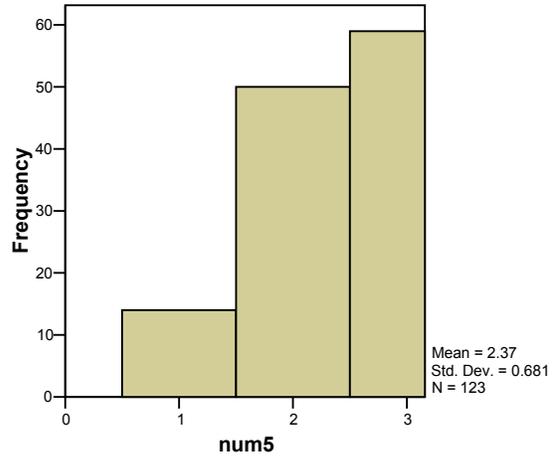


Figure 16. Histogram for Question 5

**Question 6. All students are expected to meet high academic standards and students know what high quality work should be like. Students revise their work based on feedback until they meet or exceed the performance standard. Expectations are clear.**

The mean score for students expected to meet high expectations was 2.5. The median and mode were both 3.0. Over half of the survey respondents (53.7%) indicated that 90-100% of their staff and/or community participated in this practice.

Table 16. Frequency Distribution of Question 6

**num6**

|         | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------|---------|---------------|--------------------|
| Valid 1 | 2         | 1.6     | 1.6           | 1.6                |
| 2       | 55        | 44.7    | 44.7          | 46.3               |
| 3       | 66        | 53.7    | 53.7          | 100.0              |

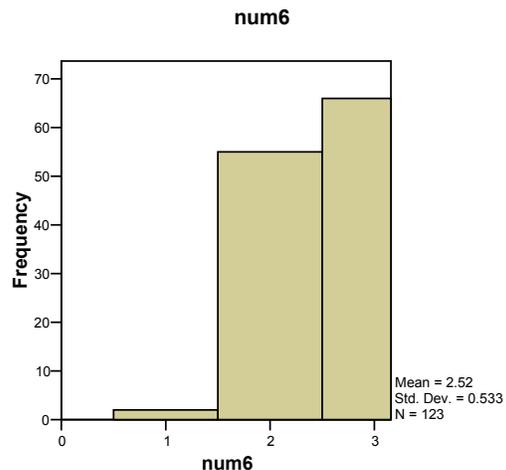


Figure 17. Histogram for Question 6

**Question 7. Curriculum, instruction, and assessment are aligned with high standards and the curriculum moves forward substantially as students' progress through the middle school grades. Students, teachers, and families understand what students are learning and why.**

Question 7 yielded a large percentage (66.7%) of high implementation. Principals indicated that their curriculum, instruction, and assessment were aligned to high standards and that the standards move forward substantially as student's progress through the middle school grades. The mean was 2.6, and the median and mode were both 3.0.

Table 17. Frequency Distribution of Question 7

**num7**

|         | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------|---------|---------------|--------------------|
| Valid 1 | 5         | 4.1     | 4.1           | 4.1                |
| 2       | 36        | 29.3    | 29.3          | 33.3               |
| 3       | 82        | 66.7    | 66.7          | 100.0              |

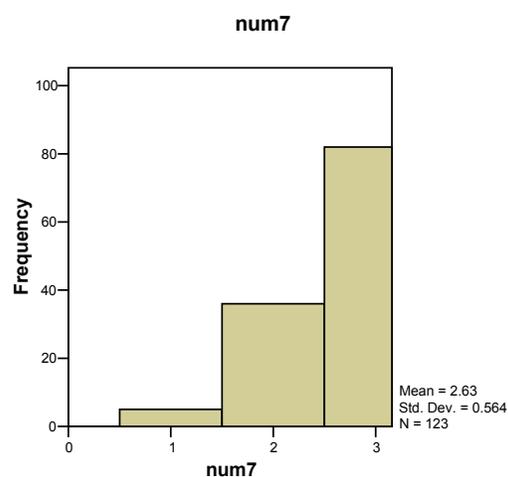


Figure 18. Histogram for Question 7

**Question 8. The curriculum emphasizes deep understanding of important concepts, development of essential skills, and the ability to apply what one has learned to real-world problems.**

Question 8 was selected by over half (51.2 %) of the participating principals as being at a high implementation level. The mean for this question was 2.5, and the median and the mode were both 3.0.

Table 18. Frequency Distribution of Question 8

**num8**

|         | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------|---------|---------------|--------------------|
| Valid 1 | 5         | 4.1     | 4.1           | 4.1                |
| 2       | 55        | 44.7    | 44.7          | 48.8               |
| 3       | 63        | 51.2    | 51.2          | 100.0              |

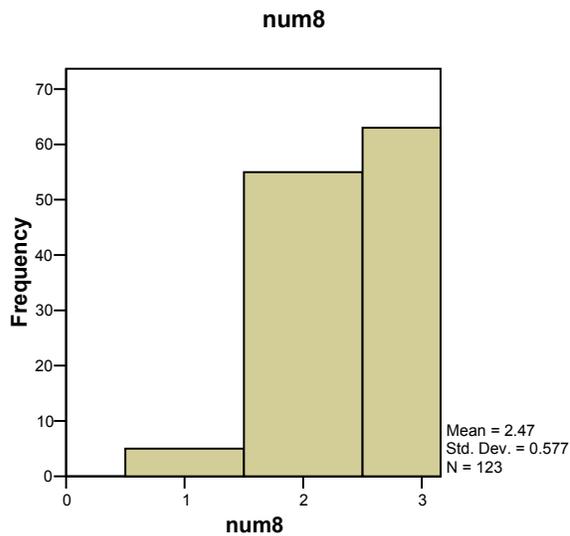


Figure 19. Histogram for Question 8

**Question 9. The school provides exploratory cycles (i.e. art, music, home economics, industrial art, electives, interest centered mini-courses, independent study) to engage students in exploratory experiences.**

Exploratory cycles was overwhelmingly selected as a key middle school practice by principals. Over 82% of the North Carolina middle school principals indicated that this practice is highly implemented. The mean was 2.8 and the median and mode were both 3.0.

Table 19. Frequency Distribution of Question 9

**num9**

|         | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------|---------|---------------|--------------------|
| Valid 0 | 1         | .8      | .8            | .8                 |
| 1       | 1         | .8      | .8            | 1.6                |
| 2       | 20        | 16.3    | 16.3          | 17.9               |
| 3       | 101       | 82.1    | 82.1          | 100.0              |

**num9**

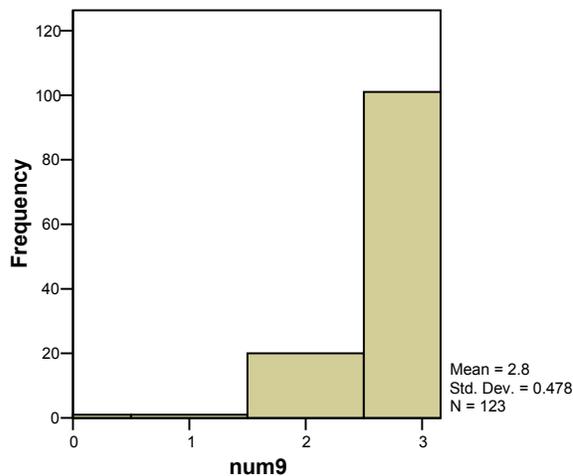


Figure 20. Histogram for Question 9

**Question 10. The school provides age-appropriate co-curricular activities for boys and girls of all skill levels, such as team sports, clubs, exploratory opportunities, service opportunities, and a rich program in the visual and performing arts.**

Question 10 was another key middle school practice that the majority (70.7%) of the participating principals rated as highly implemented. The mean was 2.7 and the median and mode were both 3.0.

Table 20. Frequency Distribution of Question 10

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | 1      | 3         | 2.4     | 2.5           | 2.5                |
|         | 2      | 32        | 26.0    | 26.2          | 28.7               |
|         | 3      | 87        | 70.7    | 71.3          | 100.0              |
|         | Total  | 122       | 99.2    | 100.0         |                    |
| Missing | System | 1         | .8      |               |                    |

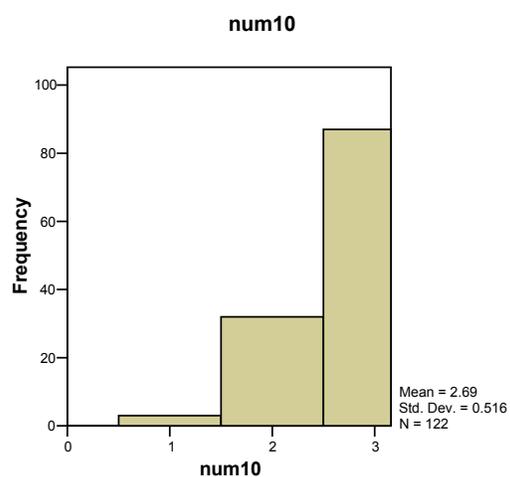


Figure 21. Histogram for Question 10

**Question 11. The school continually adapts curriculum, instruction, assessment, and scheduling to meet the student's diverse and changing needs.**

All but one participating principal indicated that they implemented this key middle school practice either at a medium or high level. The mean response to this question was 2.7 and the median and mode were both 3.0. No other key middle school practice was implemented so fully according to the respondents.

Table 21. Frequency Distribution of Question 11

**num11**

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | 2      | 42        | 34.1    | 34.4          | 34.4               |
|         | 3      | 80        | 65.0    | 65.6          | 100.0              |
| Total   |        | 122       | 99.2    | 100.0         |                    |
| Missing | System | 1         | .8      |               |                    |

**num11**

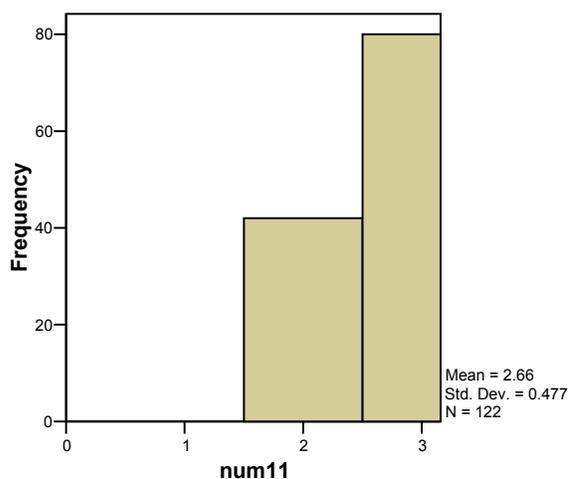


Figure 22. Histogram for Question 11

**Question 12. Parents are more than just volunteers or fund-raisers; they are meaningfully involved in all aspects of the school.**

Question 12 was one of two lowest implemented key middle school practices. With a mean of 1.9 and a median and mode of 2.0, 32.5% of the principals indicated that less than 50% of the staff and/or community supported this practice.

Table 22. Frequency Distribution of Question 12

**num12**

|         | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------|---------|---------------|--------------------|
| Valid 0 | 1         | .8      | .8            | .8                 |
| 1       | 40        | 32.5    | 32.5          | 33.3               |
| 2       | 52        | 42.3    | 42.3          | 75.6               |
| 3       | 30        | 24.4    | 24.4          | 100.0              |

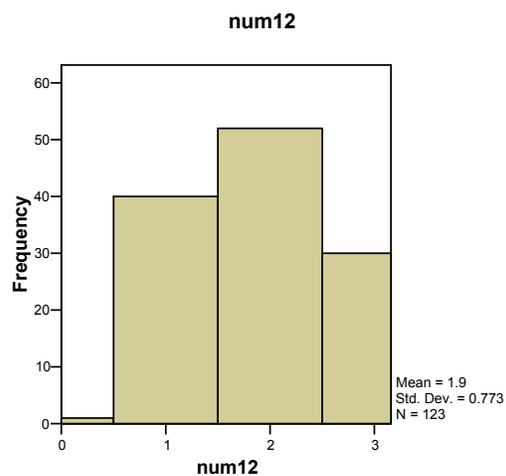


Figure 23. Histogram for Question 12

**Question 13. The school includes families and community members in setting and supporting the schools trajectory toward high performance.**

Over half of the participating principals (57.7%) indicated that families and community members are included in setting and supporting school goals toward high performance at a medium level. The mean response to this question was 2.1 with the median and mode both 2.0.

Table 23. Frequency Distribution of Question 13

**num13**

|         | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------|---------|---------------|--------------------|
| Valid 1 | 19        | 15.4    | 15.4          | 15.4               |
| 2       | 71        | 57.7    | 57.7          | 73.2               |
| 3       | 33        | 26.8    | 26.8          | 100.0              |

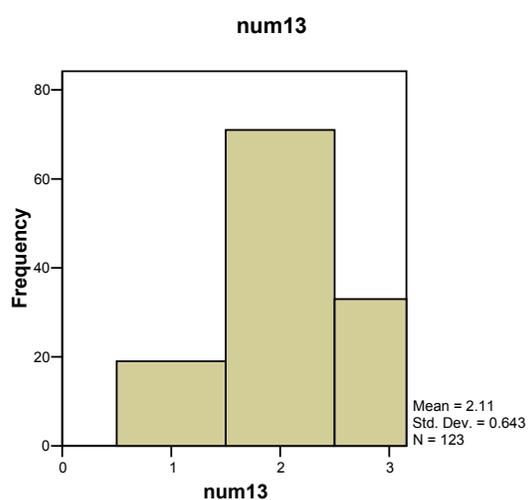


Figure 24. Histogram for Question 13

**Question 14. The school engages all stakeholders (parents, students, and faculty) in ongoing and reflective conversation, consensus building, and decision-making about governance to promote school improvement.**

Question 14 was another question where over half of the principals (56.1%) indicated that 50-89% of their staff and/or community members supported a key middle school practice.

The mean response was 2.2 and the median and mode both 2.0.

Table 24. Frequency Distribution of Question 14

**num14**

|         | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------|---------|---------------|--------------------|
| Valid 1 | 15        | 12.2    | 12.2          | 12.2               |
| 2       | 69        | 56.1    | 56.1          | 68.3               |
| 3       | 39        | 31.7    | 31.7          | 100.0              |

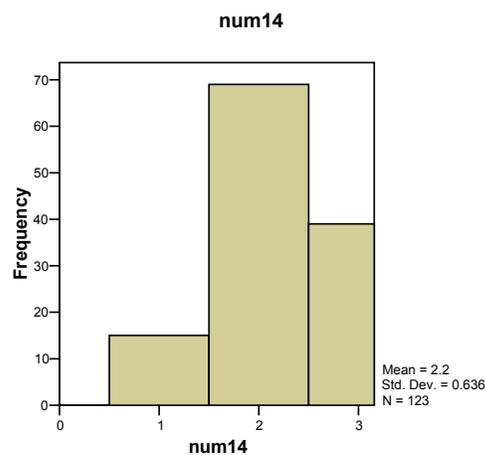


Figure 25. Histogram for Question 14

**Question 15. The school provides opportunities for the community member to understand and articulate the common vision through participation in all school-based decision making processes.**

Involving community members in many processes of a middle school was indicated by participating principals to be implemented at a medium level. The mean was 2.1 and the median and mode both 2.0.

Table 25. Frequency Distribution of Question 15

**num15**

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | 1      | 20        | 16.3    | 16.4          | 16.4               |
|         | 2      | 68        | 55.3    | 55.7          | 72.1               |
|         | 3      | 34        | 27.6    | 27.9          | 100.0              |
|         | Total  | 122       | 99.2    | 100.0         |                    |
| Missing | System | 1         | .8      |               |                    |

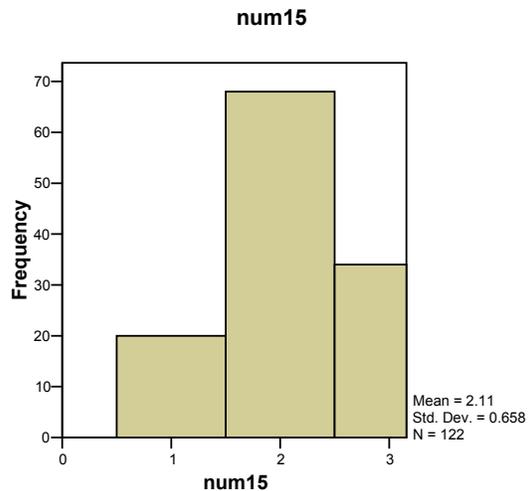


Figure 26. Histogram for Question 15

**Question 16. A shared vision of what a high-performing school is and does drives every facet of school change.**

Over 50% of the participating principals indicated that a shared vision drives every facet of school change and indicated that this middle school practice was highly implemented. The mean score was 2.5 and the median and mode both 3.0.

Table 26. Frequency Distribution of Question 16

**num16**

|         | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------|---------|---------------|--------------------|
| Valid 1 | 7         | 5.7     | 5.7           | 5.7                |
| 2       | 49        | 39.8    | 39.8          | 45.5               |
| 3       | 67        | 54.5    | 54.5          | 100.0              |

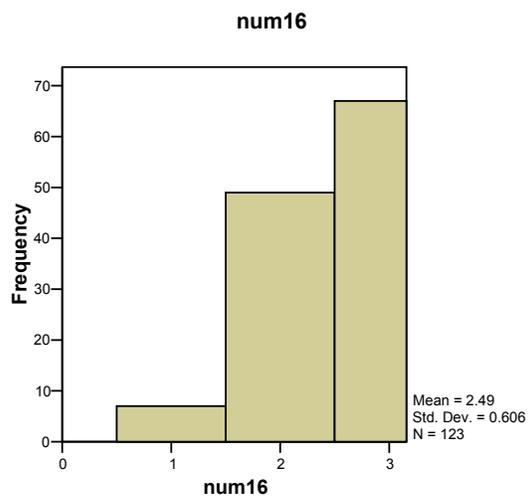


Figure 27. Histogram for Question 16

**Question 17. The school staff has opportunities to plan, select, and engage in professional development aligned with the state’s content standards and in the middle school philosophy.**

Principals overwhelmingly responded that their staff has opportunities to plan, select, and engage in professional development in the area of state standards and the middle school philosophy. Approximately 70% of the schools reported this practice was highly implemented. The mean score was 2.7 and the median and mode both 3.0.

Table 27. Frequency Distribution of Question 17

**num17**

|         | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|-----------|---------|---------------|--------------------|
| Valid 1 | 3         | 2.4     | 2.4           | 2.4                |
| 2       | 34        | 27.6    | 27.6          | 30.1               |
| 3       | 86        | 69.9    | 69.9          | 100.0              |
| Total   | 123       | 100.0   | 100.0         |                    |

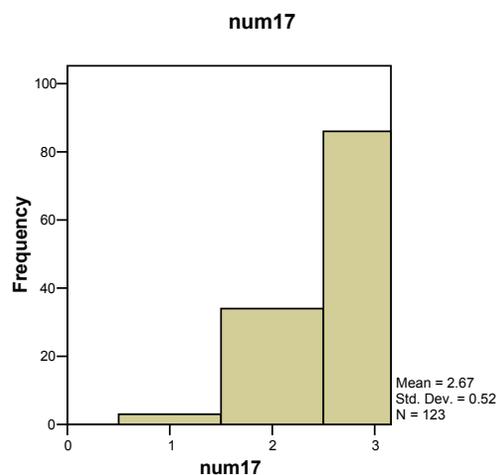


Figure 28. Histogram for Question 17

**Question 18. The school provides for staff development to orient teachers to middle school philosophy; young adolescent behavior; and age appropriate curriculum, instruction, and assessment.**

Question 18 was another key middle school practice that participating principals indicated was highly implemented. That is, 90-100% of the staff and/or community were involved in implementing this practice. The mean response was 2.5 and the median and mode both 3.0.

Table 28. Frequency Distribution of Question 18

**num18**

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | 1      | 5         | 4.1     | 4.1           | 4.1                |
|         | 2      | 49        | 39.8    | 40.2          | 44.3               |
|         | 3      | 68        | 55.3    | 55.7          | 100.0              |
|         | Total  | 122       | 99.2    | 100.0         |                    |
| Missing | System | 1         | .8      |               |                    |

**num18**

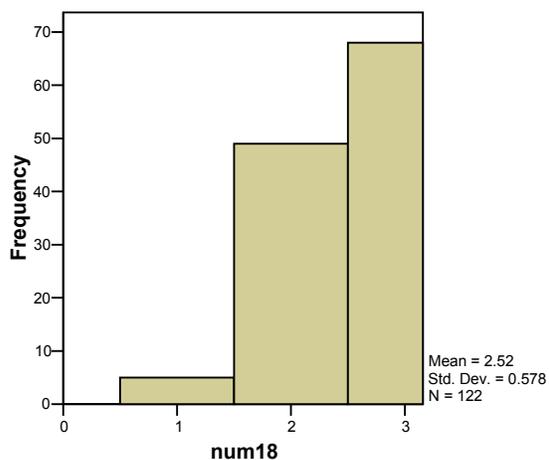


Figure 29. Histogram for Question 18

**Question 19. The school provides for teachers and specialized professionals to offer assistance to students in negotiating their lives both in and out of school.**

Question 19 was implemented 50-89% by staff and/or the community according to participating principals. The mean score was 2.3 and the median and a mode both 2.0.

Table 29. Frequency Distribution of Question 19

**num19**

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | 1      | 14        | 11.4    | 11.6          | 11.6               |
|         | 2      | 63        | 51.2    | 52.1          | 63.6               |
|         | 3      | 44        | 35.8    | 36.4          | 100.0              |
|         | Total  | 121       | 98.4    | 100.0         |                    |
| Missing | System | 2         | 1.6     |               |                    |

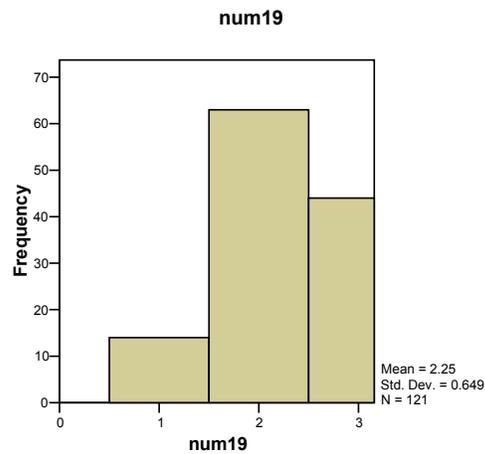


Figure 30. Histogram for Question 19

**Question 20. The school employs effective policies (safety and classroom management) that rely on collaborative and shared responsibility between everyone in the school for sustaining a climate conducive for learning.**

Over 76% of the participating principals indicated that they have effective policies for safety and classroom management and they rely on the collaborative and shared responsibility between all. This practice was highly implemented. The mean was 2.8 and the median and mode were both 3.0.

