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A VALUE-ADDED STUDY OF A FEDERAL GRANT PROGRAM IN MATHEMATICS FOR MILITARY DEPENDENT STUDENTS

by

Jay C. Marquand

A dissertation submitted in partial fulfillment
of the requirements for the degree of

Doctor of Philosophy
University of San Diego

November 2012

Dissertation Committee

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ABSTRACT

Closing the achievement gap in public education means all students are expected to be learning at grade level. In response to federal mandates requiring schools to attain specific student achievement benchmarks, many schools are placing greater resources into support programs designed to increase student achievement.

Military dependent students experience unique challenges including, ongoing parent absences, extended parental deployments, and frequent moving and relocation. In California Unified School District (CUSD) where 37% of the student population is military connected, these challenges can place military dependent students at risk of failing socially, emotionally and academically. As a result, CUSD implemented an individualized, computer-assisted instructional model to support military dependent students performing below grade level.

The purpose of this study was to provide additional, value-added information, to the findings of the district's annual assessment report of a three-year federally funded grant designed to close the mathematics achievement gap for military dependent students performing below grade level at a California middle school. This study focused on the value-added support program titled, *Students Achieving Through Technology (SATT-21)* a three year, 1.4 million dollar federally funded grant designated to CUSD in order to address the achievement gap of military dependent students performing below grade level in mathematics. The researcher used a qualitative approach (survey and interviews) to gain insights into the perceptions, concerns, and suggestions of the participants involved in the *SATT-21* program at the district's middle school to address the research questions posed for the study.

After a careful analysis of the district's annual assessment report, in combination with the responses from the participant's experiences in the program, findings revealed three major focus areas associated with the grant: (1) communication, (2) curriculum, and (3) professional development. Numerous themes emerged within each of the focus areas which supported suggestions and recommendations for the SATT-21 program. The results of this study provide value-added information for the district and stakeholders investing resources into school support programs designed to increase student achievement, particularly for military dependent students performing below grade level in mathematics.

DEDICATION

To my dearest Trinka – you are my heart, my soul, my life. During our time together, and during the course of this particular journey, you have always been by my side encouraging me, supporting me, and providing me with your undying devotion in order to fulfill my dreams. These dreams ultimately become our dreams, and allow us to continue to write the next chapter in our book of life together. I love you for helping me become the person who I am today, and tomorrow. You are my always.....

To my beautiful children, Riley and Elyse – not a moment goes by that I don't miss being with you and your warm smiles when we are not together. While it was the most difficult thing in the world to spend countless of hours on many days and weekends away from you to complete this project, I held onto the fact that someday all of this work would help you in the years to come. I love you more than my own life and I will do anything to support your dreams as you grow older.

To my father, mother, and brothers – thank you for raising a pretty decent human being. I would be nowhere without your guidance, love, and encouragement. I hope I will be able to slow down a little bit and enjoy life with you all in many years ahead.

To all of my family and friends who endured me during this journey. Thank you for your patience, wisdom and support. I'm looking forward to seeing you all again.

Last, but certainly not least, to my lord and savior who reminded me time and time again that everything happens for a reason and with his continual guidance and love all things are possible.

ACKNOWLEDGEMENTS

I would like to acknowledge the kindest and most supportive gentleman I know, Dr. Edward F. DeRoche. He started this process with me as my advisor when I first entered the program and I feel it's very appropriate he is finishing it with me. We have come full circle Ed, and I hope I can become half the man you are personally, and professionally.

Additionally, both Dr. Steven A. Gelb and Dr. Carolyn "Bobbi" Hansen have been instrumental in supporting me to fulfill my dreams. I truly appreciate Dr. Gelb's honesty and genuine sincerity in order to bring out the best in me. I also want to thank Dr. Hansen who shares the same passion for teaching and learning that I do. She is a kindred spirit and someone I admire for her accomplishments with students. Thank you both again for sharing this journey with me.

To my professional colleagues who are some of the most incredible people in the world who are dedicated to children and their future. In particular, Dr. Jeff Felix, Bill Cass, Karin Mellina, the entire CUSD faculty and staff, and of course, the CMS family. All of you have been instrumental in my success, so thank you for being a part of this exciting and wondrous profession we call education.

Also, to all of the beautiful children who continue to inspire and remind me how great our world is, and will become, because of their presence. Receiving a public education in the United States is a tremendous freedom and holds the most incredible value that is truly priceless.

Finally, to all of the brave men and women of our military services. The ongoing sacrifices you endure for the lives of your own families, and those families you don't even know, is admirable and can never be fully repaid. Thank you!

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CHAPTER I

Introduction

Background to the Study

Closing the achievement gap in public education means all students are expected to be learning at grade level. Many studies on the achievement gap focus on specific groups of students identified by their socioeconomic status, gender, race / ethnicity and how these factors impact student academic achievement (Duncan & Magnuson, 2005; Gay, 2000; Hubbard, Mehan & Stein, 2006; Ladson-Billings, 2001; Lee, 2004; Ogbu & Simons, 1998). The thrust to close the achievement gap for under-represented student groups is gaining greater emphasis from researchers and practitioners alike. However, few studies address the achievement gap of military dependent students (Engel, Gallagher & Lyle, 2008). As the demand for military service has increased, more military dependent children are entering public school systems with unique challenges associated with a military lifestyle that can impact their achievement (Government Accountability Office, 2010).

Many military dependent students experience unique challenges including ongoing parental absences, extended parental deployments, and frequent moving and relocation; all influencing transitions into new homes and schools. As a result, military dependent children bring these and other challenges to their school experiences. Studies have revealed that these challenges can have an impact on their academic achievement and their social emotional well being (Chandra, Lara-Cinisomo, Jaycox,Tanielian, Burns, Ruder & Han, 2010; Engel et al, 2008; Heinlein & Shinn, 2000; Paredes, 2003).

In response to closing the achievement gap for all students, California Unified School District (CUSD) implemented a three year, 1.4 million dollar grant designed to meet the needs of underachieving students. The federally funded/ Department of Defense Education Activity (DoDEA) grant titled Students Achieving Through Technology (SATT-21), was designated to CUSD because of its large military dependent student (mds) population with a primary focus on those mds students performing below grade level in mathematics.

To monitor the achievement of progress on the goals outlined in the SATT-21 grant, CUSD was required to provide quarterly and annual assessment reports to the federal government sponsoring the grant. The annual assessment reports are provided at the end of each November and the quarterly reports are provided four times throughout the school year. The quarterly reports are small, summary progress reports which make-up and support the content in the more comprehensive annual assessment reports. In year one of the grant (2009-2010), an annual assessment port was not required, and therefore a report was not provided. The rationale for this was due to the local county office of education assigning an external evaluator to work in conjunction with the district to monitor the progress and support the grant implementation.

In the 2010-2011 year of the grant, the federal government allowed the district to monitor and report the progress on the grant without the collaboration from the county office of education. Quarterly reports continued as originally scheduled, but annual assessment reports were required for the remaining two years of the grant, 2010 through 2012 respectively. At this point in time, there is only one annual assessment report for the SATT-21 grant, with a second and final report to be completed after this study

concludes. As a result, the single annual assessment report for the 2010-2011 school year, due and presented in November 2011, was analyzed in order to add value for this study (see Appendix A).

The summary of the findings from CUSD's 2010-2011 annual assessment report was utilized for this study in order to provide value added information about the SATT-21 grant. In particular, the valued added information from this study addresses goal #2 of the grant, mathematics. CUSD used goal measurements for mathematics from the results of pre- and post- assessments, classroom performance, grade point averages (GPA), standardized test scores, behavioral referrals, and proficiency levels in mathematics, primarily Algebra I, among military and non-military dependent students. This study utilized the information from the district's annual assessment report, but also added to these findings by analyzing the annual assessment report, and including the perspectives of the stakeholders directly involved in the SATT-21 Math Plus class at the district's middle school.

Statement of the Problem

Military dependent students who move often, transition frequently between schools, and have parents deployed or absent from home for long periods of time are at risk of not achieving at grade level in school (Baker, 2009; Chandra et al, 2010; Engel et al, 2008). It is a regular occurrence for military dependent students to enroll in California Middle School (CMS) at various times throughout the year, and as a result, they only receive portions of their education. While some students can develop more resiliency than others, most of the time their learning and academic achievement is fractured and becomes compromised. To respond to this need, CUSD applied, and was awarded, a

discretionary grant from the federal government as a way to close the achievement gap for military dependent students. Since the SATT-21 grant at CMS demands many resources including financial and human commitments in order to be successful, there was a strong interest from the federal government and the school district wishing to re-new the grant, to determine the extent to which the SATT-21 program will attain the goal of raising military dependent student achievement levels.

Additionally, there is little research regarding the experiences of military dependent students and educators participating in grant programs designed to meet the challenges of underperforming military dependent children, specifically in the area of mathematics. Without these perspectives, agencies providing grants to close achievement gaps, and school personnel working diligently to implement them, have limited information to determine the extent to which their initiatives are meeting a grant's objectives and school wide goals.

Purpose of the Study

The purpose of this study was to provide additional, value-added information, to the findings of the district's annual assessment report of a three-year federally funded grant designed to close the mathematics achievement gap for military dependent students performing below grade level at their middle school. This study sought to focus on the purpose of the grant through a review of the district's annual assessment report, and from the perspectives of the participants involved in the grant including, the students, parents and faculty members associated in the SATT-21 program at the middle school.

The findings in district's evaluation plan matrix and its annual assessment report were essential to the framing of three central research questions. The central questions

were critical in developing a series of sub-questions which were asked of the participants involved in this research study (see Appendices C-E).

Research Questions

1) What did student data reveal about student participation in the grant?
2) What were the perceptions, concerns, and suggestions of the participants relative to the resources provided in the program?
3) After a careful synthesis and analysis of the perceptions, concerns, and suggestions from all of the participants, what is the value-added information that would inform the stakeholders about the results and recommendations derived from this study?

Significance of the Study

The findings and recommendations in this study will contribute to the literature regarding mathematics achievement of middle school military and non-military dependent students who perform below grade level. In addition, educators, school board members, researchers, military personnel and their families, may discover support mechanisms that can be used in the classroom when addressing the needs of both military and non-military dependent students achieving below expectations in mathematics. Using these support mechanisms in class may also provide knowledge on how to effectively maximize the resources provided to military and non-military dependent students as a means to increase their proficiency in math.

Furthermore, future grant writers and recipients of grants may find information in this study helpful when attempting to procure funding as a resource to assist in closing the achievement gap among military and non-military dependent students performing

below proficiency in math. The findings and recommendations of this study may also be utilized by government grantors and program evaluators responsible for assigning resources to schools targeting military dependent students falling below grade level in math.

Subsequently, the participants in this particular study produced information based on their perceptions and experiences in the SATT-21 program and these will be advantageous to the school district implementing the grant, as well as the federal government awarding the grant, to determine if the goals/objectives of the grant have been met. The outcomes were of critical importance to the CUSD since the grant was currently in its third and final year with a possibility of renewal.

Finally, families, public stakeholders, and government officials focused on progress and achievement for students and schools, can use information in this study for accountability purposes. In CUSD, parents can collaborate with school officials to discuss their own child's learning outcomes and make decisions about their future educational success. Also, the federal government can review if the school district is meeting accountability benchmarks per SATT-21 grant criteria and determine if the district has met outcomes and be eligible for another three year renewal.

Definition of Terms

It is important that the researcher, participants, and readers have a common understanding of the definition of terms used in this study. The following definitions are provided as a way to mitigate potential misunderstandings or misrepresentations.

Academic Performance Index: A California school receiving an Academic Performance Index (API) score of 800 based on student results from the annual mandated

STAR assessment is considered by the state and the federal government as high achieving or high performing. A California school NOT receiving an Academic Performance Index (API) score of 800 based on student results from the annual mandated STAR assessment is considered by the State and the federal government as a low achieving or low performing school.

Achievement: The term achievement is used primarily as the benchmark to determine a student's success in mathematics as measured by test scores at the end of the year (mandated standardized assessments). Secondarily, achievement in the SATT-21 mathematics (Math Plus class) is also determined through academic classroom grades, pre- and post assessment data collected from classroom examinations and teacher reports.

Achievement Gap: Refers to the observed disparity on a number of educational measures between the performance of groups of students, especially groups defined by gender, race/ethnicity, ability, and socioeconomic status. An achievement gap can be observed on educational measures such as standardized test scores, grade point averages, dropout rates, and college enrollment and completion rates (California Department of Education, 2010).

Assessment and Learning in Knowledge Spaces (ALEKS): A web-based, artificially intelligent assessment and learning system. ALEKS uses adaptive questioning to quickly and accurately determine a student's knowledge in a mathematics course. ALEKS then instructs the student on concepts he/she are most ready to learn. As the student works through the concepts, ALEKS periodically reassesses the student to ensure that topics learned are retained (ALEKS, 2012).

Deployment: The name given to the movement of an individual or military unit within the United States or to an overseas location to accomplish a task or mission (MISA, 2011).

Department of Defense Education Activity (DoDEA): For purposes of this study the term DoDEA and federal government are used interchangeably when describing the actual sponsorship of the SATT-21 grant. DoDEA is a field activity of the Office of the Secretary of Defense and includes schools for children of military service men and women stationed at various bases overseas and in the United States. DoDEA also provides support services where populations of military dependent students are receiving their education in public school systems.

Measures of Academic Progress (MAP): A computer-based assessment program providing ongoing diagnoses, prescriptions, and assessments for students with the outcome focusing on increasing student skills sets and performance levels in mathematics. MAP benchmark assessments are administered three times yearly in order to determine student progress in math.

Military Dependent Students (MDS): Students who have moved into the school being studied, performing below proficiency, and have been placed in the Project SATT-21 math program.

Mobility: The frequent relocation of a student's primary residence resulting in changes of schools and school districts.

No Child Left Behind (NCLB): A landmark in education reform established in 2001 to improve student achievement and change the culture of America's schools. Under NCLB each state must measure each student's progress in reading and

mathematics in grades 3-8 annually and at least once during grades 10-12 (No Child Left Behind, 2010).

Proficiency / Performance: A military dependent student's performance results from state, mandated assessments. While in California the assessment is called Standardized Testing and Reporting (STAR) or California Standardized Tests (CST), other states have different titles. Since students in this study may come from various states and countries, the term standardized assessment will be universal term used to describe each state or countries assessment tool. Nearly all standardized assessments for students place them in proficiency ranges based on their assessment scores. The proficiency ranges usually include Advanced, Proficient, Basic, Below Basic, and Far Below Basic. Regardless of each state's determined range, the goal for all schools and students across the United States based on NCLB is to be in the proficient range at yearly benchmarks.