Table 30. Frequency Distribution of Question 20

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | 1      | 2         | 1.6     | 1.7           | 1.7                |
|         | 2      | 25        | 20.3    | 20.8          | 22.5               |
|         | 3      | 93        | 75.6    | 77.5          | 100.0              |
|         | Total  | 120       | 97.6    | 100.0         |                    |
| Missing | System | 3         | 2.4     |               |                    |

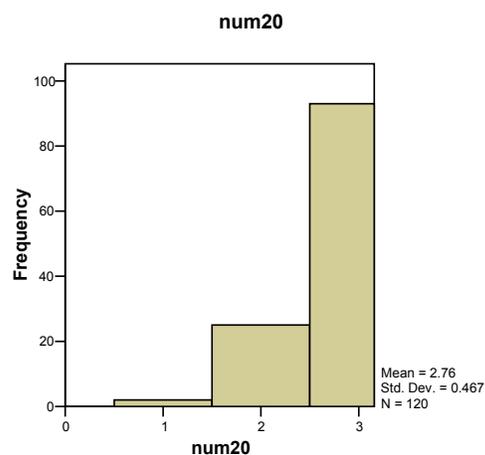


Figure 31. Histogram for Question 20

**Question 21. The school provides a comprehensive health and wellness program that is student-focused, integrated throughout the curriculum, and includes daily physical education activities that improve students' cardiovascular fitness, coordination, agility, and strength.**

Participating principals indicated 50-89% of the staff and/or community participated in a health and wellness program. That is, the principals indicated this practice was implemented at a medium level. The mean score was 2.1 and the median and mode were both 2.0.

Table 31. Frequency Distribution of Question 21

**num21**

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | 1      | 20        | 16.3    | 16.5          | 16.5               |
|         | 2      | 64        | 52.0    | 52.9          | 69.4               |
|         | 3      | 37        | 30.1    | 30.6          | 100.0              |
|         | Total  | 121       | 98.4    | 100.0         |                    |
| Missing | System | 2         | 1.6     |               |                    |

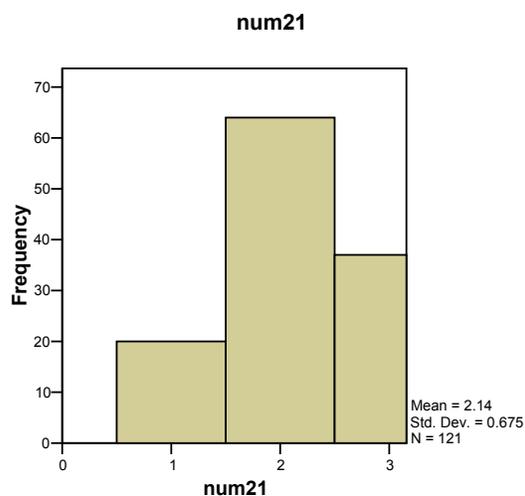


Figure 32. Histogram for Question 21

**Question 22 Has your school participated or completed a “self-study” that gives feedback on implementation of middle level practices?**

Over 60% of the participating principals indicated that they have not completed a “self-study” on the implementation of key middle school practices.

Table 32. Frequency Distribution of Question 22

**num22**

|          | Frequency | Percent | Valid Percent | Cumulative Percent |
|----------|-----------|---------|---------------|--------------------|
| Valid No | 78        | 63.4    | 63.4          | 63.4               |
| Yes      | 45        | 36.6    | 36.6          | 100.0              |
| Total    | 123       | 100.0   | 100.0         |                    |

**Question 23 If you answered no to question 22, would you be willing to participate if funded by grant monies?**

Although the question asked principals who responded “no” to question 22 to respond to this question, 54 of the principals (45.5%) indicated that they would participate in a self-study on the implementation of key middle school practices if grant money would be provided. Research indicates that “individuals who look critically at all aspects of their work and then make modifications or adjustments find that they are working most effectively (Anfara, 2001).”

Table 33. Frequency Distribution of Question 23

**num23**

|          | Frequency | Percent | Valid Percent | Cumulative Percent |
|----------|-----------|---------|---------------|--------------------|
| Valid No | 67        | 54.5    | 54.5          | 54.5               |
| Yes      | 56        | 45.5    | 45.5          | 100.0              |
| Total    | 123       | 100.0   | 100.0         |                    |

**Question 24 How many years would you say your school has been involved in implementing key middle school practices?**

The majority of the participating principals indicated they have implemented key middle school practices for more than five years. The second largest group of principals (25.2 %) indicated that they have implemented key middle school practices more than one year but less than five. According to the NMSA, when key middle school practices are implemented over time, they lead to higher levels of student achievement (NMSA, 2003).

Table 34. Frequency Distribution of Question 24

**num24**

|   | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|-----------|---------|---------------|--------------------|
| Valid Less than 1 year                    | 2         | 1.6     | 1.6           | 1.6                |
| 1 year                                    | 7         | 5.7     | 5.7           | 61.0               |
| Greater than 1 year but less than 5 years | 31        | 25.2    | 25.2          | 86.2               |
| 5 years                                   | 13        | 10.6    | 10.6          | 96.7               |
| Greater than 5 years                      | 66        | 53.7    | 53.7          | 55.3               |
| Not Implementing                          | 4         | 3.3     | 3.3           | 100.0              |

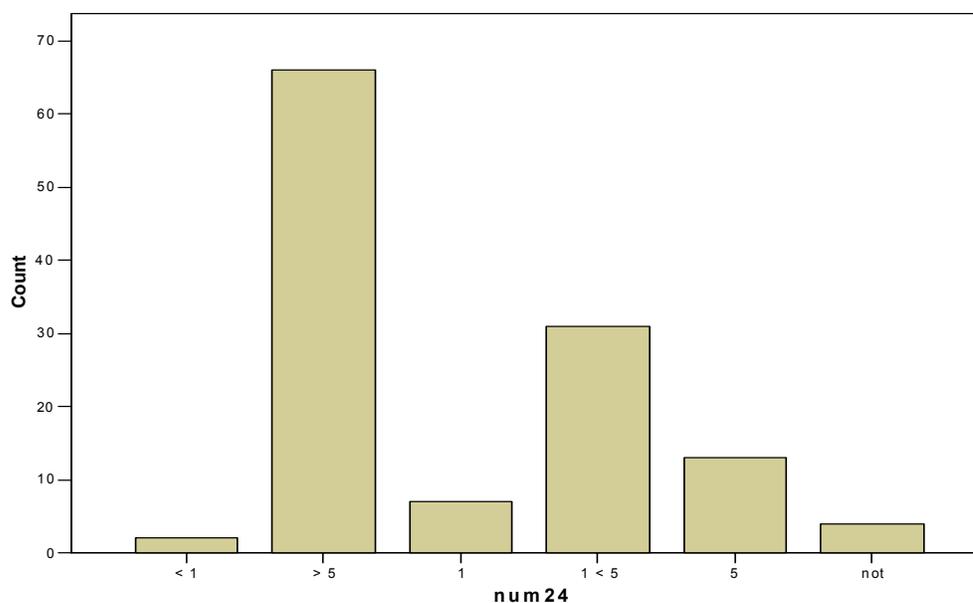


Figure 33. Histogram for Question 24

**Question 25 Please indicate your major of certification.**

Principals were given six choices to indicate certification yet only 35 principals responded. Literature indicates that many middle school principals are either elementary or secondary certified principals. Of the 35 participating principals that responded, they are either elementary or secondary certified principals.

Table 35. Frequency Distribution of Question 25

**num25**

|       |             | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-------------|-----------|---------|---------------|--------------------|
| Valid | No response | 88        | 71.5    | 71.5          | 71.5               |
|       | Elementary  | 14        | 11.4    | 11.4          | 82.9               |
|       | Secondary   | 21        | 17.1    | 17.1          | 100.0              |
|       | Total       | 123       | 100.0   | 100.0         |                    |

**Question 26 Please indicate the percent of teacher retention from the 2002-2003 school year.**

Approximately 78% of the participating principals reported that 80-100% of their teachers continue employment in their schools. Research has shown that many middle school teachers do not stay with a middle school; most leave to teach in the elementary or secondary level (Useem, 2001).

Table 36. Frequency Distribution of Question 26

**num26**

| Responses of Percent retained in ranges | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|-----------|---------|---------------|--------------------|
| Valid 10 - 29                           | 2         | 1.6     | 1.6           | 1.6                |
| 30 - 49                                 | 2         | 1.6     | 1.6           | 3.3                |
| 50 - 59                                 | 1         | .8      | .8            | 4.1                |
| 60 - 69                                 | 7         | 5.7     | 5.7           | 9.8                |
| 70 - 79                                 | 15        | 12.2    | 12.2          | 22.0               |
| 80 -89                                  | 35        | 28.5    | 28.5          | 50.4               |
| 90 - 99                                 | 58        | 47.2    | 47.2          | 97.6               |
| 100                                     | 3         | 2.4     | 2.4           | 100.0              |
| Total                                   | 123       | 100.0   | 100.0         |                    |

**Question 27 Would you like to receive a copy of the research findings?**

The majority of the participating principals (72.4%) indicated they would like to see the results of this study. Hopefully the information will help with their own analysis of implementing key middle school practices.

Table 37. Frequency Distribution of Question 27

**num27**

|          | Frequency | Percent | Valid Percent | Cumulative Percent |
|----------|-----------|---------|---------------|--------------------|
| Valid No | 34        | 27.6    | 27.6          | 27.6               |
| Yes      | 89        | 72.4    | 72.4          | 100.0              |
| Total    | 123       | 100.0   | 100.0         |                    |

Research Question 2

**If North Carolina middle schools are consistently making at least expected academic growth standards, are those middle schools implementing key middle school practices? If so, what level of implementation is in those middle schools?**

A series of descriptive analyses were conducted to see which schools made at least expected academic growth during the five years (1999-2003) and the level of implementation of key middle school practices. In addition, socioeconomic status (free/reduced lunch percentage) was used in the analysis to give an alternate perspective of the schools demographics in relation to the implementation level and the expected academic growth rate.

Of the 123 participating schools the mean number of years meeting expected academic growth was 2.9. The median was 3 years and the mode was 2 years. Tables 38-39 display the statistics on this data and Figure 34 shows the dispersion of years met.

Table 38. Descriptive statistics on number of years North Carolina middle schools met expected academic growth in a five year span (1999-2003).

| <b>Statistics</b> |         |       |
|-------------------|---------|-------|
| met               |         |       |
| N                 | Valid   | 122   |
|                   | Missing | 1     |
| Mean              |         | 2.90  |
| Median            |         | 3.00  |
| Mode              |         | 2     |
| Std. Deviation    |         | 1.485 |
| Variance          |         | 2.205 |
| Range             |         | 5     |
| Minimum           |         | 0     |
| Maximum           |         | 5     |

Table 39. Number of schools that met expected academic growth in a five year span (1999-2003).

**met**

|         | Years  | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | 0      | 6         | 4.9     | 4.9           | 4.9                |
|         | 1      | 17        | 13.8    | 13.9          | 18.9               |
|         | 2      | 30        | 24.4    | 24.6          | 43.4               |
|         | 3      | 22        | 17.9    | 18.0          | 61.5               |
|         | 4      | 24        | 19.5    | 19.7          | 81.1               |
|         | 5      | 23        | 18.7    | 18.9          | 100.0              |
|         | Total  |           | 122     | 99.2          | 100.0              |
| Missing | System | 1         | .8      |               |                    |

**Histogram**

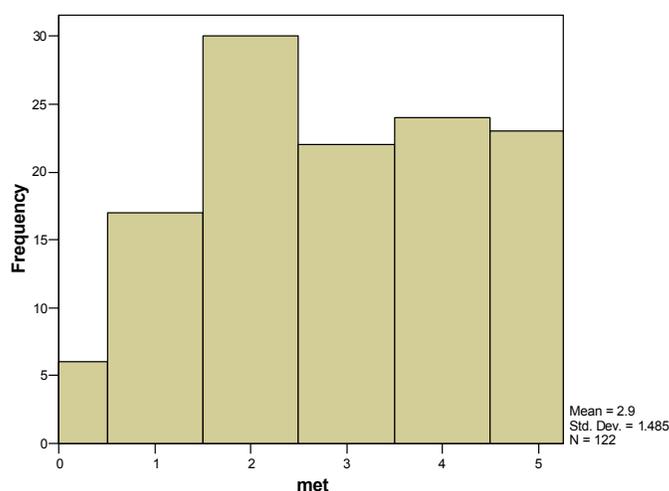


Figure 34. Histogram for number of years meeting expected academic growth in a five year span (1999-2003).

The following dichotomized analysis showed the number of schools that met expected academic growth for zero, one, two, three, four, or five years (1999-2003) and the implementation level (above or below 50.2, the mean) and free/reduced lunch percentage (above or below 41.1, the mean) for these schools.

*Met Expected Academic Growth Zero Years*

Six participating schools did not meet expected academic growth from 1999-2003. These schools have an implementation level below the mean (50.2) and have a free/reduced lunch percentage above the mean (41.1). This information possibly indicates that these six schools had a lower SES population and were implementing key middle school practices at a low level.

Table 40. Dichotomized results for North Carolina middle schools that met expected academic growth zero times in five years with the level of implementation and free/reduced lunch percentage

| Frequency<br>Percent<br>Row Pct<br>Col Pct       | Above<br>Implementation<br>Level (0) | Below<br>Implementation<br>Level (1) | Total      |
|--|--------------------------------------|--------------------------------------|------------|
| Below<br>free/reduced<br>lunch percentage<br>(0) | 0<br>0.0<br>0.0<br>0.0               | 0<br>0.0<br>0.0<br>0.0               | 0<br>0.0   |
| Above<br>free/reduced<br>lunch percentage<br>(1) | 0<br>0.0<br>0.0<br>0.0               | 6<br>100.0<br>100.0<br>100.0         | 6<br>100.0 |
| Total  | 0<br>0.0                             | 6<br>100.0                           | 6<br>100.0 |

*Met Expected Academic Growth One Year*

Seventeen participating schools met expected academic growth once between 1999-2003. Of these schools, eight have an implementation level below the mean (50.2), nine above. In contrast, 13 schools have a free/reduced lunch percentage above the mean (41.1), possibly indicating a lower SES population and a medium implementation level.

Table 41. Dichotomized analyses of North Carolina middle schools that met expected academic growth one time in five years (1999-2003).

| Frequency<br>Percent<br>Row Pct<br>Col Pct       | Above<br>Implementation<br>Level (0) | Below<br>Implementation<br>Level (1) | Total       |
|--|--------------------------------------|--------------------------------------|-------------|
| Below<br>free/reduced<br>lunch<br>percentage (0) | 3<br>17.65<br>75.00<br>33.33         | 1<br>5.88<br>25.00<br>12.50          | 4<br>23.53  |
| Above<br>free/reduced<br>lunch<br>percentage (1) | 6<br>35.29<br>46.15<br>66.67         | 7<br>41.18<br>53.85<br>87.50         | 13<br>76.47 |
| Total  | 9<br>52.94                           | 8<br>47.06                           | 17<br>100.0 |

*Met Expected Academic Growth Two Years*

Of the 30 participating schools that met expected academic growth for two years during 1999-2003, 16 are implementing key middle school practices below the mean (50.2) and 10 of these schools are below the free/reduced lunch percentage (41.1). This possibly indicates that more than half of the schools meeting two years of expected academic growth with lower implementation levels possibly have a higher SES population.

Table 42. Dichotomized analyses of North Carolina middle schools that met expected academic growth two times in five years (1999-2003).

| Frequency<br>Percent<br>Row Pct<br>Col Pct       | Above<br>Implementation<br>Level (0) | Below<br>Implementation<br>Level (1) | Total       |
|--|--------------------------------------|--------------------------------------|-------------|
| Below<br>free/reduced<br>lunch<br>percentage (0) | 6<br>20.00<br>37.50<br>42.86         | 10<br>33.33<br>62.50<br>62.50        | 16<br>53.33 |
| Above<br>free/reduced<br>lunch<br>percentage (1) | 8<br>26.67<br>57.14<br>57.14         | 6<br>20.00<br>37.50<br>42.86         | 14<br>46.67 |
| Total  | 14<br>46.67                          | 16<br>53.33                          | 30<br>100.0 |

*Met Expected Academic Growth Three Years*

Schools that met expected academic growth for three of the five years show a higher level of implementation of key middle school practices. Twelve of the 22 schools had an implementation level above the mean (50.2) and eight had a free/reduced lunch percentage lower than the mean (41.1), possibly indicating a higher SES population.

Table 43. Dichotomized analyses of North Carolina middle schools that met expected academic growth three times in five years (1999-2003).

| Frequency<br>Percent<br>Row Pct<br>Col Pct       | Above<br>Implementation<br>Level (0) | Below<br>Implementation<br>Level (1) | Total       |
|--|--------------------------------------|--------------------------------------|-------------|
| Below<br>free/reduced<br>lunch percentage<br>(0) | 8<br>36.36<br>66.67<br>66.67         | 4<br>18.18<br>33.33<br>40.00         | 12<br>54.55 |
| Above<br>free/reduced<br>lunch percentage<br>(1) | 4<br>18.18<br>33.33<br>40.00         | 6<br>27.27<br>60.00<br>60.00         | 10<br>45.45 |
| Total  | 12<br>54.55                          | 10<br>53.33                          | 22<br>100.0 |

*Met Expected Academic Growth Four Years*

Participating schools that met expected academic growth for four of the five years (24 schools) showed that 13 have an implementation level above the mean (50.2) and 10 had a free/reduced lunch percentage below the mean (41.1). This possibly indicates that these schools had a higher SES population.

Table 44. Dichotomized analyses of North Carolina middle schools that met expected academic growth four times in five years (1999-2003).

| Frequency<br>Percent<br>Row Pct<br>Col Pct       | Above<br>Implementation<br>Level (0) | Below<br>Implementation<br>Level (1) | Total       |
|--|--------------------------------------|--------------------------------------|-------------|
| Below<br>free/reduced<br>lunch percentage<br>(0) | 10<br>41.67<br>55.56<br>76.92        | 8<br>33.33<br>44.44<br>72.73         | 18<br>75.00 |
| Above<br>free/reduced<br>lunch percentage<br>(1) | 3<br>12.50<br>50.00<br>23.08         | 3<br>12.50<br>50.00<br>27.27         | 6<br>25.00  |
| Total  | 13<br>54.17                          | 11<br>45.83                          | 24<br>100.0 |

*Met Expected Academic Growth Five Years*

Of the 23 participating schools that met academic expected growth all five years, 16 displayed an implementation level above the mean (50.2) and 15 of these schools had a free/reduced lunch percentage below the mean (41.1). This possibly indicates that these schools had a higher SES population.

Table 45. Dichotomized analyses of North Carolina middle schools that met expected academic growth five times in five years (1999-2003).

| Frequency<br>Percent<br>Row Pct<br>Col Pct       | Above<br>Implementation<br>Level (0) | Below<br>Implementation<br>Level (1) | Total       |
|--|--------------------------------------|--------------------------------------|-------------|
| Below<br>free/reduced<br>lunch percentage<br>(0) | 15<br>65.22<br>75.00<br>93.75        | 5<br>21.74<br>25.00<br>71.43         | 20<br>86.96 |
| Above<br>free/reduced<br>lunch percentage<br>(1) | 1<br>4.35<br>33.33<br>6.25           | 2<br>8.70<br>66.67<br>28.57          | 3<br>13.04  |
| Total  | 16<br>69.57                          | 7<br>30.43                           | 23<br>100.0 |

Reviewing the data on the participating schools on the number of years they met or did not meet expected academic growth in a five year span (1999-2003) showed that the lower number of years a school met expected academic growth reflected in the reported implementation level. An additional analysis was conducted to see if there was a correlation between the implementation level and free/reduced lunch percentage with the number of years a school met expected academic growth.

Pearson correlation analysis (Table 46) showed that the implementation level of key middle school practices did not have a statistical effect on the number of years a participating school met or did not meet expected academic growth. Yet, free/reduced lunch did have a statistical effect. Overall, these results led to the acceptance of the NULL hypothesis associated with this question:

NULL Hypothesis: No statistical difference will be noted between the implementation level and the number of years a school met expected academic growth.

Table 46. Correlation analyses of North Carolina middle schools expected academic growth indicator (met or not met), implementation level number, and free/reduced lunch percentage.

### Correlations

|                      |                     | Met expected academic growth | Free/reduced lunch percentage | Implementation level |
|----------------------|---------------------|------------------------------|-------------------------------|----------------------|
| met                  | Pearson Correlation | 1                            | -.490(**)                     | .176                 |
|                      | Sig. (2-tailed)     |                              | .000                          | .053                 |
|                      | N                   | 122                          | 122                           | 122                  |
| frlper               | Pearson Correlation | -.490(**)                    | 1                             | -.060                |
|                      | Sig. (2-tailed)     | .000                         |                               | .508                 |
|                      | N                   | 122                          | 123                           | 123                  |
| Implementation level | Pearson Correlation | .176                         | -.060                         | 1                    |
|                      | Sig. (2-tailed)     | .053                         | .508                          |                      |
|                      | N                   | 122                          | 123                           | 123                  |

\*\* Correlation is significant at the 0.01 level (2-tailed).

### Research Question 3

**What is the relationship, if any, between the degree of implementation of key middle school practices in North Carolina middle schools and any level of school expected academic growth with additional school demographics (school location, school size, student body race/ethnicity, and student body socioeconomic status) considered?**

A series of simple and multiple linear regressions were conducted to determine whether there was any relationship between the degree of implementation of key middle school practices and school expected academic growth when selected demographic variables were introduced.

The dependent variables were North Carolina middle schools' expected academic growth, calculated using the North Carolina ABCs Accountability regression formulas and the North Carolina ABCs EOG reading and mathematics test data. Each participating school had their expected academic growth rate calculated for five years (1999-2003). The independent variables were the schools' implementation level, school location, school size,

school student body race/ethnicity percentage, and school student body free/reduced lunch percentage.

The first step in the analysis involved running residual plots to check the dependent variables (expected academic growth rate for 1999-2003) and the independent variables (implementation level, school size, school student body race/ethnicity percentage, and school student body free/reduced lunch percentage) for outliers and for a check on the linear relationship of the variables. These checks are recommended as they reduce the probability of Type I and Type II errors (Osborne and Waters, 2001). The visual plots showed some outliers that were also identified in univariate procedures and all variables showed a linear relationship. The definition for an outlier was determined to be a school's variable that was more than three standard deviations from the mean for that specific variable. In addition, any studentized residual scores (z-score) greater or less than 3/-3 were removed. Once outliers were removed residual plots were rerun to check again for a linear relationship, which was evident and studentized residuals checked to ensure they were between 3 and -3.

The next step was a correlation analysis on the five years (1999-2003) of expected academic growth using the cleaned datasets. The correlation between the years was reviewed to see if each year was a good predictor for subsequent years. The five years showed that each subsequent year (1999 to 2000; 2000 to 2001; 2001 to 2002; 2002 to 2003) was a good predictor for the subsequent school year. The 1999 and 2000 data did not correlate with the 2003 data. Table 47 represents the correlation analysis.

Table 47. Correlation of 1999-2003 expected academic growth indicators

**Correlations**

|                 |                        | Total<br>expected<br>99 | Total<br>expected<br>00 | Total<br>expected<br>01 | Total<br>expected<br>02 | Total<br>expected<br>03 |
|-----------------|------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| totalexpected99 | Pearson<br>Correlation | 1                       | .567(**)                | .324(**)                | .376(**)                | .168                    |
|                 | Sig. (2-tailed)        |                         | .000                    | .001                    | .000                    | .093                    |
|                 | N                      | 101                     | 101                     | 101                     | 101                     | 101                     |
| totalexpected00 | Pearson<br>Correlation | .567(**)                | 1                       | .566(**)                | .570(**)                | .097                    |
|                 | Sig. (2-tailed)        | .000                    |                         | .000                    | .000                    | .320                    |
|                 | N                      | 101                     | 107                     | 107                     | 107                     | 107                     |
| totalexpected01 | Pearson<br>Correlation | .324(**)                | .566(**)                | 1                       | .536(**)                | .301(**)                |
|                 | Sig. (2-tailed)        | .001                    | .000                    |                         | .000                    | .001                    |
|                 | N                      | 101                     | 107                     | 112                     | 112                     | 112                     |
| totalexpected02 | Pearson<br>Correlation | .376(**)                | .570(**)                | .536(**)                | 1                       | .272(**)                |
|                 | Sig. (2-tailed)        | .000                    | .000                    | .000                    |                         | .004                    |
|                 | N                      | 101                     | 107                     | 112                     | 112                     | 112                     |
| totalexpected03 | Pearson<br>Correlation | .168                    | .097                    | .301(**)                | .272(**)                | 1                       |
|                 | Sig. (2-tailed)        | .093                    | .320                    | .001                    | .004                    |                         |
|                 | N                      | 101                     | 107                     | 112                     | 112                     | 112                     |

\*\* Correlation is significant at the 0.01 level (2-tailed).

After checking for a correlation between the five years of expected academic growth rates for the participating schools, a simple regression analysis was performed with the schools expected academic growth rate (1999-2003) and the degree of implementation of key middle school practices. An analysis of variance (ANOVA) was run for any regression analysis that showed significance. An alpha level of .05 was used for all statistical tests. Tables 48-52 display the results of this analysis.

Table 48. Regression Coefficients for the Implementation Level as a Predictor of the Expected Academic Growth Indicator in 1999

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|-------|------|
|       |                     | B                           | Std. Error | Beta                      |       |      |
| 1     | (Constant)          | 2.014                       | 1.987      |                           | 1.013 | .314 |
|       | implementationlevel | .003                        | .039       | .007                      | .065  | .948 |

a. Dependent Variable: totalexpected99

Table 49. Regression Coefficients for the Implementation Level as a Predictor of the Expected Academic Growth Indicator in 2000.

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -4.744                      | 2.174      |                           | -2.182 | .032 |
|       | implementationlevel | .079                        | .043       | .184                      | 1.850  | .067 |

a. Dependent Variable: totalexpected00

Table 50. Regression Coefficients for the Implementation Level as a Predictor of the Expected Academic Growth Indicator in 2001.

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -1.823                      | .951       |                           | -1.917 | .058 |
|       | implementationlevel | .030                        | .019       | .155                      | 1.587  | .116 |

a. Dependent Variable: totalexpected01

Table 51. ANOVA and regression analysis for the Implementation Level as a Predictor of the Expected Academic Growth Indicator in 2002.

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 1.333          | 1   | 1.333       | 9.801 | .002 <sup>a</sup> |
|       | Residual   | 14.277         | 105 | .136        |       |                   |
|       | Total      | 15.610         | 106 |             |       |                   |

a. Predictors: (Constant), implementationlevel

b. Dependent Variable: totalexpected02

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -.970                       | .252       |                           | -3.845 | .000 |
|       | implementationlevel | .016                        | .005       | .292                      | 3.131  | .002 |

a. Dependent Variable: totalexpected02

Table 52. Regression Coefficients for the Implementation Level as a Predictor of the Expected Academic Growth Indicator in 2003.

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|-------|------|
|       |                     | B                           | Std. Error | Beta                      |       |      |
| 1     | (Constant)          | -.403                       | .688       |                           | -.585 | .559 |
|       | implementationlevel | .025                        | .014       | .169                      | 1.816 | .072 |

a. Dependent Variable: totalexpected03

The linear regression analysis showed a small significant result in the 2002 data ( $t=3.845$ ,  $p=.002$ ). That is, as the implementation level increases, the expected academic growth rate also increases. An ANOVA was run to verify the significance ( $F = 9.801$ ,  $p=.002$ ). In addition, a small effect size (0.378) was noted in the analysis (Appendix G) showing that the effect of the implementation level on expected academic growth was small. These results led to a rejection of the NULL hypothesis associated with this part of question 3:

NULL Hypothesis: There will not be a relationship between the degree of implementation of key middle school practices and any level of school expected academic growth.

While 2002 indicates a small significant effect, North Carolina fully implemented the North Carolina student accountability model that school year. This model invoked the “student accountability” of the ABCs model. That is, students in grades 3, 5, and 8 were being held accountable to meet proficiency (scoring a level III or IV) on the EOG reading and mathematics tests to be promoted to the next grade level. This emphasis in two grades that are part of this study might be a reason there was some effect on student achievement. Participating schools could have increased the implementation of key middle school practices which resulted in higher student academic achievement. Further studies would be needed to see if the found effect is due to the implementation of key middle school practices.

#### *Other data*

A series of simple regression analyses were conducted with expected academic growth rates (1999-2003) and the implementation level, along with each of the following independent variables: school location (rural or urban), school size, school student body race/ethnicity percentages (American Indian, Asian, Black, Hispanic, Multi-Racial and White), and school student body socioeconomic status percentages (Free/Reduced lunch). These analyses were completed to see if there was an effect on expected academic achievement when the implementation level was controlled with another independent variable prior to running multiple regression analyses.

The results showed that in 2000, when the implementation level and White or Black student percentages are controlled, there are small significant effects on expected academic

growth. When the implementation level and White students are controlled, the significance ( $t=2.010$ ,  $p=.040$ ; and  $t=5.940$ ,  $p=.000$ , respectively) indicates that when the implementation level goes up, and the percentage of White students is high, the expected academic achievement is higher. In contrast, when the implementation level and Black students are controlled, the significance ( $t=2.198$ ,  $p=.030$ ; and  $t=-.6034$ ,  $p=.000$ ) indicates that as the implementation level increases and the percentage of Black students decreases, the expected academic achievement increases.

In 2002, there continued to be a significant effect on expected academic achievement when the implementation level was controlled with additional independent variables (Table 53).

Table 53. Regression Coefficients for the Implementation Level as a Predictor of the 2002 Expected Academic Growth Indicator with Additional Independent Variables Controlled

|                      | Free/Reduced Lunch       | Asian Students          | White Students          | Black Students           | School Size             | School Location          |
|----------------------|--------------------------|-------------------------|-------------------------|--------------------------|-------------------------|--------------------------|
|                      | $t=-6.729$ ,<br>$p=.000$ | $t=4.034$ ,<br>$p=.000$ | $t=4.565$ ,<br>$p=.000$ | $t=-4.741$ ,<br>$p=.000$ | $t=2.573$ ,<br>$p=.012$ | $t=-2.424$ ,<br>$p=.000$ |
| Implementation Level | $t=3.324$ ,<br>$p=.001$  | $t=3.088$ ,<br>$p=.003$ | $t=3.522$ ,<br>$p=.001$ | $t=3.673$ ,<br>$p=.001$  | $t=3.586$ ,<br>$p=.001$ | $t=3.474$ ,<br>$p=.001$  |

Overall, when the implementation level increases, and the free/reduced lunch percentage or the Black students percentages decrease, the expected academic achievement increases. In addition, when the Asian or White students percentages increase and the school size increases, the expected academic achievement increases. A full display of the data is in Appendix G.

*Multiple regression analysis*

The next analysis was a series of multiple regression analyses that included the degree of implementation of key middle school practices, school location (rural or urban), school size, student body race/ethnicity (White, Black, Asian, Hispanic), and student body socioeconomic status (free/reduced lunch). Two of the six student body race/ethnicity (American Indian and Multi-Racial) did not show any significance in preliminary linear analyses and were since dropped. Tables 54-56 show the multiple regression analysis results by year (1999-2003).

Table 54. Regression Coefficients for the Independent Variables with the 1999 Expected academic growth indicators

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -7.266                      | 21.685     |                           | -.335  | .738 |
|       | implementationlevel | -.013                       | .039       | -.035                     | -.337  | .737 |
|       | Rural               | -1.060                      | .633       | -.191                     | -1.676 | .097 |
|       | frlper              | -.014                       | .030       | -.092                     | -.476  | .635 |
|       | asper               | -.031                       | .283       | -.020                     | -.109  | .914 |
|       | blper               | .116                        | .223       | .981                      | .523   | .602 |
|       | hiper               | .100                        | .229       | .207                      | .438   | .663 |
|       | whper               | .146                        | .222       | 1.328                     | .660   | .511 |
|       | schoolsize          | -.003                       | .001       | -.227                     | -2.181 | .032 |

a. Dependent Variable: totalexpected99

Table 55. Regression Coefficients for the Independent Variables with the 2000 Expected academic growth indicators

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | 24.394                      | 19.396     |                           | 1.258  | .212 |
|       | implementationlevel | .066                        | .035       | .152                      | 1.849  | .068 |
|       | Rural               | -.868                       | .584       | -.139                     | -1.485 | .141 |
|       | frlper              | -.068                       | .028       | -.385                     | -2.444 | .016 |
|       | asper               | -.202                       | .249       | -.120                     | -.812  | .419 |
|       | blper               | -.274                       | .198       | -2.022                    | -1.386 | .169 |
|       | hiper               | -.272                       | .206       | -.480                     | -1.319 | .190 |
|       | whper               | -.243                       | .198       | -1.915                    | -1.228 | .223 |
|       | schoolsize          | -.001                       | .001       | -.054                     | -.636  | .526 |

a. Dependent Variable: totalexpected00

Table 56. Regression Coefficients for the Independent Variables with the 2001 Expected academic growth indicators

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -1.495                      | 9.391      |                           | -.159  | .874 |
|       | implementationlevel | .014                        | .017       | .075                      | .825   | .411 |
|       | Rural               | -.124                       | .286       | -.045                     | -.435  | .664 |
|       | frlper              | -.037                       | .014       | -.469                     | -2.731 | .008 |
|       | asper               | .128                        | .120       | .170                      | 1.060  | .292 |
|       | blper               | .028                        | .096       | .469                      | .293   | .770 |
|       | hiper               | -.005                       | .100       | -.019                     | -.048  | .962 |
|       | whper               | .021                        | .096       | .384                      | .224   | .823 |
|       | schoolsize          | .000                        | .001       | -.076                     | -.808  | .421 |

a. Dependent Variable: totalexpected01

Table 57. Regression Coefficients for the Independent Variables with the 2002 Expected academic growth indicators

|       |                     | Coefficients <sup>a</sup>   |            |                           |        |      |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -1.394                      | 2.359      |                           | -.591  | .556 |
|       | implementationlevel | .015                        | .004       | .287                      | 3.533  | .001 |
|       | Rural               | -.068                       | .071       | -.088                     | -.968  | .335 |
|       | frlper              | -.005                       | .003       | -.246                     | -1.608 | .111 |
|       | asper               | .053                        | .030       | .249                      | 1.759  | .082 |
|       | blper               | .004                        | .024       | .212                      | .146   | .884 |
|       | hiper               | .001                        | .025       | .019                      | .056   | .956 |
|       | whper               | .007                        | .024       | .433                      | .281   | .779 |
|       | schoolsize          | .000                        | .000       | .078                      | .914   | .363 |

a. Dependent Variable: totalexpected02

Table 58. Regression Coefficients for the Independent Variables with the 2003 Expected academic growth indicators

|       |                     | Coefficients <sup>a</sup>   |            |                           |       |      |
|-------|---------------------|-----------------------------|------------|---------------------------|-------|------|
| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|       |                     | B                           | Std. Error | Beta                      |       |      |
| 1     | (Constant)          | -2.218                      | 7.820      |                           | -.284 | .777 |
|       | implementationlevel | .025                        | .014       | .171                      | 1.727 | .087 |
|       | Rural               | .060                        | .240       | .029                      | .250  | .803 |
|       | frlper              | .006                        | .011       | .109                      | .563  | .575 |
|       | asper               | .000                        | .100       | .000                      | .002  | .998 |
|       | blper               | .012                        | .080       | .276                      | .154  | .878 |
|       | hiper               | .007                        | .084       | .037                      | .089  | .930 |
|       | whper               | .021                        | .080       | .498                      | .262  | .794 |
|       | schoolsize          | .000                        | .000       | -.064                     | -.610 | .543 |

a. Dependent Variable: totalexpected03

As indicated earlier in this report, 2002 was the only year to show a significant effect between a schools' expected academic growth and the reported implementation level of key middle school practices. When controlling for additional independent variables individually with the implementation level, 2000 also showed a significant effect on a schools' expected academic growth. In the multiple regression analysis 2002 was the only year to continue

with a significant effect ( $t=3.533$ ,  $p=.001$ ). Overall, these results led to the rejection of the NULL hypothesis for this question:

NULL Hypothesis: There will be no relationship between the degree of implementation of key middle school practices and any level of expected academic growth with additional school demographics introduced.

### **Analysis Summary**

This chapter presented the statistical analyses of the data collected from the principals, NCDPI Accountability Division, and the U.S. Census Bureau. The data revealed that participating middle schools were located in urban communities (53.1%) and had a low diversity (10% = American Indian, Asian, Hispanic, and Multi-Racial, 29% = Black, 62% = White). While there was considerable variation in school sizes and student body socioeconomic status, the typical school was medium in size (mean = 724) with a little less than half of its student body receiving free or reduced lunch (mean = 41.1). The data also revealed that schools were implementing key middle school practices (mean = 50.2). Yet, with this level of implementation, the range of scores was high (31) and the level of implementation did not have an effect on the number of years a school met or did not meet expected academic growth (accepted NULL hypothesis). In additional analyses, one year of the data (2002) indicated that there was some effect on student academic achievement when the implementation level was controlled (rejected NULL hypothesis). This finding is very interesting and further studying is recommended to see if the implementation of key middle school practices indeed is the reason for this effect.

## CHAPTER 5: DISCUSSION AND IMPLICATIONS

This chapter reviews the purpose of this study, the procedures employed, and the descriptive data. Summaries of the study's findings and discussion of the findings in relation to the key middle school practices are then presented. This chapter ends with implications for middle school principals and recommendations for further study.

### Purpose of the Study

This study looked at the level of implementation of key middle school practices as reported on the *Survey of Middle School Implementation Levels* and the effect on middle school student academic achievement calculated from North Carolina testing data. The relationship was further examined using select demographic variables - school location, school size, student body race/ethnicity, and student body socioeconomic status. The following research questions formed the parameters for this study:

1. What is the level of implementation of key middle school practices in North Carolina middle schools with grade configurations 5-8 or 6-8 as reported in the 2002-2003 school year?
2. If North Carolina middle schools are consistently making at least expected academic growth standards, are those middle schools implementing key middle school practices? If so, what level of implementation is in those middle schools?
3. When using additional school demographic variables (i.e. community location, school size, student body race/ethnicity, and student body socioeconomic status) as part of the analyses, is there an effect on reaching expected academic growth rates with any amount of implementation of key middle school practices?

### Summary of the Study Procedures

This study used a non-experimental research design to examine the relationship between the implementation of key middle school practices and expected academic growth. The population for this study consisted of 404 North Carolina middle schools with a grade configuration of 5-8 or 6-8 (excluding charter schools). Each of these schools was mailed

directions for accessing and completing the online version of the *Survey of Middle School Implementation Level (Survey)*.

The *Survey* was used to gather responses from principals on their use of key middle school practices. The survey instrument was designed using a similar survey from Dr. Thelma Isaac's dissertation (2001). The instrument used was modified to reflect current middle school practices. Many of the *Survey* questions were adapted from national studies such as the *National Middle School Survey 2001* by Drs. Ken McEwin, Thomas Dickinson, and Doris Jenkins that was used to assess middle school practices across the nation. Other questions were adapted from the state of California's School Self-Rating of key middle school practices that is available online.

Two mailings of the directions for accessing and completing the *Survey* were sent. The first mailing was sent to the 404 North Carolina middle schools that have a grade configuration of 5-8 or 6-8. The second mailing was sent to approximately 100 North Carolina middle schools that had not participated in the survey as of August 27, 2004 and did not have a valid email address. In addition, emails were sent to approximately 300 North Carolina middle schools during the study to remind them of the online survey. On September 19, 2004, there were 123 valid responses, which represented a 31% response rate. This percentage was deemed reasonable to the researcher to continue the study.

Data from the online survey were copied and transferred into Excel. The data were later imported into the Statistical Analysis System (SAS) computer software program. The SAS program was used to calculate the implementation level for each school that participated in this study and to merge the implementation level and survey responses with the North Carolina middle schools EOG testing data from 1999-2003. Additional demographic

variables were included in this dataset: school size, student body race/ethnicity, and student body socioeconomic status (free/reduced lunch). Data from the U.S. Census bureaus website were included in the SAS dataset to identify each school as rural or urban (school location). This dataset was then transferred to Statistical Package for the Social Sciences (SPSS) for descriptive statistic summaries, regression analyses, and graphs that were used to answer the study's research questions.

### Discussion

Literature indicates the theoretical and social bases for the implementation of key middle school practices, yet many middle school experts have argued that successful implementation of key middle school practices is not occurring or if it is occurring, research is limited on the effect on student academic achievement. In *Education Week*, articles such as *Muddle in the Middle* (March 1998) and *A Crack in the Middle* (April 1998) have indicated that middle schools are not working and have referenced middle schools as “the wasteland of our primary and secondary landscape” (Bradley, 1998). These articles have used national test scores for the basis of their reports. To blame middle schools for low test scores without knowing the extent to which key middle school practices have been implemented is risky (Lounsbury, 2000).

In North Carolina, middle school student academic achievement lags behind that of elementary school and high school counterparts as measured by the EOG test data (Appendix A). Decision makers need data driven solutions to effectively address this problem. Some experts theorize, based on limited observations and anecdotal information that expected academic achievement would increase if the key middle school practices were fully implemented. This study was designed to fill the research gap regarding the relationship

between the implementation of key middle school practices and student academic achievement. The results of this study can be viewed as one piece of data for the North Carolina middle schools in their continued efforts to design their middle schools to meet the goal of high student academic achievement. A system's view of school administration must begin with an identification of those factors considered inputs. Curricular emphases, in the form of middle school practices, fall into this category (Appolloni, 1993).

### Summary of the Findings

#### **Question 1. What is the level of implementation of key middle school practices in North Carolina middle schools with grade configurations 5-8 or 6-8 as reported in the 2002-2003 school year?**

The 123 middle schools that responded to the *Survey of Middle School Implementation Levels* indicated that they were using many key middle school practices in their schools. The mean implementation level was a 50.2 score out of a possible 63. The range of scores was from 31 to 62, with a median of 51.0 and two modes of 52 and 57. The variance and standard deviation are 49.7 and 7.1 respectively. The normal curve has 99.8 percent of the scores falling within three standard deviations (3SD) from the mean. In this study, the scores were only slightly skewed to the left (3SD = 36 and 64 respectively) and the results were a fairly normal curve, which indicates the results are heterogeneous.

Principals indicated a high level of implementation (90-100% of their staff and/or the community are practicing the specific key middle school practice) on seven of the 21 questions. These included:

- (1) interdisciplinary teams and common planning times for teachers,
- (2) alignment of the curriculum with high standards,
- (3) exploratory cycles,

- (4) co-curricular activities for boys and girls of all levels,
- (5) continuous adaptation of curriculum to meet students diverse needs,
- (6) staff participates and selects professional development on middle school subjects,
- (7) safety and class management responsibilities are shared.

In addition, the principals indicated a medium level of implementation (50-89% of their staff and/or the community are practicing the specific key middle school practice) on 12 of the 21 questions. They consisted of:

- (1) flexible scheduling,
- (2) use of a wide variety of instructional strategies,
- (3) multiple opportunities for students to explore a rich variety of topics,
- (4) expected high academic standards for all students,
- (5) applications of curriculum to real world problems,
- (6) opportunities for the families to contribute in setting and supporting schools goals toward high performance,
- (7) opportunities for families to promote school improvement,
- (8) understanding of the schools vision provided for families,
- (9) providing a shared vision,
- (10) providing staff development to orient teachers to middle school philosophy,
- (11) providing middle school professionals in the classrooms, and
- (12) providing a comprehensive health and wellness program.

The low level of implementation (1 – 49% of their staff and/or the community are practicing the specific key middle school practice) was indicated on only two of the 21

questions. They were (1) the advisor/advisee programs and (2) the use of parents as more than just volunteers in school activities.

The majority of the principals indicated that they had been implementing key middle school practices more than five years and had also maintained a high teacher retention percentage. Many of the participating principals indicated that they had not participated in a self-study to assess their middle schools level of implementation of key middle school practices but would if given grant monies. Overall, participating principals felt that they were implementing many key middle school practices successfully.

**Question 2. If North Carolina middle schools are consistently making at least expected academic growth, are those middle schools implementing key middle school practices? If so, what level of implementation is in those middle schools?**

Participating middle schools made at least expected academic growth 60% of the time (approximately three out of the five years) between 1999 and 2003. Schools that made expected academic growth four or five of the school years in this study showed a higher level of implementation of key middle school practices than those meeting three years or less. In addition, schools with a lower free/reduced lunch percentage (SES indicator) also have higher levels of implementation of key middle school practices and made expected academic growth four or five years of this study. A correlation analysis indicated that the implementation level did not have an effect on whether a North Carolina middle school met expected academic growth but free/reduced lunch did have an effect ( $r = -.490, p < .01$ ).

**Question 3. When using additional school demographic variables (i.e. school location, school size, student body race/ethnicity, and student body socioeconomic status) as part of the analyses, is there an effect on North Carolina middle schools reaching expected academic growth with any amount of implementation of key middle school practices?**

The relationship between implementation of key middle school practices and the expected academic growth rates was examined individually (simple regression analyses), in

conjunction with one other independent variable, and with multiple school demographic variables (multiple regression analyses). Five years of expected academic growth rates for the participating schools were used in these analyses. One year of the data (2002) showed a small effect ( $t=3.131$ ,  $p=.002$ ;  $r^2=0.085$ ) with the implementation level scores controlled. That is, the dependent variable, expected academic growth rates are predicted to increase when the implementation of key middle school practices increases. Additional analyses were conducted on the 2002 data to verify this significance ( $F=10.301$ ,  $p=.002$  and  $\eta^2=0.378$ ).

### Implications

This study was designed to provide decision makers with useful data concerning the middle school model as delineated in the literature. A by-product of this study has been the discovery or refinement of additional questions that could be explored in future research studies. The following recommendations are given for the implementation of key middle school practices and their benefits, and recommendations for future research.

#### *Recommendations on Implementation*

The results of this study in the preceding sections imply a few implications. The following recommendations are offered to administrators, central office staff, and teachers to help them understand and accurately reflect the impact of the middle school reform on student academic achievement.

1. This study is a measuring tool for other North Carolina middle schools. Principals should become familiar with the implementation level of key middle school practices in their middle school to help in assessing the effect of programs on student academic achievement.

2. Findings in this study found one year when high implementation of key middle school practices had a significant impact on academic achievement. North Carolina administrators can use this information to review what had been implemented that school year. That is, were key middle school practices in place and have since been modified or removed?
3. Since all years in the study did not show a significant effect, the results of this study must be used cautiously. More research is recommended, aiming for consistent findings in multiple research studies.
4. The use of other demographic variables provided data on the types of participating middle schools in relation to other North Carolina middle schools. A middle school should review its demographics to see if it falls within the averages for this study to generalize the study's findings. The socioeconomic status indicator is one variable that needs to be considered in all research. As indicated in this study, free/reduced lunch was found to be a significant variable in predicting student academic achievement. That is, the higher the free/reduced lunch percentage, the lower the expected academic growth.

Using additional variables in a study helps to sort and control the effects of some variables while studying other variables. For example, in Table 57, the implementation level was being studied to see if there was an effect on the 2002 expected academic growth with other demographic variables controlled. The significance was small ( $t=3.533$ ,  $p=.001$ ). The effect of other independent variables on the implementation level in predicting expected academic growth in 2002 is not affected. Many independent variables should be examined to

see which ones contribute to an effect as just knowing the means does not give the complete picture.