Project SATT-21 / Grant: A project funded by a federal grant and provided to the California Unified School District (CUSD) specifically designed to meet the needs of military dependent students who are not succeeding in school. The primary goals of Project SATT-21 are to identify military students scoring below proficiency, provide resources to school faculty in order to elevate military students proficiency levels, and assess if these resources and support mechanisms are meetings the goals as described in the grant application.

Resources: The term is used to describe the overall support in the SATT-21 Math Plus class and includes software programs to diagnose and assess student progress, hardware technology such as mini-netbook computers for students, professional

development and training for faculty serving the students in the program, the allocation of funds to create the class, and additional expenditures associated with operating a program not included in the regular and ongoing budget.

Student Online Achievement Resources (SOAR): A web-based computer program for military families and the school districts that serve them. It aims to address the unique challenges facing military children in our nation's public schools, while benefitting the overall student population by providing survey inventories, assessments, tutorials and other resources to support students and parents (SOAR, 2012).

Stakeholder: A stakeholder is an individual with a vested interest in his/her school and the learning outcomes of children such as a teacher, administrator, student, parent and community member.

Standardized Testing and Reporting (STAR) and California Standardized Test (CST): California Standardized Testing and Reporting (STAR), also known as the California Standardized Test (CST), measures how well the California education system and its students are performing based on student achievement data collected from annual, mandated, standardized end of the year assessments (California Department of Education, 2010).

Value-Added Study: The term value-added refers to the additional information provided by this study which was collected from the participants' responses, in conjunction with an analysis of the district's annual assessment report on the progress of the SATT-21 grant.

CHAPTER II

Review of the Literature

"Educators, counselors, and mental health workers associated with public schools are generally not aware of the unique issues and challenges that confront military dependent students. To be effective, they must become aware of military child issues and appropriate intervention" (John Molino, Deputy Under Secretary of Defense, as cited in Tafoya, 2003).

Chapter Overview

This chapter is presented in two sections. The first section provides an introduction, a description of project SATT-21, and an analysis of the literature, with specific attention to the challenges military students experience and the relationship to school academic achievement. Included in this section is a brief description on the federal accountability mandate requiring public schools to address the needs of all students who perform below proficiency, including military dependent students. This section also identifies some of the unique issues that military students experience regarding academic achievement including the theoretical construct of Military Family Syndrome (Cozza, Chun, & Polo, 2005; Jensen, Xenakis, Wolf, & Bain, 1991; Lagrone, 1978), family mobility and relocation (Paredes, 1993; Heinlein & Shinn, 2000), and parent absence / deployment (Hillenbrand, 1976; Lyle, 2006; Engel, Gallagher & Lyle, 2008).

The second section of the chapter describes strategies for educators to employ that can help support military children in school systems and promote their achievement. These strategies include communication between military dependent students and

families with school personnel (Harrison & Vannest, 2008; MISA, 2010), curriculum expectations and student/teacher relationships (Davies, 2003; Klem & Connell, 2004; Skinner & Belmont, 1993), teacher training and professional development (DuFour, 2005; Fullan, 2007; Guskey, 2002, Murphy, 2005), *and technology in education* (Barnett, 2002; Becker, 2000; 2009; Means, 2010; USDE, 2009). This section will conclude Chapter Two.

Introduction

The largest single employer in the United States is the military with 2.2 million personnel spread over 50 states and over 150 countries. More than 1 million students across the U.S. have parents employed by the military, and 84% of those children are under the age of 14 (Engel et al, 2008). Due to Base Realignment and Closure (BRAC) approved in 2005, it's expected over 120,000 family members will be relocated to the U.S. from overseas and thousands more will be relocated from within the U.S. (Government Accountability Office, 2010). As a result, the children of military parents will be relocating to public schools throughout the country.

These military dependent students face multiple challenges as they transition into new school systems. Some of these challenges include: social adaptability involving inclusion and peer acceptance, emotional instability as one or more parent(s) leave the home for extended periods of time due to deployment, and lastly, academic performance issues including, curriculum, instruction and learning problems often connected to the frequent relocation associated with military families (Bradshaw, Sudhinaraset, Mmari & Blum, 2010; Heinlein & Shinn; Paredes, 2003). The Military Impacted School's Association (MISA, 2010) also acknowledges the multiple and unique issues that military

students experience in schools and state the following, "The challenges and stresses that military children encounter have the potential to affect an entire school community and may interfere with the ability of students and staff to focus on learning" (pg. 2). So, how do educators prepare and make an effort to support military students within their schools who may have these experiences, are not achieving at grade level, and perform below academic proficiency?

Recent studies focus on several issues for school systems to address when closing the achievement gap for military dependent students including the following: identifying the unique challenges military dependent students encounter that can impact their learning and achievement, providing support mechanisms designed to increase their learning and achievement, and determining the extent to which support mechanisms are successful. This particular study attempted to expand the dialogue on the current research by providing additional, value-added information to the findings of a school district's assessment of a three-year federally funded grant designed to close the mathematics achievement gap for military dependent students performing below grade level at a California middle school.

Students Achieving Through Technology (SATT-21)

CUSD is a pre-school through grade 12 public school district located near a large military air station and amphibious base. The district is small compared to most school districts in California with a total student enrollment of 3,082. Within such a small district composed of one high school, one middle school, and two elementary schools, the segment of the student population having a military connection is significant at 37% (Boyle, Cass & Coyle, 2009). The large, disproportionate size of military dependent

students in the district when compared to other student groups on the school campuses, in combination with the research demonstrating the challenges associated with military dependent students and their learning, requires the district to pay greater attention to this population of students when meeting the needs of all students performing below grade level.

According to CUSD (Boyle et al., 2009), transiency, or frequent relocation, can cause students to arrive in the district with gaps in their content area knowledge and skills. "At the middle and high school levels, students often have significant credit deficiencies, low grade point averages and test scores, acute social and emotional challenges, socio-economic disparity, higher than normal local expectations, and for some, the incongruity of the rigorous California content standards versus their previous states of residence" (pg. 1). For these students, CUSD has observed lower scores on pre- and post-mastery assessments that require teachers to differentiate the curriculum in order to meet the needs of the district's military dependent students. Additionally, the military lifestyle affects many military dependent students and may manifest itself as lower self-esteem (Boyle et al., 2009).

Since many military dependent students enter CUSD schools during the course of a school year, their academic development and learning is often fragmented. As a result, military dependent students can be at-risk of failing socially, emotionally, and academically. This can be demonstrated in the classroom through inconsistent skills and content area knowledge gaps due to, "extreme variations in state standards, adopted curriculum, school cultures, socio-economic strata, and infrastructural support mechanisms (Boyle et al, 2009)."

Through Project SATT-21, CUSD's goal was to close the achievement gap by implementing an individualized, computer-assisted instructional model. As stated in the grant,

> The goal is to abate the achievement gap between military dependent students and their civilian peers through a highly interactive, individualized, motivating instructional system which provides immediate feedback to the student, teachers and parents. Project SATT-21 is consistent with the Coronado Unified School District's stated goal of "advancing achievement for the 21st century learner." The needs of the twenty-first century learner are varied and different from those addressed by traditional teaching methods. Meeting the unique needs of each and every student is only possible through the use of specific, articulated computer-based instructional programs (pg. 1).

Using the latest research, the district chose specific technology equipment and educational software programs to meet this goal. The success of this goal was measured through the incorporation of pre- and post- assessments, classroom performance, grade point averages (GPA), standardized test scores, behavioral referrals, and proficiency levels in mathematics, primarily Algebra I, among military and non-military dependent students. The grant was implemented in the 2009-2010 school year with the purchase of new software programs, mini-netbook computers for use by military dependent students at school and at home, employment of certificated facilitators who serve as intervention specialists for each target school site, and the implementation of professional development training (Boyle et al., 2009). While the school district allocated SATT-21 resources to all of its four schools, the school targeted for this study was the middle school, grades 6 through 8.