### *Recommendations for Future Research*

North Carolina has been in the national news as a leader in accountability and recently showed higher gains in student academic achievement (NCDPI, 2004). However, North Carolina middle schools do not show consistent trends of continued student academic growth. This study was conducted to see if implementation of key middle school practices as delineated in middle school literature is an indication for high student academic achievement. A one-time survey of principals, who indicated their level of implementation of key middle school practices, is not enough to know if the implementation of key middle school practices increases student academic achievement in North Carolina middle schools.

To fully understand the level of implementation of key middle school practices, the following steps are proposed:

1. Work with middle school experts to design a valid and reliable survey instrument to identify the implementation level of key middle school practices in North Carolina middle schools. The availability of such an instrument would afford a valuable service to educational administrators.
2. Create surveys that assess the level of implementation of key middle school practices for North Carolina middle school administrators, teachers, students, and parents to get a true indication of the implementation of key middle school practices in the state.
3. Conduct site visits in conjunction with the surveys that include interviews and observations in a sample of North Carolina schools. These types of data would help assess the true level of implementation of key middle school practices in a school.
4. In addition to a new study in North Carolina, other states should conduct similar studies. North Carolina middle schools might not be typical middle schools in respect to school location, school size, student body race/ethnicity, and student body socioeconomic status. It would be interesting to see if other states found

significant effects between the implementation of key middle school practices and student academic achievement in their middle schools.

### Conclusion

The data provided preliminary but not conclusive support for the effect of implementing key middle school practices on a schools expected academic growth. Regarding the study's research questions 1-3, the data indicated that the higher the implementation of the key middle school practices, the higher the student academic achievement and one year of data was a good predictor of expected academic growth. To provide conclusive support, multiple research findings are needed. Also, more in-depth research is needed, as explained on p.105.

Middle school researchers indicated that to ensure a successful reform research is needed. The middle school reform is intended to guide schools in the educating of young adolescents. If change is to take place, administrators need to take charge and assume responsibility for studying their own practice. This study had a year of effect and should be recognized by North Carolina middle school decision makers. In addition, this study can be replicated to continue with the research base that is needed to ensure all North Carolina middle school students reach high academic achievement and to contribute to the middle school research base.

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Appendix A  
North Carolina Testing Data

**Trend in Percent of Schools Meeting At Least Expected Growth  
by Grade and Subject for Grades 3 through 8**

**Reading**

| Grade | Percent Meeting At Least Expected Growth |         |         |         |
|-------|--|---------|---------|---------|
|       | 1997-98                                  | 1998-99 | 1999-00 | 2000-01 |
| 3     | 86.9                                     | 85.8    | 76.2    | 51.1    |
| 4     | 42.8                                     | 22.4    | 17.9    | 26.4    |
| 5     | 85.2                                     | 58.0    | 80.2    | 85.4    |
| 6     | 48.0                                     | 44.0    | 19.7    | 18.1    |
| 7     | 56.2                                     | 72.9    | 33.2    | 44.9    |
| 8     | 78.7                                     | 55.2    | 31.4    | 51.9    |

**Mathematics**

| Grade | Percent Meeting At Least Expected Growth |         |         |         |
|-------|--|---------|---------|---------|
|       | 1997-98                                  | 1998-99 | 1999-00 | 2000-01 |
| 3     | 56.4                                     | 39.9    | 38.1    | 51.9    |
| 4     | 77.3                                     | 85.9    | 86.3    | 83.2    |
| 5     | 66.4                                     | 74.3    | 66.0    | 56.0    |
| 6     | 69.4                                     | 71.4    | 55.5    | 66.2    |
| 7     | 72.1                                     | 82.6    | 61.0    | 80.2    |
| 8     | 84.2                                     | 66.8    | 64.6    | 32.1    |



**1999-2003 North Carolina Expected Academic Growth  
Grades 5, 6, 7 & 8**

**1998-1999 School Year**

| <b>Grade Level</b> | <b>N-Count</b> | <b>Reading Expected</b> | <b>Mathematic Expected</b> |
|--------------------|----------------|-------------------------|----------------------------|
| <b>5</b>           | 85809          | 0.12                    | 0.53                       |
| <b>6</b>           | 84261          | -0.24                   | 0.47                       |
| <b>7</b>           | 83207          | 0.41                    | 0.72                       |
| <b>8</b>           | 81894          | 0.04                    | 0.46                       |

**1999-2000 School Year**

| <b>Grade Level</b> | <b>N-Count</b> | <b>Reading Expected</b> | <b>Mathematic Expected</b> |
|--------------------|----------------|-------------------------|----------------------------|
| <b>5</b>           | 89349          | 0.78                    | 0.4                        |
| <b>6</b>           | 87221          | -0.89                   | 0.05                       |
| <b>7</b>           | 85281          | -0.41                   | 0.32                       |
| <b>8</b>           | 82778          | -0.32                   | 0.38                       |

**2000-2001 School Year**

| <b>Grade Level</b> | <b>N-Count</b> | <b>Reading Expected</b> | <b>Mathematic Expected</b> |
|--------------------|----------------|-------------------------|----------------------------|
| <b>5</b>           | 90385          | 0.48                    | 0.06                       |
| <b>6</b>           | 90187          | -0.5                    | 0.16                       |
| <b>7</b>           | 87387          | -0.09                   | 0.35                       |
| <b>8</b>           | 84335          | -0.0                    | -0.22                      |

**2001-2002 School Year**

| <b>Grade Level</b> | <b>N-Count</b> | <b>Reading Expected</b> | <b>Mathematic Expected</b> |
|--------------------|----------------|-------------------------|----------------------------|
| <b>5</b>           | 91127          | 0.48                    | 0.22                       |
| <b>6</b>           | 91321          | -0.43                   | 0.43                       |
| <b>7</b>           | 90727          | -0.22                   | 0.37                       |
| <b>8</b>           | 87153          | -0.0                    | -0.05                      |

**2002-2003 School Year**

| <b>Grade Level</b> | <b>N-Count</b> | <b>Reading Expected</b> | <b>Mathematic Expected</b> |
|--------------------|----------------|-------------------------|----------------------------|
| <b>5</b>           | 92574          | 0.84                    | 0.47                       |
| <b>6</b>           | 92508          | -0.51                   | 0.74                       |
| <b>7</b>           | 92938          | 0.25                    | 0.29                       |
| <b>8</b>           | 90906          | 0.02                    | 0.07                       |

\*Negative zeros are shown as NC takes all data to full precision (32 digits) and the standard was negative in both cases.

**North Carolina ABCs Results 1997-2002**  
**Expected Academic Growth Status Chart**

Number of years a school met expected academic growth (1997-2002)

| Frequency<br>Percent<br>Row Pct<br>Col Pct | 6 years                        | 5 years                        | 4 years                       | 3 years                       | 2 years                      | 1 year                      | Zero<br>years              | Total          |
|--|--------------------------------|--------------------------------|-------------------------------|-------------------------------|------------------------------|-----------------------------|----------------------------|----------------|
| Elementary<br>School <sup>1</sup>          | 219<br>10.45<br>43.37<br>30.37 | 148<br>7.06<br>29.31<br>27.72  | 86<br>4.10<br>17.03<br>24.43  | 45<br>2.15<br>8.91<br>17.37   | 6<br>0.29<br>1.19<br>3.87    | 1<br>0.05<br>0.20<br>1.56   | 0<br>0.00<br>0.00<br>0.00  | 505<br>24.09   |
| Middle<br>School <sup>2</sup>              | 96<br>4.58<br>23.53<br>13.31   | 72<br>3.44<br>17.65<br>13.48   | 81<br>3.86<br>19.85<br>23.01  | 69<br>3.29<br>16.91<br>26.64  | 55<br>2.62<br>13.48<br>35.48 | 32<br>1.53<br>7.84<br>50.00 | 3<br>0.14<br>0.74<br>27.27 | 408<br>19.47   |
| High<br>School <sup>3</sup>                | 406<br>19.37<br>34.32<br>56.31 | 314<br>14.98<br>26.54<br>58.80 | 185<br>8.83<br>15.64<br>52.56 | 145<br>6.92<br>12.26<br>55.98 | 94<br>4.48<br>7.95<br>60.65  | 31<br>1.48<br>2.62<br>48.44 | 8<br>0.38<br>0.68<br>72.73 | 1183<br>56.44  |
| Total                                      | 724<br>34.40                   | 534<br>25.48                   | 352<br>16.79                  | 259<br>12.36                  | 155<br>7.40                  | 64<br>3.05                  | 11<br>0.52                 | 2096<br>100.00 |

<sup>1</sup> defined as a school with a grade level no higher than grade 6

<sup>2</sup> defined as a school with a grade level beginning with a four and ending with an eight; five to eight; six to eight; seven to eight;

<sup>3</sup> defined as a school with a grade level ending in grade 12  
includes charter schools

Schools in this chart (except the schools that met five or six years) did not necessarily meet expected academic growth consecutive years. Middle schools had the lowest number of schools meeting academic growth in the four – six year counts and had the most meeting in the zero to three years.

Appendix B  
*Survey Of Middle School Implementation Levels*

*SURVEY OF MIDDLE SCHOOL IMPLEMENTATION LEVELS*

Listed below are several key middle school practices. Please indicate the degree to which your school is implementing each (**4 = high level of implementation; 3 = medium level of implementation; 2 – low level of implementation; or 1 – not implemented**)

1. Every student has a mentor, advisory, advocate, or other adult with whom he/she trusts and maintains a long-term relationship.
2. The school is designed with interdisciplinary teams that include heterogeneous grouping of students, common planning for teachers, formal team leaders with specific responsibilities, team sessions for systemic assessment of student strengths and weaknesses, team organization for effective decision-making, and development of team identity.
3. Flexible scheduling enables students to engage in extended projects, hands-on experiences, and inquiry-based learning. Students can have more time to learn the content, concepts, or skills if they need it.
4. Teachers use a wide variety of instructional strategies to foster curiosity, exploration, creativity, and the development of social skills.
5. The school provides multiple opportunities for students to explore a rich variety of topics and interests in order to develop their identity, discover and demonstrate their own competence, and plan for their future.
6. All students are expected to meet high academic standards and students know what high quality work should be like. Students revise their work based on feedback until they meet or exceed the performance standard. Expectations are clear.
7. Curriculum, instruction, and assessment are aligned with high standards and the curriculum moves forward substantially as student's progress through the middle school grades. Students, teachers, and families understand what students are learning and why.
8. The curriculum emphasizes deep understanding of important concepts, development of essential skills, and the ability to apply what one has learned to real-world problems.
9. The school provides exploratory cycles (i.e. art, music, home economics, industrial art, electives, interest centered mini-courses, independent study) to engage students in exploratory experiences.
10. The school provides age-appropriate co-curricular activities for boys and girls of all skill levels, such as team sports, clubs, exploratory opportunities, service opportunities, and a rich program in the visual and performing arts.
11. The school continually adapts curriculum, instruction, assessment, and scheduling to meet the student's diverse and changing needs.
12. Parents are more than just volunteers or fund-raisers; they are meaningfully involved in all aspects of the school.
13. The school includes families and community members in setting and supporting the schools trajectory toward high performance.
14. The school engages all stakeholders (parents, students, faculty) in ongoing and reflective conversation, consensus building, and decision-making about governance to promote school improvement.

15. The school provides opportunities for the community member to understand and articulate the common vision through participation in all school-based decision making processes.

16. A shared vision of what a high-performing school is and does drives every facet of school change.

17. The school staff has opportunities to plan, select, and engage in professional development aligned with the state's content standards and in the middle school philosophy.

18. The school provides for staff development to orient teachers to middle school philosophy; young adolescent behavior; and age appropriate curriculum, instruction, and assessment.

19. The school provides for teachers and specialized professionals to offer assistance to students in negotiating their lives both in and out of school.

20. The school employs effective policies (safety and classroom management) that rely on collaborative and shared responsibility between everyone in the school for sustaining a climate conducive for learning.

21. The school provides a comprehensive health and wellness program that is student-focused, integrated throughout the curriculum, and includes daily physical education activities that improve students' cardiovascular fitness, coordination, agility, and strength.

22. Has your school participated or completed a "self-study" that gives feedback on implementation of middle level practices? YES NO

23. If you answered no to question 22, would you be willing to participate if funded by grant monies? YES NO

24. How many years would you say your school has been involved in implementing key middle school practices?

|                                |                  |
|--------------------------------|------------------|
| Less than a year               | 1 year           |
| Greater than 1 but less than 5 | 5 years          |
| Greater than 5 years           | Not implementing |

25. Please indicate your major of certification.

|   |
|---|
| Elementary certification                    |
| Secondary Certification                     |
| Middle School Certification                 |
| Elementary and Middle School Certification  |
| Elementary and Secondary Certification      |
| Middle School and High School Certification |
| All 3 certifications                        |

26. Please indicate the percent of teacher retention from 2002-2003 school year

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27. Would you like to receive a copy of the research findings? YES NO

Additional  
Comments \_\_\_\_\_

Thank you for completing this survey. If you indicate you would like to receive a copy of the research findings, I will send them to the school address as listed in the North Carolina School Directory.

Judith L. Williams  
1014 Eastern View Drive  
Fredericksburg, VA 22405

Appendix C  
Institutional Review Board (IRB) Emails

From: Debra Paxton  
Sent: Wednesday, July 14, 2004 4:12 PM  
To: Judith Williams  
Subject: RE: IRB submission for NCSU

Hi there - I've looked over the materials that you sent me, and since you're only asking about the way the schools conduct their business and do not ask any questions that are directly about the principal, teachers, or individual students, this research does not qualify as human subjects research.

You do not need IRB review and approval for this research.

Thanks,  
Deb Paxton

\*\*\*\*\*

Deb Paxton  
North Carolina State University  
Regulatory Compliance Administrator

>>> "Williams, Judith" 7/13/2004  
12:05:20 PM >>>

Debra,  
Attached are all the files except the directions for the principals that actually shows them the screen shots of the on-line survey. I will fax that file to you as it is too big for email unless zipped. Thanks.  
Judy

Judith L. Williams  
Chief, Research & Evaluation Branch  
4040 N. Fairfax Drive  
Arlington, VA 22203

-----Original Message-----

From: Debra Paxton  
Sent: Tuesday, July 13, 2004 7:41 AM  
To: Judith Williams  
Subject: RE: IRB submission for NCSU

Good morning - unfortunately I am unable to unzip files - I don't have the software. Would you please send me the original files that you have? If you have to send them via multiple emails, that's fine.

Thanks,  
Deb Paxton

\*\*\*\*\*

Deb Paxton  
North Carolina State University  
Regulatory Compliance Administrator

>>> "Williams, Judith" 7/12/2004  
6:48:20  
PM >>>

Debra,  
After emailing with you on the IRB requirements, I had to do some revisions to my survey instrument. It is now complete as are my letters and directions. I am attaching the form you requested along with the letters. I have zipped the file as my directions I have for the principals are in a large file. There is no password on the file.

Please let me know if I need to do or add anything else. Thanks. Judy

-----Original Message-----

From: Debra Paxton  
To: Judith Williams  
Sent: 5/24/2004 3:27 PM  
Subject: RE: IRB submission for NCSU

Hello again -

I've looked over what you sent me, and I think you can complete a "Request for Administrative Review," which is also known as an exemption. Simply download the form from; <http://www.ncsu.edu/irb>, paying particular attention to your discussion of how you may collect identifying information (since you will send a follow up letter to non-responders), how subjects will access the survey, and security of the on-line form. You should also create a consent form that will be used as an introduction to the survey. Instead of a signature line, you can simply use a link that says, "click here if you agree to participate." Finally, I would also like to see the follow up letter you will send to non-responders. You can email all these materials to me, or fax them to me if that's preferable to you. Please feel free to contact me with any questions or concerns that you have.

Sincerely,

Deb Paxton

\*\*\*\*\*

Deb Paxton  
North Carolina State University  
Regulatory Compliance Administrator

>>> "Williams, Judith" 5/20/2004 7:14:09 PM

>>>

Hi Debra,

Thank you for your quick response. I have attached my survey instrument, my methodology chapter and my letter I plan to send to principals for my dissertation study. Please let me know if you need additional information or if I need to do anything else. Thank you again for your quick response. Judy

-----Original Message-----

From: Debra Paxton  
To: Judith Williams  
Sent: 5/20/2004 1:59 PM  
Subject: IRB submission for NCSU

Hi Ms. Williams -

I'm Deb Paxton, the IRB Director for NC State. Matt Zingraff forwarded your correspondence to me so I could help you. Do you have your methodology and survey instrument in a form that you could email to me? If I could take a quick look at it, I'll be able to offer you the best guidance I can. Feel free to email it to me as an attachment. If you don't have that information in a readily accessible form, just let me know and I'll give you more specific instructions about the general IRB process.

Thanks,  
Deb Paxton

Appendix D  
Panel of Experts and Pilot Study Participants

## PANEL OF EXPERTS

The following individuals served as a panel of experts to review the *Survey of Middle School Implementation Levels* as a valid survey for gauging the implementation level in a given middle school.

Dr. Vincent A. Anfara, Jr. is Associate Professor of Educational Administration and Supervision at the University of Tennessee. He received his Ph.D. in Educational Administration from the University of New Orleans in 1995. Before entering the professorate, he taught for 23 years in both middle and high schools in Louisiana and New Mexico. His research interests focus on middle school reform, leadership in middle schools, and issues related to student achievement. He is Past-President of AERA's Middle Level Education Research Special Interest Group, the chair of the National Middle School Association's (NMSA) Research Committee, and a board member of the Tennessee Association of Middle Schools (TAMS). He has authored over 40 articles and is the author or editor of five books.

Dr. John Harrison – Executive Director for the North Carolina Middle School Association. This association is made up of many members and includes a board of directors. The Board of Directors is elected to conduct the ongoing activities of the Association. The Association is a non-profit organization filed under North Carolina Articles of Corporation. Its organizational structure is governed by a constitution adopted by the membership.

Dr. David B. Strahan - Professor at the University of North Carolina in Greensboro. Primary Specializations: Middle Grades, Teacher Education. Education background: 1979 Ed.D Curriculum and Instruction at the University of Cincinnati; 1973 Reading Specialist at Miami University of Ohio; 1972 M.Ed., Curriculum and Instruction at Miami University of Ohio; 1971 B.S. Ed., English Education Miami University of Ohio.

Teaching Experiences:

- Middle Grades Team Leader, Professional Development Schools, UNCG, 1991-present.
- Middle Grades Program Coordinator, Department of Curriculum and Instruction, UNCG, 1984-87.
- Diagnostic Clinician, Learning Development Center, Rochester Institute of Technology, 1981-84.
- Reading Specialist, Reading and English Teacher, West Carrollton Junior High School, 1972- 78.

Services:

- Editor, Middle Grades Research: Selected Studies, 1985-1990. National Middle School Association.
- Chairman: Research Committee, National Middle School Association, 1985-1990.
- Co-chair, Early Adolescent Generalist Expert Panel, National Board for Professional Teaching Standards, 1994.

- Member, Board of Directors, North Carolina Middle School Association, 1994-1997

Dr. Thelma Isaacs – Associate professor in Education at Marshall University in Huntington, WV.

#### PILOT STUDY PARTICIPANTS

Dr. Janice Robbins  
Chief, Mathematics, Science, and Physical Education Curriculum, DoDEA  
Arlington, VA

Ms. Brenda Griffin  
Principal Chatham Middle School  
Siler City, NC

Ernest Alston  
Personnel Director, Chatham County Schools (former middle school principal)  
Pittsboro, NC

Rhonda Underwood  
Teacher Licensure Specialist, Chatham County Schools (former middle school teacher)  
Pittsboro, NC

Beverly Bland  
Retired middle school counselor, Chatham County Schools  
Pittsboro, NC

Dr. Lorie Sebastian  
Chief, Student Support, DoDEA  
Arlington, VA

Dr. Marc Mossburg  
Chief, English/Language Arts and Foreign Language Curriculum, DoDEA  
Arlington, VA

Ms. Alpha Cheek  
Testing Director, Chatham County Schools (former middle school assistant principal)  
Pittsboro, NC

Dr. Mark Bignell  
Music Specialist (Pre-K – 12), DoDEA  
Arlington, VA

Ms. Jean Pryor  
Chatham County Schools (former K-8 principal)

Ms. Jean Blackmon-Brauer  
Elementary Curriculum Coordinator  
Chatham County Schools

Ms. Darlene Cooley  
Student Services  
Chatham County Schools

Mr. Lawrence Price  
Chatham County Schools (former Elementary principal)

Ms. Beverly Crotts  
Student Services  
Chatham County Schools

Ms. Mary Harris  
Student Services  
Chatham County Schools

Ms. Mary Lee Moore  
Migrant programs  
Chatham County Schools

Ms. Kim Day  
Science Specialist (Pre-K-12), DoDEA  
Arlington, VA

Dr. Linda Hackett  
Mathematics Specialist (Pre-K-12), DoDEA  
Arlington, VA

Ms. Sandee Scruggs  
Elementary Reading Specialist (grades Pre-K-8), DoDEA  
Arlington, VA

Ms. Susan Karlesses  
Middle/High School Reading Specialist (grades 7-12), DoDEA  
Arlington, VA

Ms. Wilhemina McKinney  
Assessment Specialist, DoDEA  
Arlington, VA

Appendix E  
Letter for Principals and Directions

Department of Educational Leadership  
North Carolina State University

July 20, 2004

Dear North Carolina Middle School Principal,

My name is Judith L. Williams and I am Chief, Research and Evaluation with the Department of Defense Education Activity (DoDEA) in Arlington, Virginia. I am also a doctoral student in Educational Leadership and Agency Management at North Carolina State University. As part of the requirements for completing my doctorate, I am conducting a research study that will examine the relationship between the levels of implementation of key middle school practices and student academic achievement in North Carolina middle schools. I am inviting all North Carolina middle schools with grade configurations of 5-8 or 6-8 as listed in the 2003-2004 North Carolina School Directory to participate in this study. **A raffle drawing will be held for all North Carolina middle schools that participate; details at the end of this letter.**

As a former middle school teacher, I know how precious your time is each day and I would like to ask you if you would be willing to participate in my study? The questionnaire will only take a few minutes to complete. The survey is online and is located at the following URL:

<http://www.axiscreations.com/clients/jwilliams/>

Please type in the web address, select your school from a drop down menu, click submit, fill out the survey, click submit again to complete (additional instructions included in this letter).

I will use your North Carolina school number to match your online responses to your schools 1999-2003 North Carolina End-of-Grade (EOG) Reading and Mathematics test data. After merging your EOG test data with your survey responses, **I will remove your school number from the database** and run analyses as a state. I will **not** be reporting data on individual schools, only on the state of North Carolina middle schools. If you request a copy of the research, I will provide you with the overall results plus your individual school data.

I am using the public database from the North Carolina Department of Public Instruction (NCDPI) from 1999-2003. I worked for NCDPI in the Accountability Division for three years and during those years did many analyses for NCDPI using the North Carolina testing data. I understand the importance of **confidentiality** and again emphasize my ethical responsibility to all schools that identifying information will **not** be released unless you request it for your own use.

As I mentioned earlier in this letter, an incentive to complete the survey is being given in the form of a raffle. **Every** school that submits data through the online survey will be included in a raffle drawing for the following monetary prizes: \$100, \$75, \$50, and \$25. Please consider

taking part in this survey. A high rate of return will definitely increase the strength of my study.