At California Middle School (CMS), the SATT-21 grant provided a select number of identified military and non-military dependent students performing below proficiency in mathematics to have: 1) an additional math class called Math Plus and 2) his/her own

personal netbook computer (mini-laptop) for assignments, assessments, and other Math Plus classroom related work. By having an extra math class, using technology for engagement, and utilizing specific software programs to diagnose and prescribe intervention strategies for mastery, the middle school staff hoped to increase the achievement levels of military dependent students performing below grade level in mathematics. The California Standardized Test (CST) was used as the primary measurement to determine student success in the SATT-21 Math Plus class. Other data used by CMS to monitor student progress is gathered from ongoing benchmarks including pre- and post- classroom assessments, improved classroom performance as observed by teachers, calculating GPA six times yearly school report cards and a reduction in student absences and discipline referrals.

Military Dependent Students: Challenges to School Achievement

Federal Education Mandates

How best to meet the needs of all students in public school systems has been a topic debated among educators for decades. Most recently, this debate has turned to the federal government's policy enactment of 2001 titled, *No Child Left Behind* (NCLB). While the goal of NCLB is to hold schools accountable for the learning of all students, the main criteria of this goal is measured by data gathered from student achievement scores on mandated, yearly assessment tests. Since the majority of funding for public schools is provided by state and federal governments, these agencies use student test scores as criteria when determining accountability and allocation of funding to schools. Schools are required to change their educational programs if students are not meeting specific achievement levels based on the assessment data (Crusifulli, 2006). As a result,

educators are identifying students who perform below proficiency and are attempting to provide them with support mechanisms designed to increase achievement.

Subsequently, due to recent national and state economic problems, schools are competing with each other for government funding to support students who perform below proficiency. Federal grants have become one option and are highly sought after. In this case, the school being studied has a large military dependent student population and has qualified for a federal grant in order to address military dependent students who are not achieving at grade level and are performing below proficiency. Several studies suggest there is a correlation between challenges experienced by military dependent students and academic achievement (Chandra et al, 2010; Engel et al, 2008; Fowler-Finn, 2001; Walls, 2003). Thus, it is critical to understand how school systems with large military dependent student populations are addressing those students who are not achieving at grade level and performing below proficiency. The first step, then, is to understand the challenges these students encounter in school as a result of their military experiences.

Military Family Syndrome

The health and welfare of children and families of military service members is increasing as a result of the United States military deployment across the globe (Cozza, Chun, & Polo, 2005). Many observers recognize the potential stressors that may impact military families, particularly when a military spouse or parent service member is deployed. These stressors are more noticeable in the children of military service members and can be observable in school settings.

Military dependent students bring with them a unique set of needs that are traditionally associated with a military lifestyle. These stressors were first identified by Lagrone (1978) and he coined the term, "military family syndrome." He used this term to describe a set of characteristics often presumed to be associated with children growing up in military families and communities. His research was in a post-Vietnam era and not based on empirical evidence, but rather likely the result of post-Vietnam anti-military sentiment (Cozza et al., 2005). While studies do argue the validity of Lagrone's, "military family syndrome," it has received attention from researchers and practitioners due to the unique circumstances children and families encounter as part of their military lifestyle (Cozza et al., 2005; Jensen et al., 1991).

Even though few studies have been conducted on military families, particularly in school settings, many do agree with Lagrone (1978), in theory, that military dependent children have the potential to be more vulnerable due to the stresses that war or trauma may bring. Studies conducted with military families point out several areas that cause stress among military children and families: (1) parent deployments, (2) injury or loss of parent, (3) mobility and relocation, and (4) peer relationship development (Baker, 2009; Cozza et al., 2005; Fowler-Finn, 2001; Jensen et al., 1991). Since military service members are being deployed at greater frequency and for longer periods of time, there is a need to understand how the stressors described above manifest in school settings, particularly the stressors that may impact student achievement.

Mobility / Relocation

Studies on military families and their children have identified certain challenges as they relate to a parent or spouse employed by the military and how these challenges

can impact children in school (Baker, 2009; Chandra et al, 2011; Engel et al, 2008; Fowler-Finn, 2001; Paredes, 1993; Walls, 2003). The most common experience for a military dependent student is the constant transition from one school to another.

The United States has one of the highest mobility rates of all developed countries. About one fifth of all Americans move annually (U.S. General Accounting Office, 1994). This issue is particularly important to American school children since studies have linked a relationship between mobility and educational attainment. Of the number of Americans who move frequently, military families are the largest percentage.

Over 33% of the military students will move each year (Orthner, 2002). Adolescents who experience transitions (mobility) may be more susceptible to adjustment problems (Heinlein & Shinn 2000; Paredes, 1993; Fowler-Finn, 2001). A study conducted by Paredes (1993) examined the number of moves by a student and the relationship to school achievement. His study utilized standardized test scores as the measure of student achievement over a period of 13 years in a large, Texas school district. Paredes discovered that the number of moves a student makes prior to seventh grade inversely affects his/her standardized test scores. For example, he indicated that students with no moves prior to seventh grade displayed two grade equivalents higher than those students who moved five times prior to entering seventh grade. While each successive move resulted in decreased performance scores, the most significant decline occurred after three moves (Paredes, 1993).

Paredes also suggests other factors related to mobility that can cause an impact in a student's learning. "Moving from one school to another requires a student to make new friends and adjust to a new school environment. These moves can cause stress in the

academic and social life of the student" (pg. 2). New students who move into a school after the beginning of the year, often need teachers to catch them up and re-teach the curriculum. When a new student enters into an established classroom environment, they are not aware of the existing dynamics. New students can also cause management problems since they aren't familiar with classroom rules and procedures. Furthermore, cooperative learning and group activities can be interrupted with the introduction of new team members and record keeping responsibilities for both student and teacher due to frequent entering and exiting become problematic as well (Paredes, 1993).

Heinlein and Shinn (2000) also found that students with just two or more moves prior to third grade scored lower than their peers in reading and math achievement. In addition, these third graders were less likely to be achieving at grade level and this pattern continued up until grade 6. "The early years of elementary school are a particularly critical period for attaining a foundation in basic skills, so disruptions during this time have lasting effects" (pg. 355).

The Heinlein and Shinn (2000) study pulled data from previous research on mobility and student achievement in schools and discovered various similarities when it came to students who changed schools frequently and their academic achievement at early grade levels. Their findings offered that students who move frequently may be more vulnerable to school difficulties and suggested that educators need to offer mobile children additional supports in their new schools. This included the suggestion that educators should assist in getting children to settle in as quickly as possible, and that teachers be attentive to potential learning gaps in students' knowledge that require early remediation (Heinlein & Shinn, 2000). "If children can make up these gaps quickly, the

long-term associations of early mobility with achievement measured years later should be minimized" (pg. 356).

A study by the U.S. General Accounting Office (1994) supported the Heinlinn and Shinn findings and concluded that of the nation's third graders, a significantly greater percentage of those who had changed schools frequently (3 or more times), compared to those who had never changed schools, were below grade level in reading (41% vs. 26%) and math (33% vs. 17%). The General Accounting Office findings were based on a nationally representative sample, a sample that has not only been used by Heinlinn and Shinn, but also other researchers including Wood, Halton, Scarlata, Newacheck, and Nessim (1993) and Simpson and Fowler (1994). For example, the Wood et al., (1993) study reported that children who moved frequently (5 or 6 times) were at an increased risk of failing a grade. Additionally, Simpson and Fowler (1994) found that students who moved 3 or more times were at twice the risk for repeating a grade as children who had never moved.

Cumulative findings from the literature suggest that students who move frequently may perform below grade level and probably will not achieve as well as their peers. The mobile nature of military families places military dependent students at risk by missing learning opportunities and falling into the "achievement gap." As a result, government officials, parents, and educators need to be involved in discovering solutions that provide support at home and in school. While mobility can be a primary factor impacting a military dependent student's achievement in school, another factor is parent absence usually connected to deployments which are increasing in length and resulting in

more potential stressors at home and the school environment (GAO, 2010; Engel et al, 2008).

Parent Deployment / Absence

Researchers have discovered that deployment by a parent can negatively impact children emotionally, behaviorally and academically (Cozza, Chun & Polo, 2005; Engel et al, 2008; Hillenbrand, 1976; Jensen, Grogan & Xenakis, 1989; Lyle, 2006). Unfortunately for military dependent students, parent deployment can become a challenge that causes stress at school as typically one parent is absent from the home for great lengths of time, particularly during times of war. This limits a deployed parent's participation in school as way to support their child, which tends to be the case currently as more deployments are increasing in frequency and length of deployment time (GAO, 2010).

Studies have shown that military dependent children have greater anxiety when a parent is deployed, more so when the deployment involves active combat (Cozza, et al, 2005; Jensen et al, 1989; Rosen, Teitelbaum & Westhuis, 1993). The Jensen et al, (1989) study of Operation Desert Storm (ODS) revealed that children of deployed parents described increases in anxiety and depression as compared to their non-deployed counterparts. The Rosen et al, (1993) research showed increases in internalizing symptoms (stress, sadness) and externalizing symptoms (observable behavior, decrease in school achievement) for children whose parents were deployed to combat areas. However, one of the first studies to link parental absence and deployment to the impact of military children in schools was Elizabeth Hillenbrand's study in 1976 which drew upon

empirical evidence from both parents and educators. This study was significant for its time since there was an existing paucity of research in this area.

Hillenbrand studied 126 male and female 6th grade students whose parents were active duty military. Her research assessed children's intelligence, classroom behavior and various parental factors and how these factors related to school achievement. Hillebrand's study expanded on Lessing, Lessing, Zagorin and Nelsons' (1970) research regarding the experiences of children with military parents. The Hillebrand study found a significantly lower performance I.Q., as well as lower mathematic scores, for children of military absent parents. Hillenbrand's questionnaire to teachers was constructed from a 12 point scale which included topics related to parent absence in the school setting such as overall adjustment, social maturity, tendency toward depression and behavior, school achievement and school conduct. Her findings suggested parental absence can have an impact in school. For example, teacher reported that students with more parent absence (father) were seen as more depressed and poorer achievers in school (Hillenbrand, 1976).

Subsequently, when Hillenbrand collected the data from the parent survey's regarding children of military parents absent or deployed from the home for great lengths of time, she found similar results to the teacher surveys. Many parents believed absences caused stress for their children, particularly when combat was involved. Some parents described their children crying themselves to sleep during such tours of duty, and this stress lowered their children's school work. While the Hillebrand study was one of the first to link school achievement to military parental deployment and absence, few researchers since have continued to expand on this topic, until more recently as more

military servicemen and women have been needed for active duty resulting in longer deployments.

In 2006, David Lyle produced one of the more compelling documents connecting military parent deployment and absence to student achievement in school. His study was one of the first to use standardized test results to determine a correlation between parent absence and academic achievement in school. His empirical analysis is useful for this study as mathematic scores were analyzed to support the claim that a parent's deployment can impact a child's math achievement in school.

Lyle discovered that parental absences during the contemporaneous school year do have an adverse effect on a child's test scores. More importantly, he discovered the longer the period of absence for the parent, the greater the negative effects on a child's test score (Lyle, 2006). He makes the following claim regarding parent absences and a child's performance in school,

> It is not hard to imagine that parental absences and household relocations may diminish a child's sense of security, alter a child's level of responsibility, and/or disrupt a child's social networks. These and other related factors have unpredictable educational consequences for children. For example, a child's academic performance could decline if the child becomes preoccupied with feelings of loneliness (pg. 320).

Furthermore, Lyle also adds to his claim by suggesting how a year of disrupted education during a parent absence can have an impact to a child's education the following year since learning concepts can build upon each other from one year to the next. This can be particularly important for subject areas like mathematics where concepts tend to be taught and learned in steps. These steps need to be understood by students in order to progress to the subsequent concept being taught in class. "A child who falls behind in one year may fall further and further behind with subsequent years of education. A small

educational setback in the third grade could become quite substantial by the twelfth grade" (pg. 345). This suggestion was expanded upon by Engel, Gallagher and Lyle (2008) in one of the most comprehensive studies to date on the subject.

Engel et al, (2008) argue that while there are studies surrounding parent absences and the effects on children, they are relatively scarce and disproportionately focus on military populations because of the unique nature of military service. Engel et al, (2008) claim their study: (1) is the first to focus on child outcomes in the post 9/11 environment, (2) has data much larger and more geographically diverse than those used in previous studies, (3) is the first paper to consider academic achievement across five separate academic subjects, as well as total academic achievement, and lastly and most significantly, and (4) considers new dimensions of a parent's deployment, including the length of deployment. As stated, "In short, none of the previous studies has presented nearly so comprehensive a picture of children's academic achievement during a parent's absence in the current operational environment facing military parents" (pg. 74).

The study employed assessment results and personal characteristics from over 56,000 school aged children enrolled in DoDEA schools. From 2002-2005, achievement and administrative data in combination with military parent service records, Engel et al, (2008) found a parent's deployment for one year does reduce his or her child's total test score. Additionally, the reduction continued marginally after each additional month of deployment. Further analysis showed that the most significant effects were in mathematics and science. Engel et al, (2008) state:

> Our evidence suggests that the timing and duration of a parent's deployment matters, and that the adverse effect may persist for several years. Overall, we find that parental absences, within this military context, are associated with slightly lower academic achievement for children (pg. 74).

While it's hard to disagree with these statements, it should be noted the study only consists of Department of Defense (DoDEA) schools and not public schools. Additionally, the schools are located both in the United States and outside of the U.S. / international schools. Lastly, the study strictly focuses on one particular branch of the military, the Army.

The Engel et al, (2008) research provides a very detailed analysis describing how deployments and absences are affecting the academic achievement of military dependent students. Subsequently, the data indicates that certain academic subjects, such as mathematics, pose greater difficulty for a child whose parent is absent, and that the length and time of parent's deployment does indeed matter (Engel et al, 2008). Furthermore, the findings suggest the cumulative effects of a parent's deployment linger over time to the degree that the "accumulation is a building process, and that a child who falls behind in year one may fall further and further behind with subsequent years of education" (pg. 81).

Whether it's the Paredes (1993) and Heinlein and Shinn (2000) studies on mobility, or the Hillebrand (1976), Lyle (2006) and Engel et al, (2008) studies on deployment and absences, one thing is certain, all of the findings underscore the need for schools serving military dependent students to consider programs and supports that will reduce the effects on their academic achievement.