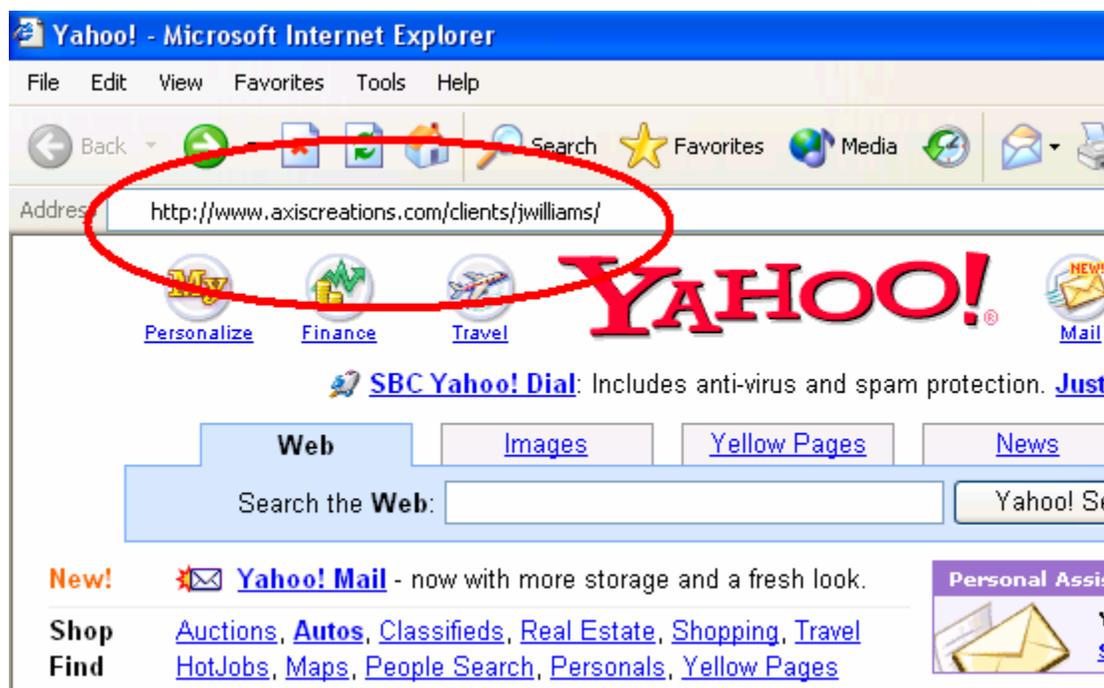
I am asking for all surveys to be complete by August 20, 2004. If you have any questions, please contact me at (XXX) XXX-XXX or by email [xxxx@xxxx.xxx](mailto:xxxx@xxxx.xxx). You may also contact my advisor, Dr. Kenneth Brinson at NCSU, (XXX)-XXX-XXXX.

Appreciatively,

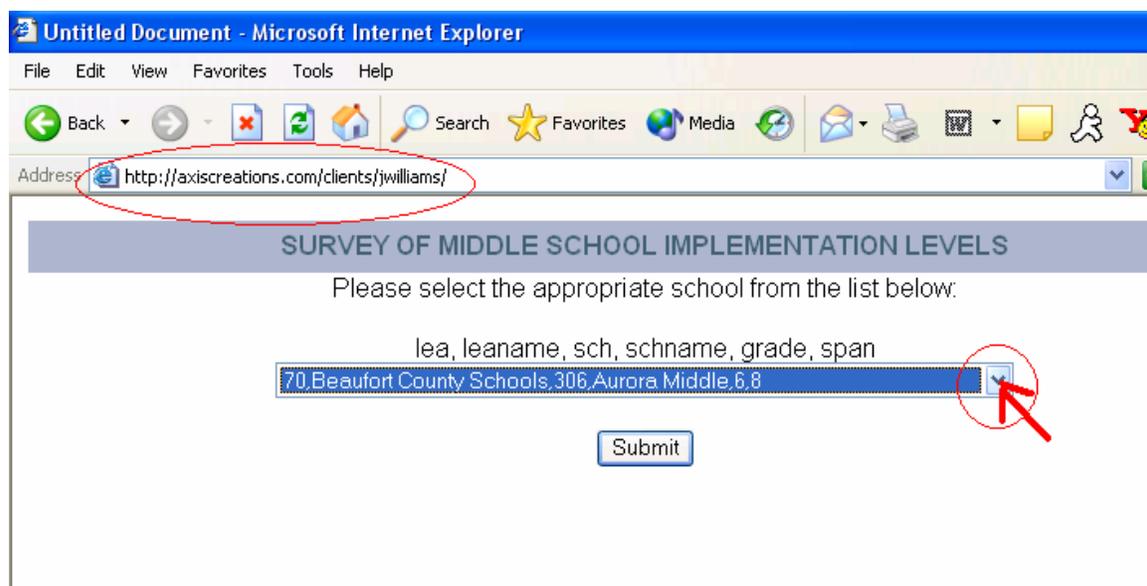
Judith L. Williams  
"Home address"

**DIRECTIONS:** Please follow the directions below to access the online middle school survey.

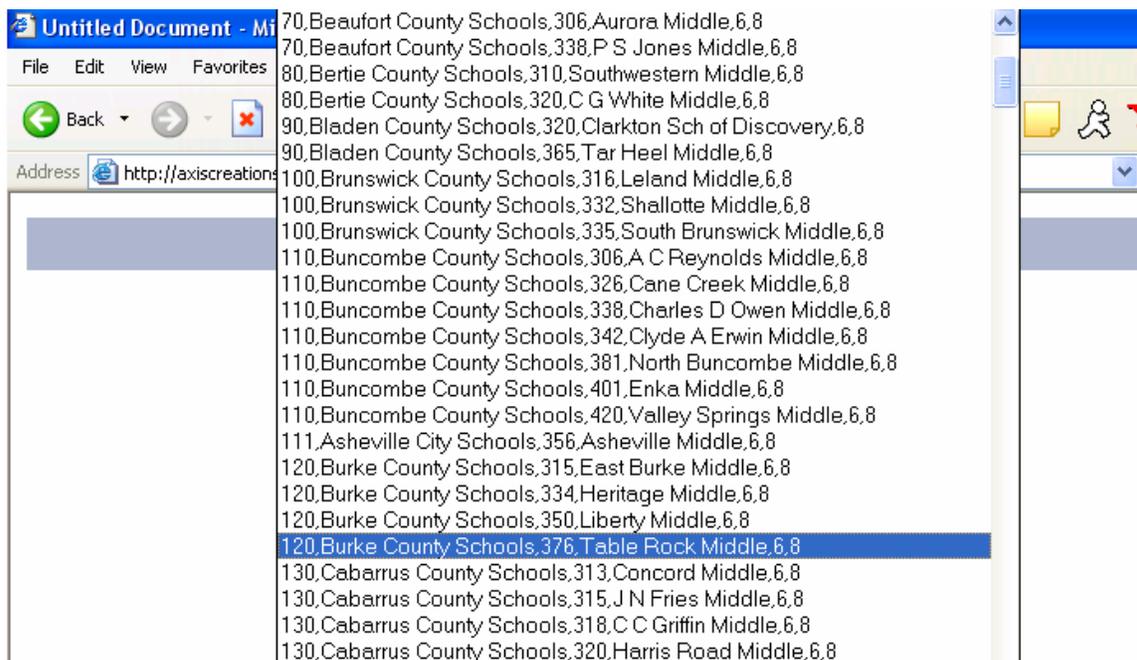
Type in the web address: <http://axiscreations.com/clients/jwilliams/> in the address bar in your web browser (see example circled below). Hit **ENTER** after typing.



You will see the page shown below after entering web address. The **arrow** is pointing to the list of all North Carolina Middle Schools. Click on the arrow to find **your middle school**.



Select **your school** from the list. After selecting your school, click the **SUBMIT** button at the bottom.



Submit

The survey will appear. Please complete each statement or question by choosing High, Medium, Low Implementation or Not Implemented. At the end of the survey, you will see directions to give an email address if you wish to receive results. Click the **SUBMIT** button at the end of the survey to submit your answers.

|   | High Level of Implementation | Medium Level of Implementation | Low Level of Implementation | Not Implemented       |
|---|------------------------------|--------------------------------|-----------------------------|-----------------------|
| 1. Every student has a mentor, advisory, advocate, or other adult with whom he/she trusts and maintains a long-term relationship. | <input type="radio"/>        | <input type="radio"/>          | <input type="radio"/>       | <input type="radio"/> |
| 2. The school is designed with interdisciplinary teams that include heterogeneous grouping of students, common planning for       |                              |                                |                             |                       |

*DIRECTIONS FOR IMPLEMENTATION LEVELS*

**HIGH** - The staff and/or community (includes parents) participate 90-100% of the time in the middle school practice listed.

**MEDIUM** – The staff and/or community (includes parents) participate 50-89% of the time in the middle school practice listed.

**LOW** – The staff and/or community (includes parents) participate 1-49% of the time in the middle school practice listed.

**NOT** – School does not participate in the middle school practice listed.

**EMAIL Letter Sent To North Carolina Middle School Principals That Did Not Respond To the Mailed Request**

Dear North Carolina Middle School Principal,

Earlier this month I mailed letters asking North Carolina middle school principals if they would volunteer to be part of a study that I am conducting as part of my doctoral program at North Carolina State University titled: “A Study for Middle School Decision Makers: The Relationship Between North Carolina Middle School Academic Growth and the Implementation Level of Key Middle School Practices.” Additionally, I have been emailing principals to take part in this study. A raffle is being held for all respondents – details below! :-)

I understand that this is a very busy time of the year for you but I would really appreciate you taking a few minutes to complete a survey. This survey will allow me to assess the implementation level of key middle school practices at your school. I will then merge your responses with your End-of-Grade data (1999-2003) for my analyses. I will then drop your school number and use your data along with all other responses.

The survey is online at the following URL: <http://axiscreations.com/clients/jwilliams/>

Once you click on the link to the survey, you will see a drop down list of all 5-8 and 6-8 North Carolina middle schools (5-8 schools are near the bottom of the list). Please select your school, click submit, and you will be at the survey. The four-implementation levels are defined below:

HIGH - The staff and/or community (includes parents) participate 90-100% of the time in the middle school practice listed.

MEDIUM – The staff and/or community (includes parents) participate 50-89% of the time in the middle school practice listed.

LOW – The staff and/or community (includes parents) participate 1-49% of the time in the middle school practice listed.

NOT – School does not participate in the middle school practice listed.

Please complete all questions/statements that pertain to your middle school and then click submit at the bottom of the survey.

I am holding a raffle for all principals that participate in the study as mentioned in the beginning of this email. The prizes are \$100, \$75, \$50, and \$25. I will draw the winners on August 20, 2004 **(I AM EXTENDING THIS UNTIL MONDAY, AUGUST 23 – A FEW PRINCIPALS ASKED IF THEY COULD HAVE THE WEEKEND TO COMPLETE THE SURVEY!).**

Please consider taking part in this study. I need at least 50% of the North Carolina middle schools to participate to complete a valid study and at this time have 22%. I would really appreciate your responses and as stated above, I will not be using any school identifications in my final report. The report will be a statewide report.

If you did not receive my initial letter with Internet directions and would like more information on the study, please contact me through this email or by phone at XXX-XXX-XXXX.

Thank you for your time and interest.

Sincerely,  
Judy Williams  
Chief, Research and Evaluation  
Department of Defense Education Activity  
4040 N. Fairfax Drive  
Arlington, VA 22203

Appendix F  
U.S. Census Bureau's definition of Rural and Urban

**Rural**

Territory, population and housing units not classified as urban. "Rural" classification cuts across other hierarchies and can be in metropolitan or non-metropolitan areas.

**Metropolitan statistical area (MSA)**

A geographic entity defined by the federal Office of Management and Budget for use by federal statistical agencies, based on the concept of a core area with a large population nucleus, plus adjacent communities having a high degree of economic and social integration with that core. Qualification of an MSA requires the presence of a city with 50,000 or more inhabitants, or the presence of an Urbanized Area (UA) and a total population of at least 100,000 (75,000 in New England). The county or counties containing the largest city and surrounding densely settled territory are central counties of the MSA. Additional outlying counties qualify to be included in the MSA by meeting certain other criteria of metropolitan character, such as a specified minimum population density or percentage of the population that is urban. MSAs in New England are defined in terms of minor civil divisions, following rules concerning commuting and population density.

**Metropolitan**

Refers to those areas surrounding large and densely populated cities or towns.

**Metropolitan area (MA)**

A collective term, established by the federal Office of Management and Budget, to refer to metropolitan statistical areas, consolidated metropolitan statistical areas, and primary metropolitan statistical areas.

**Nonmetropolitan**

The area and population not located in any Metropolitan area (MA).

**Urban**

All territory, population and housing units in urbanized areas and in places of more than 2,500 persons outside of urbanized areas. "Urban" classification cuts across other hierarchies and can be in metropolitan or non-metropolitan areas.

**Definition:** The U.S. Census Bureau classifies as urban all territory, population, and housing units located within urbanized areas (UAs) and urban clusters (UCs). It delineates UA and UC boundaries to encompass densely settled territory, which generally consists of:

- A cluster of one or more block groups or census blocks each of which has a population density of at least 1,000 people per square mile at the time, and
- Surrounding block groups and census blocks each of which has a population density of at least 500 people per square mile at the time, and
- Less densely settled blocks that form enclaves or indentations, or are used to connect discontinuous areas with qualifying densities.

Rural consists of all territory, population, and housing units located outside of UAs and UCs.

Geographic entities such as metropolitan areas, counties, minor civil divisions (MCDs), and places often contain both urban and rural territory, population, and housing units.

### **Urban Cluster (UC)**

An urban cluster (UC) consists of densely settled territory that has at least 2,500 people but fewer than 50,000 people. (A UC can have 50,000 or more people if fewer than 35,000 people live in an area that is not part of a military reservation.)

The U.S. Census Bureau introduced the UC for Census 2000 to provide a more consistent and accurate measure of the population concentration in and around places.

UCs replace the provision in the 1990 and previous censuses that defined as urban only those places with 2,500 or more people located outside of urbanized areas.

**Urban Cluster Central Place**—A central place functions as the dominant center of a UC. The U.S. Census Bureau identifies one or more central places for a UC, with a preference for the most populous incorporated place(s). (Some UCs do not have a central place.)

**Urban Cluster Title and Code**—The title of a UC may contain up to three incorporated place names, and will include the two-letter U.S. Postal Service abbreviation for each state into which the UC extends. However, if the UC does not contain an incorporated place, the UC title will include the single name of the geographic entity that occurs first from the following list:

- census designated place (CDP),
- minor civil division (MCD), or
- populated place recognized by the U.S. Geological Survey.

Each UC is assigned a five-digit census code in alphabetical sequence on a nationwide basis. The alphabetic assignment of codes for urban areas includes both urbanized areas (UAs) and UCs. A separate flag is included in data tabulation files to differentiate between UAs and UCs. In printed reports, this differentiation is included in the name.

### **Urbanized Area (UA)**

An urbanized area (UA) consists of densely settled territory that contains 50,000 or more people. The U.S. Census Bureau delineates UAs to provide a better separation of urban and rural territory, population, and housing in the vicinity of large places. At least 35,000 people in a UA must live in an area that is not part of a military reservation. For Census 2000, the UA criteria specify that the delineations be performed using a zero-based approach. Because of the more stringent density requirements and the less restrictive extended place criteria, some territory that was classified as urbanized for the 1990 census has been reclassified as rural. (Area that was part of a 1990 UA has not been automatically grandfathered into the 2000 UA.) In addition, some areas that were identified as UAs for the 1990 census have been reclassified as urban clusters.

**Urbanized Area Central Place**—The UA central place is an incorporated place or a census designated place (CDP) with the most population within the UA.

Additional place(s) may become UA central places provided that:

- The place's population within the UA exceeds 50,000 people; or
- The place's population size is at least 2/3 of the most populous UA central place.

**Urbanized Area Title and Code**—The title of a UA may contain up to three incorporated place names, and will include the two-letter U.S. Postal Service abbreviation for each state into which the UA extends. However, if the UA does not contain an incorporated place, the UA title will include the single name of the geographic entity that occurs first from the following list: census designated place (CDP), minor civil division (MCD), or populated place recognized by the U.S. Geological Survey.

Each UA is assigned a five-digit census code in alphabetical sequence on a nationwide basis, interspersed with the codes for urban clusters (UCs), also in alphabetical sequence. For the 1990 census, the U.S. Census Bureau assigned a four-digit UA code based on the metropolitan area codes. For Census 2000, a separate flag is included in data tabulation files to differentiate between UAs and UCs. In printed reports, this differentiation is included in the name.

**Extended Place**

As a result of the urbanized area (UA) and urban cluster (UC) delineations, an incorporated place or census designated place may be partially within and partially outside of a UA or UC. Any place that is split by a UA or UC is referred to as an extended place. For the 1990 and previous censuses, extended places were called extended cities. An extended city had to contain either 25 percent of the total land area or at least 25 square miles with an overall population density lower than 100 people per square mile. Such pieces of territory had to cover at least five square miles. This low-density area was classified as rural and the other, more densely settled portion of the incorporated place was classified as urban. For the 1970 and 1980 censuses, the U.S. Census Bureau identified extended cities only within UAs. For the 1990 census, the U.S. Census Bureau also applied this classification to qualifying incorporated places located outside UAs. Documentation of the UA, UC, and extended place criteria is available from the Geographic Areas Branch, Geography Division, U.S. Census Bureau, Washington, DC 20233-7400; telephone 301-457-1099.

Appendix G  
Implementation Level and Free/Reduced Lunch Data

**Implementationlevel****Met = 0**

|       | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-----------|---------|---------------|--------------------|
| Valid |           |         |               |                    |
| 36    | 1         | 16.7    | 16.7          | 16.7               |
| 38    | 1         | 16.7    | 16.7          | 33.3               |
| 39    | 1         | 16.7    | 16.7          | 50.0               |
| 45    | 1         | 16.7    | 16.7          | 66.7               |
| 46    | 1         | 16.7    | 16.7          | 83.3               |
| 48    | 1         | 16.7    | 16.7          | 100.0              |
| Total | 6         | 100.0   | 100.0         |                    |

**frlper****Met = 0**

|       | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-----------|---------|---------------|--------------------|
| Valid |           |         |               |                    |
| 56.33 | 1         | 16.7    | 16.7          | 16.7               |
| 62.34 | 1         | 16.7    | 16.7          | 33.3               |
| 65.40 | 3         | 50.0    | 50.0          | 83.3               |
| 82.40 | 1         | 16.7    | 16.7          | 100.0              |
| Total | 6         | 100.0   | 100.0         |                    |

**implementationlevel****Met = 1**

|       | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-----------|---------|---------------|--------------------|
| Valid |           |         |               |                    |
| 38    | 1         | 5.9     | 5.9           | 5.9                |
| 44    | 1         | 5.9     | 5.9           | 11.8               |
| 46    | 1         | 5.9     | 5.9           | 17.6               |
| 47    | 1         | 5.9     | 5.9           | 23.5               |
| 49    | 1         | 5.9     | 5.9           | 29.4               |
| 50    | 3         | 17.6    | 17.6          | 47.1               |
| 53    | 1         | 5.9     | 5.9           | 52.9               |
| 54    | 1         | 5.9     | 5.9           | 58.8               |
| 55    | 1         | 5.9     | 5.9           | 64.7               |
| 56    | 1         | 5.9     | 5.9           | 70.6               |
| 57    | 2         | 11.8    | 11.8          | 82.4               |
| 58    | 1         | 5.9     | 5.9           | 88.2               |
| 60    | 2         | 11.8    | 11.8          | 100.0              |
| Total | 17        | 100.0   | 100.0         |                    |

## frlper

Met = 1

|       | Frequency | Percent | Valid<br>Percent | Cumulative<br>Percent |
|-------|-----------|---------|------------------|-----------------------|
| Valid |           |         |                  |                       |
| 31.99 | 1         | 5.9     | 5.9              | 5.9                   |
| 34.67 | 1         | 5.9     | 5.9              | 11.8                  |
| 38.40 | 1         | 5.9     | 5.9              | 17.6                  |
| 38.45 | 1         | 5.9     | 5.9              | 23.5                  |
| 42.18 | 1         | 5.9     | 5.9              | 29.4                  |
| 42.82 | 1         | 5.9     | 5.9              | 35.3                  |
| 43.09 | 1         | 5.9     | 5.9              | 41.2                  |
| 43.28 | 1         | 5.9     | 5.9              | 47.1                  |
| 47.19 | 1         | 5.9     | 5.9              | 52.9                  |
| 48.04 | 1         | 5.9     | 5.9              | 58.8                  |
| 48.18 | 1         | 5.9     | 5.9              | 64.7                  |
| 51.48 | 1         | 5.9     | 5.9              | 70.6                  |
| 55.19 | 1         | 5.9     | 5.9              | 76.5                  |
| 71.70 | 1         | 5.9     | 5.9              | 82.4                  |
| 73.62 | 1         | 5.9     | 5.9              | 88.2                  |
| 74.51 | 1         | 5.9     | 5.9              | 94.1                  |
| 87.85 | 1         | 5.9     | 5.9              | 100.0                 |
| Total | 17        | 100.0   | 100.0            |                       |

## implementationlevel

Met = 2

|       | Frequency | Percent | Valid<br>Percent | Cumulative<br>Percent |
|-------|-----------|---------|------------------|-----------------------|
| Valid |           |         |                  |                       |
| 34    | 1         | 3.3     | 3.3              | 3.3                   |
| 38    | 1         | 3.3     | 3.3              | 6.7                   |
| 39    | 1         | 3.3     | 3.3              | 10.0                  |
| 41    | 1         | 3.3     | 3.3              | 13.3                  |
| 42    | 1         | 3.3     | 3.3              | 16.7                  |
| 43    | 2         | 6.7     | 6.7              | 23.3                  |
| 44    | 1         | 3.3     | 3.3              | 26.7                  |
| 45    | 1         | 3.3     | 3.3              | 30.0                  |
| 47    | 1         | 3.3     | 3.3              | 33.3                  |
| 48    | 2         | 6.7     | 6.7              | 40.0                  |
| 49    | 1         | 3.3     | 3.3              | 43.3                  |
| 50    | 3         | 10.0    | 10.0             | 53.3                  |
| 51    | 1         | 3.3     | 3.3              | 56.7                  |
| 52    | 2         | 6.7     | 6.7              | 63.3                  |
| 53    | 1         | 3.3     | 3.3              | 66.7                  |
| 54    | 2         | 6.7     | 6.7              | 73.3                  |
| 55    | 2         | 6.7     | 6.7              | 80.0                  |
| 56    | 2         | 6.7     | 6.7              | 86.7                  |
| 57    | 2         | 6.7     | 6.7              | 93.3                  |
| 60    | 1         | 3.3     | 3.3              | 96.7                  |
| 62    | 1         | 3.3     | 3.3              | 100.0                 |
| Total | 30        | 100.0   | 100.0            |                       |

## frlper

Met = 2

|       | Frequency | Percent | Valid<br>Percent | Cumulative<br>Percent |
|-------|-----------|---------|------------------|-----------------------|
| Valid |           |         |                  |                       |
| 16.46 | 1         | 3.3     | 3.3              | 3.3                   |
| 23.56 | 1         | 3.3     | 3.3              | 6.7                   |
| 28.12 | 1         | 3.3     | 3.3              | 10.0                  |
| 28.60 | 1         | 3.3     | 3.3              | 13.3                  |
| 30.62 | 1         | 3.3     | 3.3              | 16.7                  |
| 30.68 | 1         | 3.3     | 3.3              | 20.0                  |
| 31.82 | 1         | 3.3     | 3.3              | 23.3                  |
| 32.09 | 1         | 3.3     | 3.3              | 26.7                  |
| 33.20 | 1         | 3.3     | 3.3              | 30.0                  |
| 33.52 | 1         | 3.3     | 3.3              | 33.3                  |
| 34.88 | 1         | 3.3     | 3.3              | 36.7                  |
| 35.03 | 1         | 3.3     | 3.3              | 40.0                  |
| 37.05 | 1         | 3.3     | 3.3              | 43.3                  |
| 37.20 | 1         | 3.3     | 3.3              | 46.7                  |
| 38.95 | 1         | 3.3     | 3.3              | 50.0                  |
| 39.74 | 1         | 3.3     | 3.3              | 53.3                  |
| 41.43 | 1         | 3.3     | 3.3              | 56.7                  |
| 43.18 | 1         | 3.3     | 3.3              | 60.0                  |
| 43.68 | 1         | 3.3     | 3.3              | 63.3                  |
| 49.39 | 1         | 3.3     | 3.3              | 66.7                  |
| 49.69 | 1         | 3.3     | 3.3              | 70.0                  |
| 50.00 | 1         | 3.3     | 3.3              | 73.3                  |
| 54.13 | 1         | 3.3     | 3.3              | 76.7                  |
| 55.74 | 1         | 3.3     | 3.3              | 80.0                  |
| 59.42 | 1         | 3.3     | 3.3              | 83.3                  |
| 62.48 | 1         | 3.3     | 3.3              | 86.7                  |
| 70.45 | 1         | 3.3     | 3.3              | 90.0                  |
| 71.83 | 1         | 3.3     | 3.3              | 93.3                  |
| 71.91 | 1         | 3.3     | 3.3              | 96.7                  |
| 76.24 | 1         | 3.3     | 3.3              | 100.0                 |
| Total | 30        | 100.0   | 100.0            |                       |

**implementationlevel**

**Met = 3**

|       | Frequency | Percent | Valid<br>Percent | Cumulative<br>Percent |
|-------|-----------|---------|------------------|-----------------------|
| Valid |           |         |                  |                       |
| 31    | 1         | 4.5     | 4.5              | 4.5                   |
| 36    | 1         | 4.5     | 4.5              | 9.1                   |
| 39    | 1         | 4.5     | 4.5              | 13.6                  |
| 41    | 1         | 4.5     | 4.5              | 18.2                  |
| 43    | 2         | 9.1     | 9.1              | 27.3                  |
| 44    | 1         | 4.5     | 4.5              | 31.8                  |
| 48    | 1         | 4.5     | 4.5              | 36.4                  |
| 50    | 2         | 9.1     | 9.1              | 45.5                  |
| 51    | 1         | 4.5     | 4.5              | 50.0                  |
| 52    | 3         | 13.6    | 13.6             | 63.6                  |
| 53    | 1         | 4.5     | 4.5              | 68.2                  |
| 56    | 2         | 9.1     | 9.1              | 77.3                  |
| 57    | 2         | 9.1     | 9.1              | 86.4                  |
| 58    | 2         | 9.1     | 9.1              | 95.5                  |
| 61    | 1         | 4.5     | 4.5              | 100.0                 |
| Total | 22        | 100.0   | 100.0            |                       |

## frlper

Met = 3

|       | Frequency | Percent | Valid<br>Percent | Cumulative<br>Percent |
|-------|-----------|---------|------------------|-----------------------|
| Valid |           |         |                  |                       |
| 5.42  | 1         | 4.5     | 4.5              | 4.5                   |
| 14.72 | 1         | 4.5     | 4.5              | 9.1                   |
| 24.26 | 1         | 4.5     | 4.5              | 13.6                  |
| 29.06 | 1         | 4.5     | 4.5              | 18.2                  |
| 31.41 | 1         | 4.5     | 4.5              | 22.7                  |
| 34.46 | 1         | 4.5     | 4.5              | 27.3                  |
| 35.43 | 1         | 4.5     | 4.5              | 31.8                  |
| 36.12 | 1         | 4.5     | 4.5              | 36.4                  |
| 37.57 | 1         | 4.5     | 4.5              | 40.9                  |
| 38.00 | 1         | 4.5     | 4.5              | 45.5                  |
| 38.27 | 1         | 4.5     | 4.5              | 50.0                  |
| 40.90 | 1         | 4.5     | 4.5              | 54.5                  |
| 42.27 | 1         | 4.5     | 4.5              | 59.1                  |
| 44.21 | 1         | 4.5     | 4.5              | 63.6                  |
| 46.68 | 1         | 4.5     | 4.5              | 68.2                  |
| 51.09 | 1         | 4.5     | 4.5              | 72.7                  |
| 52.96 | 1         | 4.5     | 4.5              | 77.3                  |
| 58.59 | 1         | 4.5     | 4.5              | 81.8                  |
| 63.18 | 1         | 4.5     | 4.5              | 86.4                  |
| 63.35 | 1         | 4.5     | 4.5              | 90.9                  |
| 67.81 | 1         | 4.5     | 4.5              | 95.5                  |
| 91.13 | 1         | 4.5     | 4.5              | 100.0                 |
| Total | 22        | 100.0   | 100.0            |                       |

**implementationlevel**

**Met = 4**

|       | Frequency | Percent | Valid<br>Percent | Cumulative<br>Percent |
|-------|-----------|---------|------------------|-----------------------|
| Valid |           |         |                  |                       |
| 35    | 1         | 4.2     | 4.2              | 4.2                   |
| 39    | 1         | 4.2     | 4.2              | 8.3                   |
| 43    | 1         | 4.2     | 4.2              | 12.5                  |
| 47    | 4         | 16.7    | 16.7             | 29.2                  |
| 48    | 1         | 4.2     | 4.2              | 33.3                  |
| 49    | 3         | 12.5    | 12.5             | 45.8                  |
| 51    | 3         | 12.5    | 12.5             | 58.3                  |
| 52    | 1         | 4.2     | 4.2              | 62.5                  |
| 53    | 1         | 4.2     | 4.2              | 66.7                  |
| 54    | 2         | 8.3     | 8.3              | 75.0                  |
| 57    | 2         | 8.3     | 8.3              | 83.3                  |
| 59    | 1         | 4.2     | 4.2              | 87.5                  |
| 60    | 2         | 8.3     | 8.3              | 95.8                  |
| 62    | 1         | 4.2     | 4.2              | 100.0                 |
| Total | 24        | 100.0   | 100.0            |                       |

## frlper

Met = 4

|       | Frequency | Percent | Valid<br>Percent | Cumulative<br>Percent |
|-------|-----------|---------|------------------|-----------------------|
| Valid |           |         |                  |                       |
| 15.43 | 1         | 4.2     | 4.2              | 4.2                   |
| 15.87 | 1         | 4.2     | 4.2              | 8.3                   |
| 17.63 | 1         | 4.2     | 4.2              | 12.5                  |
| 17.65 | 1         | 4.2     | 4.2              | 16.7                  |
| 19.71 | 1         | 4.2     | 4.2              | 20.8                  |
| 19.78 | 1         | 4.2     | 4.2              | 25.0                  |
| 22.47 | 1         | 4.2     | 4.2              | 29.2                  |
| 25.58 | 1         | 4.2     | 4.2              | 33.3                  |
| 26.50 | 1         | 4.2     | 4.2              | 37.5                  |
| 29.03 | 1         | 4.2     | 4.2              | 41.7                  |
| 30.01 | 1         | 4.2     | 4.2              | 45.8                  |
| 31.88 | 1         | 4.2     | 4.2              | 50.0                  |
| 35.45 | 1         | 4.2     | 4.2              | 54.2                  |
| 37.90 | 1         | 4.2     | 4.2              | 58.3                  |
| 37.97 | 1         | 4.2     | 4.2              | 62.5                  |
| 38.84 | 1         | 4.2     | 4.2              | 66.7                  |
| 39.46 | 1         | 4.2     | 4.2              | 70.8                  |
| 40.45 | 1         | 4.2     | 4.2              | 75.0                  |
| 41.25 | 1         | 4.2     | 4.2              | 79.2                  |
| 50.25 | 1         | 4.2     | 4.2              | 83.3                  |
| 56.57 | 1         | 4.2     | 4.2              | 87.5                  |
| 62.86 | 1         | 4.2     | 4.2              | 91.7                  |
| 70.91 | 1         | 4.2     | 4.2              | 95.8                  |
| 77.35 | 1         | 4.2     | 4.2              | 100.0                 |
| Total | 24        | 100.0   | 100.0            |                       |

**implementationlevel**

**Met = 5**

|       | Frequency | Percent | Valid<br>Percent | Cumulative<br>Percent |
|-------|-----------|---------|------------------|-----------------------|
| Valid |           |         |                  |                       |
| 39    | 2         | 8.7     | 8.7              | 8.7                   |
| 42    | 1         | 4.3     | 4.3              | 13.0                  |
| 43    | 1         | 4.3     | 4.3              | 17.4                  |
| 46    | 1         | 4.3     | 4.3              | 21.7                  |
| 47    | 1         | 4.3     | 4.3              | 26.1                  |
| 49    | 1         | 4.3     | 4.3              | 30.4                  |
| 51    | 1         | 4.3     | 4.3              | 34.8                  |
| 52    | 3         | 13.0    | 13.0             | 47.8                  |
| 53    | 1         | 4.3     | 4.3              | 52.2                  |
| 55    | 2         | 8.7     | 8.7              | 60.9                  |
| 56    | 2         | 8.7     | 8.7              | 69.6                  |
| 57    | 1         | 4.3     | 4.3              | 73.9                  |
| 58    | 2         | 8.7     | 8.7              | 82.6                  |
| 60    | 1         | 4.3     | 4.3              | 87.0                  |
| 61    | 2         | 8.7     | 8.7              | 95.7                  |
| 62    | 1         | 4.3     | 4.3              | 100.0                 |
| Total | 23        | 100.0   | 100.0            |                       |

## frlper

Met = 5

|       | Frequency | Percent | Valid<br>Percent | Cumulative<br>Percent |
|-------|-----------|---------|------------------|-----------------------|
| Valid |           |         |                  |                       |
| 6.94  | 1         | 4.3     | 4.3              | 4.3                   |
| 8.29  | 1         | 4.3     | 4.3              | 8.7                   |
| 8.71  | 1         | 4.3     | 4.3              | 13.0                  |
| 9.02  | 1         | 4.3     | 4.3              | 17.4                  |
| 9.16  | 1         | 4.3     | 4.3              | 21.7                  |
| 14.08 | 1         | 4.3     | 4.3              | 26.1                  |
| 14.62 | 1         | 4.3     | 4.3              | 30.4                  |
| 15.68 | 1         | 4.3     | 4.3              | 34.8                  |
| 16.05 | 1         | 4.3     | 4.3              | 39.1                  |
| 27.96 | 1         | 4.3     | 4.3              | 43.5                  |
| 29.18 | 1         | 4.3     | 4.3              | 47.8                  |
| 30.25 | 1         | 4.3     | 4.3              | 52.2                  |
| 31.88 | 1         | 4.3     | 4.3              | 56.5                  |
| 32.85 | 1         | 4.3     | 4.3              | 60.9                  |
| 34.79 | 1         | 4.3     | 4.3              | 65.2                  |
| 37.60 | 1         | 4.3     | 4.3              | 69.6                  |
| 38.57 | 1         | 4.3     | 4.3              | 73.9                  |
| 38.89 | 1         | 4.3     | 4.3              | 78.3                  |
| 38.90 | 1         | 4.3     | 4.3              | 82.6                  |
| 40.16 | 1         | 4.3     | 4.3              | 87.0                  |
| 42.70 | 1         | 4.3     | 4.3              | 91.3                  |
| 48.92 | 1         | 4.3     | 4.3              | 95.7                  |
| 57.74 | 1         | 4.3     | 4.3              | 100.0                 |
| Total | 23        | 100.0   | 100.0            |                       |

Appendix H  
Regression Analyses: Independent and Dependent Variables,  
and Effect and Cronbachs analyses

## 1999 Regression Analyses

### Regression

#### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered                | Variables Removed | Method |
|-------|----------------------------------|-------------------|--------|
| 1     | implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected99

#### Model Summary

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .007 <sup>a</sup> | .000     | -.011             | 2.73795                    | .000              | .004     | 1   | 92  | .948          |

a. Predictors: (Constant), implementationlevel

#### ANOVA<sup>b</sup>

| Model |            | Sum of Squares | df | Mean Square | F    | Sig.              |
|-------|------------|----------------|----|-------------|------|-------------------|
| 1     | Regression | .032           | 1  | .032        | .004 | .948 <sup>a</sup> |
|       | Residual   | 689.668        | 92 | 7.496       |      |                   |
|       | Total      | 689.700        | 93 |             |      |                   |

a. Predictors: (Constant), implementationlevel

b. Dependent Variable: totalexpected99

#### Coefficients<sup>a</sup>

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|-------|------|
|       |                     | B                           | Std. Error | Beta                      |       |      |
| 1     | (Constant)          | 2.014                       | 1.987      |                           | 1.013 | .314 |
|       | implementationlevel | .003                        | .039       | .007                      | .065  | .948 |

a. Dependent Variable: totalexpected99

### Regression

#### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered                        | Variables Removed | Method |
|-------|--|-------------------|--------|
| 1     | frlper, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected99

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .280 <sup>a</sup> | .078     | .058              | 2.64308                    | .078              | 3.864    | 2   | 91  | .025          |

a. Predictors: (Constant), frlper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df | Mean Square | F     | Sig.              |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1     | Regression | 53.985         | 2  | 26.992      | 3.864 | .025 <sup>a</sup> |
|       | Residual   | 635.715        | 91 | 6.986       |       |                   |
|       | Total      | 689.700        | 93 |             |       |                   |

a. Predictors: (Constant), frlper, implementationlevel

b. Dependent Variable: totalexpected99

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | 4.359                       | 2.096      |                           | 2.080  | .040 |
|       | implementationlevel | -.008                       | .038       | -.021                     | -.212  | .832 |
|       | frlper              | -.044                       | .016       | -.281                     | -2.779 | .007 |

a. Dependent Variable: totalexpected99

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered               | Variables Removed | Method |
|-------|---------------------------------|-------------------|--------|
| 1     | schoolsize, implementationlevel | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected99

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .178 <sup>a</sup> | .032     | .010              | 2.70930                    | .032              | 1.480    | 2   | 91  | .233          |

a. Predictors: (Constant), schoolsize, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df | Mean Square | F     | Sig.              |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1     | Regression | 21.733         | 2  | 10.866      | 1.480 | .233 <sup>a</sup> |
|       | Residual   | 667.967        | 91 | 7.340       |       |                   |
|       | Total      | 689.700        | 93 |             |       |                   |

a. Predictors: (Constant), schoolsize, implementationlevel

b. Dependent Variable: totalexpected99

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | 4.085                       | 2.306      |                           | 1.771  | .080 |
|       | implementationlevel | -.010                       | .039       | -.026                     | -.243  | .808 |
|       | schoolsize          | -.002                       | .001       | -.180                     | -1.719 | .089 |

a. Dependent Variable: totalexpected99

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | aiper, implementationlevel <sup>a</sup> |                   | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected99

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .060 <sup>a</sup> | .004     | -.018             | 2.74811                    | .004              | .163     | 2   | 91  | .850          |

a. Predictors: (Constant), aiper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df | Mean Square | F    | Sig.              |
|-------|------------|----------------|----|-------------|------|-------------------|
| 1     | Regression | 2.456          | 2  | 1.228       | .163 | .850 <sup>a</sup> |
|       | Residual   | 687.244        | 91 | 7.552       |      |                   |
|       | Total      | 689.700        | 93 |             |      |                   |

a. Predictors: (Constant), aiper, implementationlevel

b. Dependent Variable: totalexpected99

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|-------|------|
|       |                     | B                           | Std. Error | Beta                      |       |      |
| 1     | (Constant)          | 2.301                       | 2.058      |                           | 1.118 | .266 |
|       | implementationlevel | -.001                       | .040       | -.003                     | -.027 | .978 |
|       | aiper               | -.254                       | .449       | -.060                     | -.567 | .572 |

a. Dependent Variable: totalexpected99

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | asper, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected99

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .053 <sup>a</sup> | .003     | -.019             | 2.74911                    | .003              | .130     | 2   | 91  | .879          |

a. Predictors: (Constant), asper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df | Mean Square | F    | Sig.              |
|-------|------------|----------------|----|-------------|------|-------------------|
| 1     | Regression | 1.958          | 2  | .979        | .130 | .879 <sup>a</sup> |
|       | Residual   | 687.742        | 91 | 7.558       |      |                   |
|       | Total      | 689.700        | 93 |             |      |                   |

a. Predictors: (Constant), asper, implementationlevel

b. Dependent Variable: totalexpected99

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|-------|------|
|       |                     | B                           | Std. Error | Beta                      |       |      |
| 1     | (Constant)          | 2.101                       | 2.003      |                           | 1.049 | .297 |
|       | implementationlevel | .003                        | .039       | .008                      | .081  | .936 |
|       | asper               | -.082                       | .163       | -.053                     | -.505 | .615 |

a. Dependent Variable: totalexpected99

## Regression

### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | blper, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected99

### Model Summary

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .311 <sup>a</sup> | .097     | .077              | 2.61654                    | .097              | 4.871    | 2   | 91  | .010          |

a. Predictors: (Constant), blper, implementationlevel

### ANOVA<sup>b</sup>

| Model |            | Sum of Squares | df | Mean Square | F     | Sig.              |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1     | Regression | 66.690         | 2  | 33.345      | 4.871 | .010 <sup>a</sup> |
|       | Residual   | 623.009        | 91 | 6.846       |       |                   |
|       | Total      | 689.700        | 93 |             |       |                   |

a. Predictors: (Constant), blper, implementationlevel

b. Dependent Variable: totalexpected99

### Coefficients<sup>a</sup>

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | 3.165                       | 1.934      |                           | 1.636  | .105 |
|       | implementationlevel | .002                        | .038       | .005                      | .053   | .958 |
|       | blper               | -.037                       | .012       | -.311                     | -3.120 | .002 |

a. Dependent Variable: totalexpected99

## Regression

### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | hiper, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected99

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .165 <sup>a</sup> | .027     | .006              | 2.71548                    | .027              | 1.267    | 2   | 91  | .287          |

a. Predictors: (Constant), hiper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df | Mean Square | F     | Sig.              |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1     | Regression | 18.680         | 2  | 9.340       | 1.267 | .287 <sup>a</sup> |
|       | Residual   | 671.020        | 91 | 7.374       |       |                   |
|       | Total      | 689.700        | 93 |             |       |                   |

a. Predictors: (Constant), hiper, implementationlevel

b. Dependent Variable: totalexpected99

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | 2.963                       | 2.059      |                           | 1.439  | .154 |
|       | implementationlevel | -.007                       | .039       | -.019                     | -.183  | .855 |
|       | hiper               | -.081                       | .051       | -.166                     | -1.590 | .115 |

a. Dependent Variable: totalexpected99

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered          | Variables Removed | Method |
|-------|----------------------------|-------------------|--------|
| 1     | muper, implementationlevel | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected99

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .011 <sup>a</sup> | .000     | -.022             | 2.75285                    | .000              | .005     | 2   | 91  | .995          |

a. Predictors: (Constant), muper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df | Mean Square | F    | Sig.              |
|-------|------------|----------------|----|-------------|------|-------------------|
| 1     | Regression | .083           | 2  | .041        | .005 | .995 <sup>a</sup> |
|       | Residual   | 689.617        | 91 | 7.578       |      |                   |
|       | Total      | 689.700        | 93 |             |      |                   |

a. Predictors: (Constant), muper, implementationlevel

b. Dependent Variable: totalexpected99

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t    | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|------|------|
|       |                     | B                           | Std. Error | Beta                      |      |      |
| 1     | (Constant)          | 1.986                       | 2.026      |                           | .980 | .330 |
|       | implementationlevel | .002                        | .040       | .006                      | .060 | .952 |
|       | muper               | .024                        | .293       | .009                      | .082 | .935 |

a. Dependent Variable: totalexpected99

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | whper, implementationlevel <sup>a</sup> |                   | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected99

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .331 <sup>a</sup> | .109     | .090              | 2.59794                    | .109              | 5.594    | 2   | 91  | .005          |

a. Predictors: (Constant), whper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df | Mean Square | F     | Sig.              |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1     | Regression | 75.515         | 2  | 37.757      | 5.594 | .005 <sup>a</sup> |
|       | Residual   | 614.185        | 91 | 6.749       |       |                   |
|       | Total      | 689.700        | 93 |             |       |                   |

a. Predictors: (Constant), whper, implementationlevel

b. Dependent Variable: totalexpected99

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|-------|------|
|       |                     | B                           | Std. Error | Beta                      |       |      |
| 1     | (Constant)          | .055                        | 1.974      |                           | .028  | .978 |
|       | implementationlevel | -.002                       | .037       | -.006                     | -.063 | .950 |
|       | whper               | .036                        | .011       | .331                      | 3.344 | .001 |

a. Dependent Variable: totalexpected99

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | Rural, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected99

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .122 <sup>a</sup> | .015     | -.007             | 2.73239                    | .015              | .689     | 2   | 91  | .504          |

a. Predictors: (Constant), Rural, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df | Mean Square | F    | Sig.              |
|-------|------------|----------------|----|-------------|------|-------------------|
| 1     | Regression | 10.296         | 2  | 5.148       | .689 | .504 <sup>a</sup> |
|       | Residual   | 679.404        | 91 | 7.466       |      |                   |
|       | Total      | 689.700        | 93 |             |      |                   |

a. Predictors: (Constant), Rural, implementationlevel

b. Dependent Variable: totalexpected99

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | 2.001                       | 1.983      |                           | 1.009  | .316 |
|       | implementationlevel | .008                        | .039       | .022                      | .207   | .836 |
|       | Rural               | -.681                       | .581       | -.123                     | -1.172 | .244 |

a. Dependent Variable: totalexpected99

## 2000 Regression Analyses

### Regression

#### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered                | Variables Removed | Method |
|-------|----------------------------------|-------------------|--------|
| 1     | implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected00

#### Model Summary

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .184 <sup>a</sup> | .034     | .024              | 3.04864                    | .034              | 3.422    | 1   | 98  | .067          |

a. Predictors: (Constant), implementationlevel

#### ANOVA<sup>b</sup>

| Model |            | Sum of Squares | df | Mean Square | F     | Sig.              |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1     | Regression | 31.806         | 1  | 31.806      | 3.422 | .067 <sup>a</sup> |
|       | Residual   | 910.830        | 98 | 9.294       |       |                   |
|       | Total      | 942.635        | 99 |             |       |                   |

a. Predictors: (Constant), implementationlevel

b. Dependent Variable: totalexpected00

#### Coefficients<sup>a</sup>

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -4.744                      | 2.174      |                           | -2.182 | .032 |
|       | implementationlevel | .079                        | .043       | .184                      | 1.850  | .067 |

a. Dependent Variable: totalexpected00

### Regression

#### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered                        | Variables Removed | Method |
|-------|--|-------------------|--------|
| 1     | frlper, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected00