School Supports for Military Dependent Students

Background

Schools can be a place where stability and normal routine provide a foundation for military dependent students during the challenges of relocation and deployment which result in disruptions to daily life. "The predictability of the classroom helps to cushion the impact of deployment that often includes changes in psychological equilibrium and disruption of individual behavior and coping skills" (MISA, 2010). Schools without a plan for supporting the stability of military dependent students, run the risk of increasing the achievement gap as the needs of these students go unrecognized. Therefore, it's critical for schools to identify military children on their campus, provide them with resources and supports to meet their needs, and assess if these resources and supports are effective. The first step in addressing the needs of military dependent students is to ensure school personnel and military families communicate and continue to develop positive relationships.

Communication: School and the Military Family

Whether a military child relocates and enters a school for the first time, or a parent deploys during their child's school year, school and military family communication is essential in supporting the needs of that child in the educational environment (Heller, Calderon & Medrich, 2003). Schools should have systems in place that welcome and facilitate smooth transitions for military children. A first step for schools in establishing positive transitions for military dependent students and families is through technology.

Since many military families are constantly mobile and more and more are arriving to U.S. public schools from different parts of the country and the world (BRAC, 2005; Engel et al, 2008), schools can use technology to communicate and prepare families prior to their arrival and prepare accordingly. Schools with large military dependent populations can communicate through technology and provide specific resources on their website including pertinent information such as, contact numbers and e-mail addresses of school personnel, registration and enrollment documents, descriptions of classes, extra-curricular activities, and other school related opportunities that will frontload the military student and family. Technology is an effective way for schools to communicate effectively with military families, particularly those who are relocating and enrolling for the first time. Additionally, positive communication through pre-existing relationships with local military service providers designed to assist schools and families in school transitions, is another way to promote academic achievement.

Military agencies can provide a host of services for military dependent students and their families ranging from educational services, to social / emotional services, including financial assistance. In order to facilitate these services, as well as make them known to both military families and school systems alike, is using the services of a school military liaison officer (MISA, 2010).

Schools with large military student populations typically have assistance, or request and generally receive, service coordination in the form of a school military liaison officer. Military liaison officers can keep lines of communication open and collaborate with school officials regarding incoming student enrollment and transition. School military liaison officers can be An excellent resource, and their services can continue well

after the military child transitions into school. The ongoing communication and relationship development between the military liaison officer and the school offers is an additional support mechanism for the military child with an emphasis to promote their academic success, achievement and well being.

While communication, both through technology and the relationship development, with military service providers are valuable links between schools and military families prior to school enrollment and throughout the early transition process, communication is just as important during a parent deployment. Since researchers have discovered that deployment by a parent can negatively impact children emotionally, behaviorally, and academically (Chandra et al, 2011; Engel et al, 2008; Hillenbrand, 1976; Lyle, 2006) ongoing communication between the school and military children and their families is critical in order to support student academic achievement (Harrison & Vannest, 2008; Heller et al., 2003; MISA, 2010).

Open communication with school personnel, such as teachers and counselors, and the children and families of a deployed parent, allows educators the opportunity to understand the challenges and stresses a military child encounters and how these challenges can be associated with school performance and achievement. Communication about deployment, and the impact upon military dependent students, can help educators develop strategies to maintain an optimal learning environment in the classroom and the school (MISA, 2010). While communication is valuable for initial enrollment and transition, and certainly during times of parent deployment, training for school personnel on how to communicate with military families and provide strategies at school and in the classroom is equally as valuable.

School Personnel Professional Development and Training

Many researchers agree that professional development (training) for school personnel, namely teachers, is one of the most effective ways to provide supports for students in the classroom (DuFour, 2005; Fullan, 2007; Guskey, 2002, Murphy, 2005). The most common professional development typically provides school personnel with training and resources usually centered on classroom curriculum and delivery of instruction designed to support student achievement. Furthermore, effective teacher professional development has the potential to serve as a major organizational component for the improvement of teaching and student learning (Elmore, 2007; Fullan, 2007). This same type of professional development is recommended by researchers when it comes to schools with large military populations as a means in to address the unique challenges military dependent students experience and bring into the school environment (Harrison & Vannest, 2008; MISA, 2010).

The kind of trainings beneficial for school staff related to supporting military dependent students begin with awareness training. "Awareness and prevention of problems by teachers and schools may help a military dependent student's emotional and behavioral problems from becoming significant or resulting in the lack of learning that would differentiate a child with an emotional or behavioral disorder from a child who needs temporary services. Alleviating home stressors through direct services can improve the behavioral and academic performance for which schools are held accountable under the No Child Left Behind Act of 2001" (Harrison & Vannest, 2008).

It's also important to note that professional development needs to be an ongoing, continuous process in order to be effective. One-shot in-service workshops for educators

tend to be woefully inadequate (Borko, 2004; Guskey, 2002; Darling-Hammond, Chung Wei, Andree, Richardson & Orphanos, 2009; Murphy, 2005). Due to the potential of professional development impacting student learning, greater research has continued in the last decade to provide a clearer picture on how regularly scheduled professional development for educators has the ability to determine school policy, set classroom practices and influence student learning and achievement (Borko, 2004; Fullan, 2007). In order to serve the needs of military and non-military dependent students, effective professional development training needs to be thoughtfully conceived and delivered based on student learning needs (Guskey, 2002; Murphy, 2005). In addition, Guskey (2002) cites five central components for effective professional development training that can lead to student achievement in the classroom. All center on requiring the school to ask critical questions prior to developing the training and after the training has occurred.

- Participant Reactions – Will/Did the participants value the training?
- Participants' Learning – What will/did the participants learn as result of the training?
- Organization Support and Change – Will/did the school or district leadership advocate for the training and support the participants in the training and in the application of these new skills in the classroom?
- Participants' Use of New Knowledge and Skills – Will/did the participants actually apply their new skills and knowledge in the classroom?
- Student Learning Outcomes – Most importantly, will/did the student improve as a result of their teacher's professional development?

Since California Middle School is located near two major military bases and has a military dependent population of 37%, it makes sense for regular professional development training to occur as the enrollment for military dependent students at the school has increased each year in since 2009. Faculty and staff training on the effects of deployment to military students at school is critical, particularly for teachers, as they provide direct supports in the classroom in order promote achievement for all students. These trainings for staff should include consultation with a school liaison from the military services who can also provide specialized assessment and intervention training for staff (MISA, 2010). Training for school personnel is essential to identify the needs of military children and provide supports in the classroom.

School and Curriculum Expectations

While communication and training among school personnel are necessary to address the needs of military dependent students in order to provide school expectations and supports to promote their academic success, implementation of such expectations and supports, or strategies, is powerful, as well. Supporting military dependent students and their families, especially during times of parent absence and deployment, requires assisting teachers in understanding the experience of students whose parents are in the military. Teacher focused curriculum expectations and supports in this area can educate teachers and staff about unique school challenges military dependent students may experience and provide them with the skills necessary to assist those students and promote their achievement (Heller et al., 2003; Jackson & Davis, 2000; MISA, 2010).

Some of these teacher focused curriculum expectations and supports include monitoring military dependent students and the classroom environment, providing

structure and maintaining objectivity, reinforcing safety and security, being patient, reducing student workload as needed, listening, being sensitive to language and cultural needs, acknowledging and validating feelings, and reinforcing anger management (MISA, 2010). By focusing on students and the classroom learning environment, teachers can establish and maintain routines. The routines are pivotal for military children as they can offer a sense of normalcy and control. Harrison & Vannest (2008) add to this by stating, "An optimal learning environment that maintains stability and predictability will provide an atmosphere in which students can regain a feeling of control and stability" (pg. 21). This sense of control and stability relies heavily on the structure a teacher provides in class, as well as their objectivity.