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .630 <sup>a</sup> | .397     | .384              | 2.42164                    | .397              | 31.870   | 2   | 97  | .000          |

a. Predictors: (Constant), frlper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df | Mean Square | F      | Sig.              |
|-------|------------|----------------|----|-------------|--------|-------------------|
| 1     | Regression | 373.794        | 2  | 186.897     | 31.870 | .000 <sup>a</sup> |
|       | Residual   | 568.842        | 97 | 5.864       |        |                   |
|       | Total      | 942.635        | 99 |             |        |                   |

a. Predictors: (Constant), frlper, implementationlevel

b. Dependent Variable: totalexpected00

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | .793                        | 1.873      |                           | .423   | .673 |
|       | implementationlevel | .056                        | .034       | .131                      | 1.651  | .102 |
|       | frlper              | -.107                       | .014       | -.605                     | -7.637 | .000 |

a. Dependent Variable: totalexpected00

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered               | Variables Removed | Method |
|-------|---------------------------------|-------------------|--------|
| 1     | schoolsize, implementationlevel | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected00

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .199 <sup>a</sup> | .040     | .020              | 3.05490                    | .040              | 2.003    | 2   | 97  | .140          |

a. Predictors: (Constant), schoolsize, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df | Mean Square | F     | Sig.              |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1     | Regression | 37.391         | 2  | 18.695      | 2.003 | .140 <sup>a</sup> |
|       | Residual   | 905.244        | 97 | 9.332       |       |                   |
|       | Total      | 942.635        | 99 |             |       |                   |

a. Predictors: (Constant), schoolsize, implementationlevel

b. Dependent Variable: totalexpected00

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -5.685                      | 2.495      |                           | -2.278 | .025 |
|       | implementationlevel | .084                        | .043       | .195                      | 1.942  | .055 |
|       | schoolsize          | .001                        | .001       | .078                      | .774   | .441 |

a. Dependent Variable: totalexpected00

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | aiper, implementationlevel <sup>a</sup> |                   | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected00

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .195 <sup>a</sup> | .038     | .018              | 3.05759                    | .038              | 1.914    | 2   | 97  | .153          |

a. Predictors: (Constant), aiper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df | Mean Square | F     | Sig.              |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1     | Regression | 35.793         | 2  | 17.897      | 1.914 | .153 <sup>a</sup> |
|       | Residual   | 906.842        | 97 | 9.349       |       |                   |
|       | Total      | 942.635        | 99 |             |       |                   |

a. Predictors: (Constant), aiper, implementationlevel

b. Dependent Variable: totalexpected00

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -4.529                      | 2.205      |                           | -2.054 | .043 |
|       | implementationlevel | .077                        | .043       | .180                      | 1.799  | .075 |
|       | aiper               | -.280                       | .429       | -.065                     | -.653  | .515 |

a. Dependent Variable: totalexpected00

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | asper, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected00

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .274 <sup>a</sup> | .075     | .056              | 2.99764                    | .075              | 3.951    | 2   | 97  | .022          |

a. Predictors: (Constant), asper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df | Mean Square | F     | Sig.              |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1     | Regression | 71.006         | 2  | 35.503      | 3.951 | .022 <sup>a</sup> |
|       | Residual   | 871.629        | 97 | 8.986       |       |                   |
|       | Total      | 942.635        | 99 |             |       |                   |

a. Predictors: (Constant), asper, implementationlevel

b. Dependent Variable: totalexpected00

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -5.046                      | 2.143      |                           | -2.355 | .021 |
|       | implementationlevel | .075                        | .042       | .174                      | 1.784  | .078 |
|       | asper               | .344                        | .164       | .204                      | 2.089  | .039 |

a. Dependent Variable: totalexpected00

## Regression

### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | blper, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected00

### Model Summary

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .545 <sup>a</sup> | .297     | .283              | 2.61289                    | .297              | 20.536   | 2   | 97  | .000          |

a. Predictors: (Constant), blper, implementationlevel

### ANOVA<sup>b</sup>

| Model |            | Sum of Squares | df | Mean Square | F      | Sig.              |
|-------|------------|----------------|----|-------------|--------|-------------------|
| 1     | Regression | 280.399        | 2  | 140.200     | 20.536 | .000 <sup>a</sup> |
|       | Residual   | 662.236        | 97 | 6.827       |        |                   |
|       | Total      | 942.635        | 99 |             |        |                   |

a. Predictors: (Constant), blper, implementationlevel

b. Dependent Variable: totalexpected00

### Coefficients<sup>a</sup>

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -2.728                      | 1.893      |                           | -1.441 | .153 |
|       | implementationlevel | .081                        | .037       | .187                      | 2.198  | .030 |
|       | blper               | -.070                       | .012       | -.514                     | -6.034 | .000 |

a. Dependent Variable: totalexpected00

## Regression

### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | hiper, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected00

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .288 <sup>a</sup> | .083     | .064              | 2.98573                    | .083              | 4.370    | 2   | 97  | .015          |

a. Predictors: (Constant), hiper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df | Mean Square | F     | Sig.              |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1     | Regression | 77.922         | 2  | 38.961      | 4.370 | .015 <sup>a</sup> |
|       | Residual   | 864.713        | 97 | 8.915       |       |                   |
|       | Total      | 942.635        | 99 |             |       |                   |

a. Predictors: (Constant), hiper, implementationlevel

b. Dependent Variable: totalexpected00

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -3.330                      | 2.218      |                           | -1.501 | .137 |
|       | implementationlevel | .065                        | .042       | .152                      | 1.542  | .126 |
|       | hiper               | -.127                       | .056       | -.224                     | -2.274 | .025 |

a. Dependent Variable: totalexpected00

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered          | Variables Removed | Method |
|-------|----------------------------|-------------------|--------|
| 1     | muper, implementationlevel | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected00

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .268 <sup>a</sup> | .072     | .053              | 3.00345                    | .072              | 3.748    | 2   | 97  | .027          |

a. Predictors: (Constant), muper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df | Mean Square | F     | Sig.              |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1     | Regression | 67.624         | 2  | 33.812      | 3.748 | .027 <sup>a</sup> |
|       | Residual   | 875.012        | 97 | 9.021       |       |                   |
|       | Total      | 942.635        | 99 |             |       |                   |

a. Predictors: (Constant), muper, implementationlevel

b. Dependent Variable: totalexpected00

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -5.586                      | 2.183      |                           | -2.558 | .012 |
|       | implementationlevel | .077                        | .042       | .179                      | 1.827  | .071 |
|       | muper               | .609                        | .305       | .195                      | 1.993  | .049 |

a. Dependent Variable: totalexpected00

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | whper, implementationlevel <sup>a</sup> |                   | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected00

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .540 <sup>a</sup> | .291     | .277              | 2.62406                    | .291              | 19.949   | 2   | 97  | .000          |

a. Predictors: (Constant), whper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df | Mean Square | F      | Sig.              |
|-------|------------|----------------|----|-------------|--------|-------------------|
| 1     | Regression | 274.722        | 2  | 137.361     | 19.949 | .000 <sup>a</sup> |
|       | Residual   | 667.913        | 97 | 6.886       |        |                   |
|       | Total      | 942.635        | 99 |             |        |                   |

a. Predictors: (Constant), whper, implementationlevel

b. Dependent Variable: totalexpected00

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -8.399                      | 1.970      |                           | -4.263 | .000 |
|       | implementationlevel | .074                        | .037       | .172                      | 2.010  | .047 |
|       | whper               | .064                        | .011       | .508                      | 5.940  | .000 |

a. Dependent Variable: totalexpected00

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | Rural, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected00

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .294 <sup>a</sup> | .086     | .068              | 2.97969                    | .086              | 4.585    | 2   | 97  | .013          |

a. Predictors: (Constant), Rural, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df | Mean Square | F     | Sig.              |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1     | Regression | 81.415         | 2  | 40.707      | 4.585 | .013 <sup>a</sup> |
|       | Residual   | 861.221        | 97 | 8.879       |       |                   |
|       | Total      | 942.635        | 99 |             |       |                   |

a. Predictors: (Constant), Rural, implementationlevel

b. Dependent Variable: totalexpected00

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -4.705                      | 2.125      |                           | -2.214 | .029 |
|       | implementationlevel | .090                        | .042       | .209                      | 2.142  | .035 |
|       | Rural               | -1.441                      | .610       | -.231                     | -2.364 | .020 |

a. Dependent Variable: totalexpected00

## 2001 Regression Analyses

### Regression

#### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered                | Variables Removed | Method |
|-------|----------------------------------|-------------------|--------|
| 1     | implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected01

#### Model Summary

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .155 <sup>a</sup> | .024     | .015              | 1.34831                    | .024              | 2.519    | 1   | 102 | .116          |

a. Predictors: (Constant), implementationlevel

#### ANOVA<sup>b</sup>

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 4.579          | 1   | 4.579       | 2.519 | .116 <sup>a</sup> |
|       | Residual   | 185.430        | 102 | 1.818       |       |                   |
|       | Total      | 190.009        | 103 |             |       |                   |

a. Predictors: (Constant), implementationlevel

b. Dependent Variable: totalexpected01

#### Coefficients<sup>a</sup>

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -1.823                      | .951       |                           | -1.917 | .058 |
|       | implementationlevel | .030                        | .019       | .155                      | 1.587  | .116 |

a. Dependent Variable: totalexpected01

### Regression

#### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered                        | Variables Removed | Method |
|-------|--|-------------------|--------|
| 1     | frlper, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected01

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .487 <sup>a</sup> | .238     | .222              | 1.19765                    | .238              | 15.734   | 2   | 101 | .000          |

a. Predictors: (Constant), frlper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F      | Sig.              |
|-------|------------|----------------|-----|-------------|--------|-------------------|
| 1     | Regression | 45.137         | 2   | 22.569      | 15.734 | .000 <sup>a</sup> |
|       | Residual   | 144.871        | 101 | 1.434       |        |                   |
|       | Total      | 190.009        | 103 |             |        |                   |

a. Predictors: (Constant), frlper, implementationlevel

b. Dependent Variable: totalexpected01

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | .145                        | .922       |                           | .157   | .876 |
|       | implementationlevel | .021                        | .017       | .108                      | 1.232  | .221 |
|       | frlper              | -.037                       | .007       | -.464                     | -5.318 | .000 |

a. Dependent Variable: totalexpected01

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered               | Variables Removed | Method |
|-------|---------------------------------|-------------------|--------|
| 1     | schoolsize, implementationlevel | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected01

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .171 <sup>a</sup> | .029     | .010              | 1.35142                    | .029              | 1.519    | 2   | 101 | .224          |

a. Predictors: (Constant), schoolsize, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 5.550          | 2   | 2.775       | 1.519 | .224 <sup>a</sup> |
|       | Residual   | 184.459        | 101 | 1.826       |       |                   |
|       | Total      | 190.009        | 103 |             |       |                   |

a. Predictors: (Constant), schoolsize, implementationlevel

b. Dependent Variable: totalexpected01

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -2.203                      | 1.086      |                           | -2.028 | .045 |
|       | implementationlevel | .032                        | .019       | .166                      | 1.674  | .097 |
|       | schoolsize          | .000                        | .001       | .072                      | .729   | .468 |

a. Dependent Variable: totalexpected01

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered          | Variables Removed | Method |
|-------|----------------------------|-------------------|--------|
| 1     | aiper, implementationlevel |                   | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected01

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .170 <sup>a</sup> | .029     | .010              | 1.35161                    | .029              | 1.505    | 2   | 101 | .227          |

a. Predictors: (Constant), aiper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 5.498          | 2   | 2.749       | 1.505 | .227 <sup>a</sup> |
|       | Residual   | 184.511        | 101 | 1.827       |       |                   |
|       | Total      | 190.009        | 103 |             |       |                   |

a. Predictors: (Constant), aiper, implementationlevel

b. Dependent Variable: totalexpected01

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -1.719                      | .964       |                           | -1.782 | .078 |
|       | implementationlevel | .029                        | .019       | .151                      | 1.532  | .129 |
|       | aiper               | -.133                       | .188       | -.070                     | -.709  | .480 |

a. Dependent Variable: totalexpected01

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | asper, implementationlevel <sup>a</sup> |                   | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected01

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .322 <sup>a</sup> | .104     | .086              | 1.29853                    | .104              | 5.843    | 2   | 101 | .004          |

a. Predictors: (Constant), asper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 19.705         | 2   | 9.853       | 5.843 | .004 <sup>a</sup> |
|       | Residual   | 170.303        | 101 | 1.686       |       |                   |
|       | Total      | 190.009        | 103 |             |       |                   |

a. Predictors: (Constant), asper, implementationlevel

b. Dependent Variable: totalexpected01

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -1.944                      | .917       |                           | -2.121 | .036 |
|       | implementationlevel | .026                        | .018       | .136                      | 1.435  | .154 |
|       | asper               | .212                        | .071       | .283                      | 2.995  | .003 |

a. Dependent Variable: totalexpected01

## Regression

### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | blper, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected01

### Model Summary

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .290 <sup>a</sup> | .084     | .066              | 1.31252                    | .084              | 4.648    | 2   | 101 | .012          |

a. Predictors: (Constant), blper, implementationlevel

### ANOVA<sup>b</sup>

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 16.014         | 2   | 8.007       | 4.648 | .012 <sup>a</sup> |
|       | Residual   | 173.994        | 101 | 1.723       |       |                   |
|       | Total      | 190.009        | 103 |             |       |                   |

a. Predictors: (Constant), blper, implementationlevel

b. Dependent Variable: totalexpected01

### Coefficients<sup>a</sup>

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -1.390                      | .941       |                           | -1.477 | .143 |
|       | implementationlevel | .030                        | .018       | .156                      | 1.636  | .105 |
|       | blper               | -.015                       | .006       | -.245                     | -2.576 | .011 |

a. Dependent Variable: totalexpected01

## Regression

### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | hiper, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected01

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .293 <sup>a</sup> | .086     | .068              | 1.31153                    | .086              | 4.731    | 2   | 101 | .011          |

a. Predictors: (Constant), hiper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 16.276         | 2   | 8.138       | 4.731 | .011 <sup>a</sup> |
|       | Residual   | 173.732        | 101 | 1.720       |       |                   |
|       | Total      | 190.009        | 103 |             |       |                   |

a. Predictors: (Constant), hiper, implementationlevel

b. Dependent Variable: totalexpected01

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -1.143                      | .961       |                           | -1.190 | .237 |
|       | implementationlevel | .023                        | .018       | .121                      | 1.263  | .210 |
|       | hiper               | -.063                       | .024       | -.250                     | -2.608 | .010 |

a. Dependent Variable: totalexpected01

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered          | Variables Removed | Method |
|-------|----------------------------|-------------------|--------|
| 1     | muper, implementationlevel | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected01

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .159 <sup>a</sup> | .025     | .006              | 1.35409                    | .025              | 1.314    | 2   | 101 | .273          |

a. Predictors: (Constant), muper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 4.820          | 2   | 2.410       | 1.314 | .273 <sup>a</sup> |
|       | Residual   | 185.188        | 101 | 1.834       |       |                   |
|       | Total      | 190.009        | 103 |             |       |                   |

a. Predictors: (Constant), muper, implementationlevel

b. Dependent Variable: totalexpected01

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -1.891                      | .973       |                           | -1.943 | .055 |
|       | implementationlevel | .030                        | .019       | .154                      | 1.572  | .119 |
|       | muper               | .049                        | .135       | .036                      | .363   | .718 |

a. Dependent Variable: totalexpected01

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | whper, implementationlevel <sup>a</sup> |                   | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected01

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .305 <sup>a</sup> | .093     | .075              | 1.30610                    | .093              | 5.192    | 2   | 101 | .007          |

a. Predictors: (Constant), whper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 17.714         | 2   | 8.857       | 5.192 | .007 <sup>a</sup> |
|       | Residual   | 172.295        | 101 | 1.706       |       |                   |
|       | Total      | 190.009        | 103 |             |       |                   |

a. Predictors: (Constant), whper, implementationlevel

b. Dependent Variable: totalexpected01

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -2.663                      | .970       |                           | -2.747 | .007 |
|       | implementationlevel | .028                        | .018       | .149                      | 1.571  | .119 |
|       | whper               | .015                        | .005       | .263                      | 2.775  | .007 |

a. Dependent Variable: totalexpected01

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | Rural, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected01

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .248 <sup>a</sup> | .062     | .043              | 1.32863                    | .062              | 3.319    | 2   | 101 | .040          |

a. Predictors: (Constant), Rural, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 11.719         | 2   | 5.860       | 3.319 | .040 <sup>a</sup> |
|       | Residual   | 178.290        | 101 | 1.765       |       |                   |
|       | Total      | 190.009        | 103 |             |       |                   |

a. Predictors: (Constant), Rural, implementationlevel

b. Dependent Variable: totalexpected01

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -1.751                      | .938       |                           | -1.868 | .065 |
|       | implementationlevel | .033                        | .018       | .171                      | 1.770  | .080 |
|       | Rural               | -.532                       | .265       | -.194                     | -2.011 | .047 |

a. Dependent Variable: totalexpected01

## 2002 Regression Analyses

### Regression

#### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered                | Variables Removed | Method |
|-------|----------------------------------|-------------------|--------|
| 1     | implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected02

#### Model Summary

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .292 <sup>a</sup> | .085     | .077              | .36874                     | .085              | 9.801    | 1   | 105 | .002          |

a. Predictors: (Constant), implementationlevel

#### ANOVA<sup>b</sup>

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 1.333          | 1   | 1.333       | 9.801 | .002 <sup>a</sup> |
|       | Residual   | 14.277         | 105 | .136        |       |                   |
|       | Total      | 15.610         | 106 |             |       |                   |

a. Predictors: (Constant), implementationlevel

b. Dependent Variable: totalexpected02

#### Coefficients<sup>a</sup>

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -.970                       | .252       |                           | -3.845 | .000 |
|       | implementationlevel | .016                        | .005       | .292                      | 3.131  | .002 |

a. Dependent Variable: totalexpected02

### Regression

#### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered                        | Variables Removed | Method |
|-------|--|-------------------|--------|
| 1     | frlper, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected02

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .602 <sup>a</sup> | .363     | .351              | .30925                     | .363              | 29.610   | 2   | 104 | .000          |

a. Predictors: (Constant), frlper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F      | Sig.              |
|-------|------------|----------------|-----|-------------|--------|-------------------|
| 1     | Regression | 5.663          | 2   | 2.832       | 29.610 | .000 <sup>a</sup> |
|       | Residual   | 9.946          | 104 | .096        |        |                   |
|       | Total      | 15.610         | 106 |             |        |                   |

a. Predictors: (Constant), frlper, implementationlevel

b. Dependent Variable: totalexpected02

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -.408                       | .227       |                           | -1.793 | .076 |
|       | implementationlevel | .014                        | .004       | .261                      | 3.324  | .001 |
|       | frlper              | -.012                       | .002       | -.528                     | -6.729 | .000 |

a. Dependent Variable: totalexpected02

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered               | Variables Removed | Method |
|-------|---------------------------------|-------------------|--------|
| 1     | schoolsize, implementationlevel | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected02

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .374 <sup>a</sup> | .140     | .124              | .35925                     | .140              | 8.472    | 2   | 104 | .000          |

a. Predictors: (Constant), schoolsize, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 2.187          | 2   | 1.093       | 8.472 | .000 <sup>a</sup> |
|       | Residual   | 13.423         | 104 | .129        |       |                   |
|       | Total      | 15.610         | 106 |             |       |                   |

a. Predictors: (Constant), schoolsize, implementationlevel

b. Dependent Variable: totalexpected02

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -1.328                      | .282       |                           | -4.702 | .000 |
|       | implementationlevel | .018                        | .005       | .330                      | 3.586  | .001 |
|       | schoolsize          | .000                        | .000       | .237                      | 2.573  | .012 |

a. Dependent Variable: totalexpected02

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | aiper, implementationlevel <sup>a</sup> |                   | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected02

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .313 <sup>a</sup> | .098     | .081              | .36791                     | .098              | 5.662    | 2   | 104 | .005          |

a. Predictors: (Constant), aiper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 1.533          | 2   | .766        | 5.662 | .005 <sup>a</sup> |
|       | Residual   | 14.077         | 104 | .135        |       |                   |
|       | Total      | 15.610         | 106 |             |       |                   |

a. Predictors: (Constant), aiper, implementationlevel

b. Dependent Variable: totalexpected02

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -.920                       | .255       |                           | -3.609 | .000 |
|       | implementationlevel | .015                        | .005       | .284                      | 3.039  | .003 |
|       | aiper               | -.062                       | .051       | -.114                     | -1.216 | .227 |

a. Dependent Variable: totalexpected02

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | asper, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected02

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .457 <sup>a</sup> | .209     | .194              | .34453                     | .209              | 13.751   | 2   | 104 | .000          |

a. Predictors: (Constant), asper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F      | Sig.              |
|-------|------------|----------------|-----|-------------|--------|-------------------|
| 1     | Regression | 3.265          | 2   | 1.632       | 13.751 | .000 <sup>a</sup> |
|       | Residual   | 12.345         | 104 | .119        |        |                   |
|       | Total      | 15.610         | 106 |             |        |                   |

a. Predictors: (Constant), asper, implementationlevel

b. Dependent Variable: totalexpected02

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -1.020                      | .236       |                           | -4.321 | .000 |
|       | implementationlevel | .014                        | .005       | .270                      | 3.088  | .003 |
|       | asper               | .075                        | .019       | .353                      | 4.034  | .000 |

a. Dependent Variable: totalexpected02

## Regression

### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered                      | Variables Removed | Method |
|-------|--|-------------------|--------|
| 1     | bper, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected02

### Model Summary

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .498 <sup>a</sup> | .248     | .233              | .33598                     | .248              | 17.142   | 2   | 104 | .000          |

a. Predictors: (Constant), bper, implementationlevel

### ANOVA<sup>b</sup>

| Model |            | Sum of Squares | df  | Mean Square | F      | Sig.              |
|-------|------------|----------------|-----|-------------|--------|-------------------|
| 1     | Regression | 3.870          | 2   | 1.935       | 17.142 | .000 <sup>a</sup> |
|       | Residual   | 11.740         | 104 | .113        |        |                   |
|       | Total      | 15.610         | 106 |             |        |                   |

a. Predictors: (Constant), bper, implementationlevel

b. Dependent Variable: totalexpected02

### Coefficients<sup>a</sup>

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -.827                       | .232       |                           | -3.567 | .001 |
|       | implementationlevel | .017                        | .005       | .313                      | 3.673  | .000 |
|       | bper                | -.007                       | .001       | -.404                     | -4.741 | .000 |

a. Dependent Variable: totalexpected02

## Regression

### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | hiper, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected02

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .340 <sup>a</sup> | .115     | .098              | .36438                     | .115              | 6.783    | 2   | 104 | .002          |

a. Predictors: (Constant), hiper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 1.801          | 2   | .901        | 6.783 | .002 <sup>a</sup> |
|       | Residual   | 13.808         | 104 | .133        |       |                   |
|       | Total      | 15.610         | 106 |             |       |                   |

a. Predictors: (Constant), hiper, implementationlevel

b. Dependent Variable: totalexpected02

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -.845                       | .258       |                           | -3.273 | .001 |
|       | implementationlevel | .014                        | .005       | .271                      | 2.920  | .004 |
|       | hiper               | -.013                       | .007       | -.175                     | -1.879 | .063 |

a. Dependent Variable: totalexpected02

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered          | Variables Removed | Method |
|-------|----------------------------|-------------------|--------|
| 1     | muper, implementationlevel | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected02

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .300 <sup>a</sup> | .090     | .072              | .36959                     | .090              | 5.137    | 2   | 104 | .007          |

a. Predictors: (Constant), muper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 1.403          | 2   | .702        | 5.137 | .007 <sup>a</sup> |
|       | Residual   | 14.206         | 104 | .137        |       |                   |
|       | Total      | 15.610         | 106 |             |       |                   |

a. Predictors: (Constant), muper, implementationlevel

b. Dependent Variable: totalexpected02

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -1.012                      | .259       |                           | -3.900 | .000 |
|       | implementationlevel | .016                        | .005       | .293                      | 3.128  | .002 |
|       | muper               | .026                        | .036       | .067                      | .720   | .473 |

a. Dependent Variable: totalexpected02

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | whper, implementationlevel <sup>a</sup> |                   | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected02

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .488 <sup>a</sup> | .238     | .223              | .33817                     | .238              | 16.248   | 2   | 104 | .000          |

a. Predictors: (Constant), whper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F      | Sig.              |
|-------|------------|----------------|-----|-------------|--------|-------------------|
| 1     | Regression | 3.716          | 2   | 1.858       | 16.248 | .000 <sup>a</sup> |
|       | Residual   | 11.893         | 104 | .114        |        |                   |
|       | Total      | 15.610         | 106 |             |        |                   |

a. Predictors: (Constant), whper, implementationlevel

b. Dependent Variable: totalexpected02

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -1.371                      | .247       |                           | -5.540 | .000 |
|       | implementationlevel | .016                        | .005       | .302                      | 3.522  | .001 |
|       | whper               | .006                        | .001       | .391                      | 4.565  | .000 |

a. Dependent Variable: totalexpected02

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | Rural, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected02

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .366 <sup>a</sup> | .134     | .118              | .36047                     | .134              | 8.067    | 2   | 104 | .001          |

a. Predictors: (Constant), Rural, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 2.096          | 2   | 1.048       | 8.067 | .001 <sup>a</sup> |
|       | Residual   | 13.513         | 104 | .130        |       |                   |
|       | Total      | 15.610         | 106 |             |       |                   |

a. Predictors: (Constant), Rural, implementationlevel

b. Dependent Variable: totalexpected02

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -.970                       | .247       |                           | -3.934 | .000 |
|       | implementationlevel | .017                        | .005       | .319                      | 3.474  | .001 |
|       | Rural               | -.172                       | .071       | -.223                     | -2.424 | .017 |

a. Dependent Variable: totalexpected02

## 2003 Regression Analyses

### Regression

#### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered                | Variables Removed | Method |
|-------|----------------------------------|-------------------|--------|
| 1     | implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected03

#### Model Summary

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .169 <sup>a</sup> | .029     | .020              | 1.02642                    | .029              | 3.298    | 1   | 112 | .072          |

a. Predictors: (Constant), implementationlevel

#### ANOVA<sup>b</sup>

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 3.475          | 1   | 3.475       | 3.298 | .072 <sup>a</sup> |
|       | Residual   | 117.997        | 112 | 1.054       |       |                   |
|       | Total      | 121.472        | 113 |             |       |                   |

a. Predictors: (Constant), implementationlevel

b. Dependent Variable: totalexpected03

#### Coefficients<sup>a</sup>

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|-------|------|
|       |                     | B                           | Std. Error | Beta                      |       |      |
| 1     | (Constant)          | -.403                       | .688       |                           | -.585 | .559 |
|       | implementationlevel | .025                        | .014       | .169                      | 1.816 | .072 |

a. Dependent Variable: totalexpected03

### Regression

#### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered                        | Variables Removed | Method |
|-------|--|-------------------|--------|
| 1     | frlper, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected03

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .170 <sup>a</sup> | .029     | .011              | 1.03087                    | .029              | 1.652    | 2   | 111 | .196          |

a. Predictors: (Constant), frlper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 3.512          | 2   | 1.756       | 1.652 | .196 <sup>a</sup> |
|       | Residual   | 117.960        | 111 | 1.063       |       |                   |
|       | Total      | 121.472        | 113 |             |       |                   |

a. Predictors: (Constant), frlper, implementationlevel

b. Dependent Variable: totalexpected03

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|-------|------|
|       |                     | B                           | Std. Error | Beta                      |       |      |
| 1     | (Constant)          | -.352                       | .743       |                           | -.474 | .636 |
|       | implementationlevel | .024                        | .014       | .168                      | 1.790 | .076 |
|       | frlper              | -.001                       | .005       | -.017                     | -.186 | .853 |

a. Dependent Variable: totalexpected03

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered               | Variables Removed | Method |
|-------|---------------------------------|-------------------|--------|
| 1     | schoolsize, implementationlevel | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected03

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .197 <sup>a</sup> | .039     | .022              | 1.02552                    | .039              | 2.250    | 2   | 111 | .110          |

a. Predictors: (Constant), schoolsize, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 4.733          | 2   | 2.367       | 2.250 | .110 <sup>a</sup> |
|       | Residual   | 116.738        | 111 | 1.052       |       |                   |
|       | Total      | 121.472        | 113 |             |       |                   |

a. Predictors: (Constant), schoolsize, implementationlevel

b. Dependent Variable: totalexpected03

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -.017                       | .773       |                           | -.022  | .982 |
|       | implementationlevel | .023                        | .014       | .156                      | 1.664  | .099 |
|       | schoolsize          | .000                        | .000       | -.103                     | -1.094 | .276 |

a. Dependent Variable: totalexpected03

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered          | Variables Removed | Method |
|-------|----------------------------|-------------------|--------|
| 1     | aiper, implementationlevel |                   | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected03

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .170 <sup>a</sup> | .029     | .012              | 1.03082                    | .029              | 1.658    | 2   | 111 | .195          |

a. Predictors: (Constant), aiper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 3.523          | 2   | 1.762       | 1.658 | .195 <sup>a</sup> |
|       | Residual   | 117.948        | 111 | 1.063       |       |                   |
|       | Total      | 121.472        | 113 |             |       |                   |

a. Predictors: (Constant), aiper, implementationlevel

b. Dependent Variable: totalexpected03

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|-------|------|
|       |                     | B                           | Std. Error | Beta                      |       |      |
| 1     | (Constant)          | -.428                       | .701       |                           | -.610 | .543 |
|       | implementationlevel | .025                        | .014       | .171                      | 1.820 | .071 |
|       | aiper               | .030                        | .142       | .020                      | .214  | .831 |

a. Dependent Variable: totalexpected03

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | asper, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected03

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .192 <sup>a</sup> | .037     | .020              | 1.02663                    | .037              | 2.126    | 2   | 111 | .124          |

a. Predictors: (Constant), asper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 4.482          | 2   | 2.241       | 2.126 | .124 <sup>a</sup> |
|       | Residual   | 116.990        | 111 | 1.054       |       |                   |
|       | Total      | 121.472        | 113 |             |       |                   |

a. Predictors: (Constant), asper, implementationlevel

b. Dependent Variable: totalexpected03

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|-------|------|
|       |                     | B                           | Std. Error | Beta                      |       |      |
| 1     | (Constant)          | -.387                       | .689       |                           | -.563 | .575 |
|       | implementationlevel | .026                        | .014       | .177                      | 1.897 | .060 |
|       | asper               | -.053                       | .054       | -.091                     | -.977 | .330 |

a. Dependent Variable: totalexpected03

## Regression

### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | blper, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected03

### Model Summary

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .206 <sup>a</sup> | .043     | .025              | 1.02358                    | .043              | 2.469    | 2   | 111 | .089          |

a. Predictors: (Constant), blper, implementationlevel

### ANOVA<sup>b</sup>

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 5.175          | 2   | 2.587       | 2.469 | .089 <sup>a</sup> |
|       | Residual   | 116.297        | 111 | 1.048       |       |                   |
|       | Total      | 121.472        | 113 |             |       |                   |

a. Predictors: (Constant), blper, implementationlevel

b. Dependent Variable: totalexpected03

### Coefficients<sup>a</sup>

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -.297                       | .691       |                           | -.429  | .669 |
|       | implementationlevel | .026                        | .014       | .175                      | 1.886  | .062 |
|       | blper               | -.005                       | .004       | -.118                     | -1.274 | .205 |

a. Dependent Variable: totalexpected03

## Regression

### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | hiper, implementationlevel <sup>a</sup> | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected03

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .185 <sup>a</sup> | .034     | .017              | 1.02799                    | .034              | 1.973    | 2   | 111 | .144          |

a. Predictors: (Constant), hiper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 4.171          | 2   | 2.085       | 1.973 | .144 <sup>a</sup> |
|       | Residual   | 117.301        | 111 | 1.057       |       |                   |
|       | Total      | 121.472        | 113 |             |       |                   |

a. Predictors: (Constant), hiper, implementationlevel

b. Dependent Variable: totalexpected03

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|-------|------|
|       |                     | B                           | Std. Error | Beta                      |       |      |
| 1     | (Constant)          | -.262                       | .711       |                           | -.368 | .713 |
|       | implementationlevel | .023                        | .014       | .161                      | 1.716 | .089 |
|       | hiper               | -.015                       | .019       | -.076                     | -.812 | .419 |

a. Dependent Variable: totalexpected03

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered          | Variables Removed | Method |
|-------|----------------------------|-------------------|--------|
| 1     | muper, implementationlevel | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected03

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .183 <sup>a</sup> | .034     | .016              | 1.02836                    | .034              | 1.932    | 2   | 111 | .150          |

a. Predictors: (Constant), muper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 4.087          | 2   | 2.044       | 1.932 | .150 <sup>a</sup> |
|       | Residual   | 117.384        | 111 | 1.058       |       |                   |
|       | Total      | 121.472        | 113 |             |       |                   |

a. Predictors: (Constant), muper, implementationlevel

b. Dependent Variable: totalexpected03

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|-------|------|
|       |                     | B                           | Std. Error | Beta                      |       |      |
| 1     | (Constant)          | -.296                       | .704       |                           | -.420 | .675 |
|       | implementationlevel | .025                        | .014       | .169                      | 1.816 | .072 |
|       | muper               | -.074                       | .097       | -.071                     | -.761 | .448 |

a. Dependent Variable: totalexpected03

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered                       | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | whper, implementationlevel <sup>a</sup> |                   | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected03

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .217 <sup>a</sup> | .047     | .030              | 1.02124                    | .047              | 2.736    | 2   | 111 | .069          |

a. Predictors: (Constant), whper, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 5.706          | 2   | 2.853       | 2.736 | .069 <sup>a</sup> |
|       | Residual   | 115.766        | 111 | 1.043       |       |                   |
|       | Total      | 121.472        | 113 |             |       |                   |

a. Predictors: (Constant), whper, implementationlevel

b. Dependent Variable: totalexpected03

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -.788                       | .734       |                           | -1.075 | .285 |
|       | implementationlevel | .025                        | .014       | .173                      | 1.871  | .064 |
|       | whper               | .006                        | .004       | .136                      | 1.463  | .146 |

a. Dependent Variable: totalexpected03

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered          | Variables Removed | Method |
|-------|----------------------------|-------------------|--------|
| 1     | Rural, implementationlevel | .                 | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected03

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .202 <sup>a</sup> | .041     | .023              | 1.02458                    | .041              | 2.356    | 2   | 111 | .099          |

a. Predictors: (Constant), Rural, implementationlevel

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 4.948          | 2   | 2.474       | 2.356 | .099 <sup>a</sup> |
|       | Residual   | 116.524        | 111 | 1.050       |       |                   |
|       | Total      | 121.472        | 113 |             |       |                   |

a. Predictors: (Constant), Rural, implementationlevel

b. Dependent Variable: totalexpected03

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|-------|------|
|       |                     | B                           | Std. Error | Beta                      |       |      |
| 1     | (Constant)          | -.429                       | .687       |                           | -.625 | .533 |
|       | implementationlevel | .023                        | .014       | .159                      | 1.703 | .091 |
|       | Rural               | .230                        | .194       | .111                      | 1.184 | .239 |

a. Dependent Variable: totalexpected03

## Multiple Regression Analyses for All Years (1999-2003)

### Regression

#### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered   | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | schoolsize, hiper, Rural, blper, implementationlevel, asper, frlper, <sup>a</sup> whper |                   | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected99

#### Model Summary

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .436 <sup>a</sup> | .190     | .114              | 2.56372                    | .190              | 2.492    | 8   | 85  | .018          |

a. Predictors: (Constant), schoolsize, hiper, Rural, blper, implementationlevel, asper, frlper, whper

#### ANOVA<sup>b</sup>

| Model |            | Sum of Squares | df | Mean Square | F     | Sig.              |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1     | Regression | 131.022        | 8  | 16.378      | 2.492 | .018 <sup>a</sup> |
|       | Residual   | 558.677        | 85 | 6.573       |       |                   |
|       | Total      | 689.700        | 93 |             |       |                   |

a. Predictors: (Constant), schoolsize, hiper, Rural, blper, implementationlevel, asper, frlper, whper

b. Dependent Variable: totalexpected99

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -7.266                      | 21.685     |                           | -.335  | .738 |
|       | implementationlevel | -.013                       | .039       | -.035                     | -.337  | .737 |
|       | Rural               | -1.060                      | .633       | -.191                     | -1.676 | .097 |
|       | frlper              | -.014                       | .030       | -.092                     | -.476  | .635 |
|       | asper               | -.031                       | .283       | -.020                     | -.109  | .914 |
|       | blper               | .116                        | .223       | .981                      | .523   | .602 |
|       | hiper               | .100                        | .229       | .207                      | .438   | .663 |
|       | whper               | .146                        | .222       | 1.328                     | .660   | .511 |
|       | schoolsize          | -.003                       | .001       | -.227                     | -2.181 | .032 |

a. Dependent Variable: totalexpected99

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered   | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | schoolsize, hiper, blper, Rural, implementationlevel, asper, frlper, <sup>a</sup> whper |                   | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected00

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .663 <sup>a</sup> | .440     | .390              | 2.40914                    | .440              | 8.927    | 8   | 91  | .000          |

a. Predictors: (Constant), schoolsize, hiper, blper, Rural, implementationlevel, asper, frlper, whper

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df | Mean Square | F     | Sig.              |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1     | Regression | 414.476        | 8  | 51.809      | 8.927 | .000 <sup>a</sup> |
|       | Residual   | 528.160        | 91 | 5.804       |       |                   |
|       | Total      | 942.635        | 99 |             |       |                   |

a. Predictors: (Constant), schoolsize, hiper, blper, Rural, implementationlevel, asper, frlper, whper

b. Dependent Variable: totalexpected00

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | 24.394                      | 19.396     |                           | 1.258  | .212 |
|       | implementationlevel | .066                        | .035       | .152                      | 1.849  | .068 |
|       | Rural               | -.868                       | .584       | -.139                     | -1.485 | .141 |
|       | frlper              | -.068                       | .028       | -.385                     | -2.444 | .016 |
|       | asper               | -.202                       | .249       | -.120                     | -.812  | .419 |
|       | blper               | -.274                       | .198       | -2.022                    | -1.386 | .169 |
|       | hiper               | -.272                       | .206       | -.480                     | -1.319 | .190 |
|       | whper               | -.243                       | .198       | -1.915                    | -1.228 | .223 |
|       | schoolsize          | -.001                       | .001       | -.054                     | -.636  | .526 |

a. Dependent Variable: totalexpected00

**Regression****Variables Entered/Removed<sup>b</sup>**

| Model | Variables Entered   | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | schoolsize, whper, implementationlevel, asper, Rural, hiper, frlper, blper <sup>a</sup> |                   | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected01

**Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .530 <sup>a</sup> | .281     | .221              | 1.19905                    | .281              | 4.645    | 8   | 95  | .000          |

a. Predictors: (Constant), schoolsize, whper, implementationlevel, asper, Rural, hiper, friper, blper

**ANOVA<sup>b</sup>**

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 53.426         | 8   | 6.678       | 4.645 | .000 <sup>a</sup> |
|       | Residual   | 136.583        | 95  | 1.438       |       |                   |
|       | Total      | 190.009        | 103 |             |       |                   |

a. Predictors: (Constant), schoolsize, whper, implementationlevel, asper, Rural, hiper, friper, blper

b. Dependent Variable: totalexpected01

**Coefficients<sup>a</sup>**

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -1.495                      | 9.391      |                           | -.159  | .874 |
|       | implementationlevel | .014                        | .017       | .075                      | .825   | .411 |
|       | Rural               | -.124                       | .286       | -.045                     | -.435  | .664 |
|       | friper              | -.037                       | .014       | -.469                     | -2.731 | .008 |
|       | asper               | .128                        | .120       | .170                      | 1.060  | .292 |
|       | blper               | .028                        | .096       | .469                      | .293   | .770 |
|       | hiper               | -.005                       | .100       | -.019                     | -.048  | .962 |
|       | whper               | .021                        | .096       | .384                      | .224   | .823 |
|       | schoolsize          | .000                        | .001       | -.076                     | -.808  | .421 |

a. Dependent Variable: totalexpected01

## Regression

### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered   | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | schoolsize, hiper, blper, implementationlevel, asper, Rural, frlper, <sup>a</sup> whper |                   | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected02

### Model Summary

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .648 <sup>a</sup> | .420     | .372              | .30401                     | .420              | 8.862    | 8   | 98  | .000          |

a. Predictors: (Constant), schoolsize, hiper, blper, implementationlevel, asper, Rural, frlper, whper

### ANOVA<sup>b</sup>

| Model |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
|-------|------------|----------------|-----|-------------|-------|-------------------|
| 1     | Regression | 6.552          | 8   | .819        | 8.862 | .000 <sup>a</sup> |
|       | Residual   | 9.057          | 98  | .092        |       |                   |
|       | Total      | 15.610         | 106 |             |       |                   |

a. Predictors: (Constant), schoolsize, hiper, blper, implementationlevel, asper, Rural, frlper, whper

b. Dependent Variable: totalexpected02

### Coefficients<sup>a</sup>

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                     | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)          | -1.394                      | 2.359      |                           | -.591  | .556 |
|       | implementationlevel | .015                        | .004       | .287                      | 3.533  | .001 |
|       | Rural               | -.068                       | .071       | -.088                     | -.968  | .335 |
|       | frlper              | -.005                       | .003       | -.246                     | -1.608 | .111 |
|       | asper               | .053                        | .030       | .249                      | 1.759  | .082 |
|       | blper               | .004                        | .024       | .212                      | .146   | .884 |
|       | hiper               | .001                        | .025       | .019                      | .056   | .956 |
|       | whper               | .007                        | .024       | .433                      | .281   | .779 |
|       | schoolsize          | .000                        | .000       | .078                      | .914   | .363 |

a. Dependent Variable: totalexpected02

## Regression

### Variables Entered/Removed<sup>b</sup>

| Model | Variables Entered   | Variables Removed | Method |
|-------|---|-------------------|--------|
| 1     | schoolsize, whper, implementationlevel, asper, hiper, Rural, frlper, blper <sup>a</sup> |                   | Enter  |

a. All requested variables entered.

b. Dependent Variable: totalexpected03

### Model Summary

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .262 <sup>a</sup> | .068     | -.003             | 1.03814                    | .068              | .964     | 8   | 105 | .468          |

a. Predictors: (Constant), schoolsize, whper, implementationlevel, asper, hiper, Rural, frlper, blper

### ANOVA<sup>b</sup>

| Model |            | Sum of Squares | df  | Mean Square | F    | Sig.              |
|-------|------------|----------------|-----|-------------|------|-------------------|
| 1     | Regression | 8.310          | 8   | 1.039       | .964 | .468 <sup>a</sup> |
|       | Residual   | 113.162        | 105 | 1.078       |      |                   |
|       | Total      | 121.472        | 113 |             |      |                   |

a. Predictors: (Constant), schoolsize, whper, implementationlevel, asper, hiper, Rural, frlper, blper

b. Dependent Variable: totalexpected03

### Coefficients<sup>a</sup>

| Model |                     | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|-------|---------------------|-----------------------------|------------|---------------------------|-------|------|
|       |                     | B                           | Std. Error | Beta                      |       |      |
| 1     | (Constant)          | -2.218                      | 7.820      |                           | -.284 | .777 |
|       | implementationlevel | .025                        | .014       | .171                      | 1.727 | .087 |
|       | Rural               | .060                        | .240       | .029                      | .250  | .803 |
|       | frlper              | .006                        | .011       | .109                      | .563  | .575 |
|       | asper               | .000                        | .100       | .000                      | .002  | .998 |
|       | blper               | .012                        | .080       | .276                      | .154  | .878 |
|       | hiper               | .007                        | .084       | .037                      | .089  | .930 |
|       | whper               | .021                        | .080       | .498                      | .262  | .794 |
|       | schoolsize          | .000                        | .000       | -.064                     | -.610 | .543 |

a. Dependent Variable: totalexpected03

## Univariate Analysis of Variance

### Between-Subjects Factors

|                     |    | N |
|---------------------|----|---|
| implementationlevel | 31 | 1 |
|                     | 34 | 1 |
|                     | 35 | 1 |
|                     | 36 | 2 |
|                     | 38 | 3 |
|                     | 39 | 6 |
|                     | 41 | 2 |
|                     | 42 | 1 |
|                     | 43 | 4 |
|                     | 44 | 2 |
|                     | 45 | 2 |
|                     | 46 | 3 |
|                     | 47 | 5 |
|                     | 48 | 5 |
|                     | 49 | 5 |
|                     | 50 | 8 |
|                     | 51 | 6 |
|                     | 52 | 8 |
|                     | 53 | 4 |
|                     | 54 | 5 |
|                     | 55 | 4 |
|                     | 56 | 7 |
|                     | 57 | 8 |
|                     | 58 | 3 |
|                     | 59 | 1 |
|                     | 60 | 5 |
|                     | 61 | 3 |
|                     | 62 | 3 |

### Tests of Between-Subjects Effects

Dependent Variable: totalexpected02

| Source              | Type III Sum of Squares | df  | Mean Square | F      | Sig. | Partial Eta Squared |
|---------------------|-------------------------|-----|-------------|--------|------|---------------------|
| Corrected Model     | 6.435 <sup>a</sup>      | 27  | .238        | 1.801  | .023 | .378                |
| Intercept           | 2.820                   | 1   | 2.820       | 21.311 | .000 | .210                |
| implementationlevel | 6.435                   | 27  | .238        | 1.801  | .023 | .378                |
| Error               | 10.586                  | 80  | .132        |        |      |                     |
| Total               | 21.304                  | 108 |             |        |      |                     |
| Corrected Total     | 17.021                  | 107 |             |        |      |                     |

a. R Squared = .378 (Adjusted R Squared = .168)

### Pilot and Final Survey Cronbach Analyses

Data used: 13 Pilot study responses

The CORR Procedure

Cronbach Coefficient Alpha

| Variables    | Alpha           |
|--------------|-----------------|
| Raw          | <b>0.954707</b> |
| Standardized | <b>0.956960</b> |

Data use: 123 responses on the Survey

The CORR Procedure

Cronbach Coefficient Alpha

| Variables    | Alpha           |
|--------------|-----------------|
| Raw          | <b>0.875025</b> |
| Standardized | <b>0.880445</b> |