A teacher who provides structure through a predictable class schedule, classroom rules and consequences, and a fair and consistent assignment of school and class work, supports the notion of a stable environment. One that can lend itself to reassuring military dependent students that they are not alone emotionally and their school is a safe and caring place (MISA, 2010).

Davies (2003) supports the goal of schools being a safe place for military students in his statement saying, "By providing needed emotional support through maintaining a cohesive, predictable classroom with clearly defined expectations, teachers can accomplish this goal" (pg. 3). This safe environment includes the teacher's ability to provide opportunities for all students to learn about each other which can provide for safety and security in the classroom. This includes being sensitive to the emotional and academic needs of the military dependent student. As a result, military dependent students can develop positive relationships with their peers and teachers, but equally

important, they can also make connections to the activities and teaching and learning in the classroom.

Teachers and other school personnel can include activities at the school and in the classroom that provide a connection to military students and the school. These opportunities also allow for non-military students to understand the challenges of their military student peers. Harrison and Vannest (2008) share in this statement by commenting, "Integrating deployment into the curriculum allows educators to provide supports to address the unique needs of this population while continuing to instruct all students in core academic areas" (pg. 22). Furthermore, they also provide a comprehensive list of class wide and school wide supports that can help military students focus on their achievement in school.

Table 1

Class Wide Supports

Subject Area:	**Examples of Instructional Activities**
English/Language Arts	-Instruct students to maintain contact with the soldier and other students by teaching appropriate content and format for e-mails, letters, and instant messenger. -Instruct students to express feelings by writing prose, poetry, research reports, and journals. -Teach public speaking through activities that allow the student to share the deployment experience.
Reading	-Read and discuss letters, e-mails, poetry, books, short stories, and newspaper articles about soldiers, war, and deployments. -Follow by differentiating fact and opinion, identifying the main idea, characters and setting, and different forms of propaganda.
Math	-Use the deployment calendar to count, discuss weather in different countries, and add and subtract the number of days. -Write family budgets and checks. -Teach students to measure and estimate distance traveled by the soldier and between the student and the deployed parent. -Teach students to identify different times zones, including the country

Math (continued)	where the parent is deployed. -Add and subtract time difference between the soldier and the family.
History/social studies	-Use globes/maps to label geographical locations, climate, and landforms of the country where the soldier is deployed. -Research the culture of the country where the soldier is deployed. -Compare and contrast different wars and reactions of families and children. -Teach symbols and meaning of patriotism.
Technology	-Teach the student to create a Web group to communicate with other children of deployed soldiers, or post pictures to help the deployed soldier understand the changes at home. -Teach the student to use computer graphics as self-expression. -Teach parents to use power point presentations for public speaking. -Teach the student to use digital photography.
Art	-Encourage self-expression by teaching the student to use different mediums for drawing and painting. -Create graffiti walls with open-ended sentences.

A classroom activity or a curriculum piece that gives students the time to discuss and share provides an opportunity at school which may cultivate relationships for military dependent students, their peers, and school staff. Developing a positive relationship by listening to military dependent students, school personnel can continue to establish a safe and secure environment allowing military dependent students to feel welcome in school and to focus on their academic achievement. Supports that schools provide to military dependent students, such as direct teaching strategies in the classroom, or counseling services, can be part of an overall school-wide effort to develop programs targeting military dependent students at risk of performing below grade level.

Math Programs for Below Grade Level Students

Efforts to improve mathematic programs for students performing below grade level nationwide has garnered more interest recently due to NCLB. Furthermore, the continual comparisons of U.S. students with students in other countries highlighted from

the President all the way to the media, emphasizes the need for students to become better prepared in math to compete in the workforce and global economy. As a result of these factors, reform efforts for math curricula and programs have involved district and school centered approaches to learning and achievement. "While the debate ensues over what constitutes compelling evidence of math effectiveness, there remains considerable consensus about the need to implement a standards based curriculum including instructional materials and assessment tools" (Mac Iver & Mac Iver, 2009, p. 223).

In CUSD, the response to address below grade level students in mathematics was to provide highly individualized technology based instruction through the SATT-21 grant program. At the middle school, this was accomplished by having students placed in the Math Plus class with specific services designed to increase their level of proficiency in math. Part of planned success of the Math Plus class relies on the research which supports the need for schools to have school wide consistency and coherence in curriculum and instruction, rather than the "hodgepodge" of materials sometimes found across the same grades in numerous schools (Balfanz, Mac Iver & Byrnes, 2006; Newmann, Smith, Allensworth & Bryk, 2001). A strong, consistent math program, which is highly individualized and follows a coherent standards based approach to learning, has the ability to increase in student achievement.

Since 2002, the United States Department of Education (USDE) has sponsored many research studies focusing on the types of standards based math programs, including technology and web-based programs, that produce positive results in mathematics. Additionally, these studies targeted the review of intervention programs to promote middle school students' math knowledge and skill sets (USDE, 2008). The USDE

released a report in 2008 that provided evidence of their research compiled since their 2002 initiative. The evidence suggested there are greater student gains in math achievement from most of the math and technology math based programs studied over the course of their ongoing research (USDE, 2008). The studies also recommended that more attention needs to be given to middle school mathematics programs. Stemming from the USDE's initiative to review effective technology and web-based math intervention programs to raise student achievement, one of the more recognized studies on middle school math achievement related to a comprehensive math model conducted in Philadelphia, 2009.

In what would be considered a comprehensive school reform model (CSR), the mathematics model currently used in a large Philadelphia school district provides a uniform, consistent approach to math instruction for middle school students. Much like CUSD, Philadelphia uses mandated end of the year assessment data to determine growth, but also uses benchmark assessments throughout the year to review student progress on math skill mastery and growth. Results from a study conducted in 2009, demonstrated students in grades 5-8 who displayed achievement gains were positively relative to the number of years the schools had implemented a specific math curricular program (Mac Iver & Mac Iver, 2009; PSDE, 2007). Furthermore, middle schools with a consistent intervention math model that had been in place over the course of a students' typical three year middle school enrollment, noticed gains in math achievement. Schools that use specific and proven math curricular programs for students performing below grade level in math can be a factor when attempting to close the achievement gap.

In addition, having a clear and articulated math program aligning with state standards, common instructional materials, and supported through technology and web-based intervention programs, can also result in student mastery of math skills and increased levels of achievement (USDE, 2008; Mac Iver & Mac Iver, 2009). Furthermore, a school's consistent use of a math program, in combination with a student's consistent use of that program (approximately three years in middle school, 6-8 grade) can also support students performing below proficiency in math (Mac Iver & Mac Iver, 2009; PSDE, 2007). Students who receive comprehensive school programs and stay enrolled within the same school environment for numerous years, reduce the disruption of their learning experiences and minimize curricular inconsistencies and incorrect placement in classes. As a result, students can discover greater successes in particular courses, such as math, increase their level of math confidence and self-esteem, make meaningful connections to the curriculum, and develop relationships with peers and adults at school. All of these topics have been linked to health, social, and educational outcomes for students (Blum, 2005; CDC, 2009).

Student and Teacher Relationships

Student and teacher communication and interaction can naturally lead to the development of a positive relationship in the classroom. Research has shown that in order for students to learn what is delivered through an effective curriculum they must be able to access support from their teachers (Klem & Connell, 2004). In addition, support from a teacher can influence how a student acclimates to the classroom environment, which can ultimately lead to a positive school experience. Regardless if students do or do not have a close relationship with their teacher, that relationship can contribute to a

student's adjustment in school (Pianta & Stuhlman, 2003). Adjustment in school for military dependent students continues to be a challenge particularly when establishing peer and faculty relationships.

Students need to feel that teachers and school personnel care about them and are actively involved in their learning process. This faculty involvement needs to be balanced between faculty guidance and student individual decision making, also known as autonomy support (Klem & Connell, 2004; Skinner & Belmont, 1993). Autonomy support can be particularly helpful with military dependent students. Autonomy support is often used by military dependent students since mobility factors can result in their relationships with peers and teachers being short lived.

Since many students want respect from their peers and teachers in order to make decisions, there also needs to be clear expectations from the school faculty so students understand the importance of making appropriate decisions. If teachers establish curriculum and learning expectations that are consistent and predictable, then students become aware and understand the consequences of not meeting expectations directly associated with their decisions MISA, 2010). School and teacher expectations, imbedded with autonomy support for student decision making, all hinges on the development of a healthy relationship between the student and teacher. Klem & Connell (2004) suggest there is a direct linkage between teacher support, student engagement and academic success which is further displayed in their *Reduced Self-System Process Model.*

Table 2

The Reduced Self-System Process Model

CONTEXT	ACTION	OUTCOMES
Experiences of Support from Teachers	Engagement	School Performance and Commitment
Structure	Ongoing	Test Scores
Autonomy Support	Reaction to Challenge	Attendance
Involvement	N/A	N/A

Klem and Connells' model (2004) demonstrating the Context, Action and Outcomes is similar to the SATT-21 grant criteria for gathering student demographic data. In particular, the *Outcomes* category has a relationship to research question one described in this study when determining student outcomes. Furthermore, the *Reduced Self-System Model* establishes a rubric to show another understanding of the dynamic between student and teacher relationships in the classroom.

Studies indicate that students who have caring and supportive relationships in school demonstrate more positive academic values, attitudes, and satisfaction in school (Battistich, Solomon & Kim, 1995; Klem & Connell, 2004; Felner, Jackson, Kasak, Mulhall, Brand & Flowers, 1997). Furthermore, these students are more engaged academically which can also influence their achievement (Battistich et al., 1995; Klem & Connell, 2004; Skinner & Belmont, 1993). Engagement from students also relies on the type of curriculum expectations in the classroom. Technology is one of those engagement tools in education that is becoming more of a teaching and learning expectation in the 21st century classroom.

Technology in Education

School systems are one of the largest growing users of technology in the United States (USDE, 2010). However, very few studies have focused on how the integration of technology in the classroom is impacting student achievement (Dynarski, 2008; USDE, 2009). While many researchers agree the use of technology in school systems has the potential to support student engagement in the instructional curriculum and impact learning and achievement, much less is understood on specifically how to implement the use of technology tools in order to accomplish this goal (Dynarski, 2008; Means, 2010; USDE, 2009).

Technology access. One of the greatest barriers of using technology in the classroom, including software and hardware programs, is access (Means, 2010). In this regard, California Middle School has an abundance of access for students to use technology on a frequent basis. As a result of the school budgeting and setting aside monies for technology hardware, including the SATT-21 grant that has provided an additional windfall of support for technology, any student in the school at any given time has one-to-one access with a computing device supported by the school. Providing access to students at school is the first step in implementing effective technology in the classroom. However, as stated by Means (2010), "Technology adoption and implementation require not just funding, but also ongoing effort" (pg. 285).

Efforts to support the effective use of technology in the classroom for student learning require schools to be innovative with a primary focus on student learning outcomes (Means, 2010). These learning outcomes are imbedded in several major recommendations provided by researchers who are recognized in the field of technology

and education and include (1) school wide coherence (2) teacher training (3) technology access and (4) support for technology use (Barnett, 2002; Becker, 2000; Means. 2010; USDE, 2009). Learning outcomes can be greatly enhanced only when educators have the resources to provide meaningful instruction with technology tools and realize there will be significant results in student achievement.

School wide coherence. Project SATT-21 has the eventual goal to impact not just military dependent students performing below proficiency with support services through technology hardware and software programs, but also to provide support services to all students performing below grade level in mathematics. Currently the SATT-21 program offers limited services through the Math Plus class and other intervention services for military and non-military dependent students in mathematics, but the plan is to expand into reading and all grade levels for students performing below proficiency. The concept of expanding the SATT-21 program services is part of a larger, school wide coherence to deliver instruction to students and train faculty with technology tools to support student learning and achievement.

Teacher training. Research shows that teachers who make good-faith efforts to learn about technology software programs and also provide this education to their students, demonstrated increased gains in student performance and achievement in the classroom (USDE, 2009). School leaders and administrators need to give professional development time to teachers with technology hardware and software tools if they expect to see results in the classroom. This professional development needs to occur frequently, as needed, in order to support teachers with effective strategies to deliver technology instruction and services in the classroom. As a result of proper training and practice for

teachers using technology hardware and software programs, studies have indicated that those teachers not only implement technology more often and earlier in the year, but they also showed modest gains in student achievement (USDE, 2009; Means, 2010).

Infrastructure and technical support. Studies have shown that schools with well articulated infrastructure plans and support services had modest gains in student achievement as opposed to schools without them (USDE, 2009; Means, 2010). Technology infrastructure has to be adequate to support hardware and software programs designed to operate effectively in order to support teacher instruction and facilitate student learning. The effectiveness of the SATT-21 program relies heavily on the infrastructure working consistently and the support from IT personnel. A comprehensive technology plan to support the SATT-21 program and military dependent students performing below proficiency in math is necessary in order to collect legitimate data. Review of that data is critical to determine if student learning outcomes are being met.

Conclusion

Some conclusions can be made from the current literature reviewed. While a better understanding of providing support mechanisms for military dependent students performing below grade level has been revealed, there are few studies and interventions that address the needs of military dependent students in public school systems (Engel et al, 2008). Even though intervention strategies and supports for all students are required (NCLB, 2010) and widely agreed upon by researchers and educators alike, how to effectively close the achievement gap remains challenging for schools, but particularly for schools with large military dependent student populations. Adding to this challenge is the reality that resources, including funding and support from those who establish

school mandates, remain scarce to non-existent. Therefore, there is a need to look at formal support programs specifically designed address military dependent students who perform below grade level.

Void of using information available on support programs designed to close the achievement gap for military dependent students, government officials, researchers, and practitioners, will continue to provide already limited resources available to increase student achievement, but not truly know the effectiveness of such programs. By gathering this type of data and information, all stakeholders invested in supporting military dependent students may better realize how to be effective in such an endeavor. As a result, students will receive the tools necessary to be more successful in school, and educators will be able to deliver instructional strategies, interventions, and programs designed to meet the needs of military dependent students performing below grade level.

CHAPTER III

Methodology

Chapter Overview

The research methodology for the study is described in the following sections of this chapter. The first section discusses the purpose of the study and the three central research questions. Next, the research design, research setting, the participants, and role of the researcher, are presented. As the chapter concludes, the data collection and the methods of data analysis are described with reference to the literature and central questions of the study.

Purpose of the Study

The purpose of this study was to provide additional, value-added information, to CUSD's annual assessment report of a three-year federally funded grant designed to close the mathematics achievement gap for military dependent students performing below grade level at their middle school. This study sought to focus on the purpose of the grant through a review of the district's annual assessment report and from the perspectives of the participants involved in the grant including, the students, parents and faculty members associated in the SATT-21 program at the middle school. The findings in the district's evaluation plan matrix and its annual assessment report were essential to the framing of three central research questions. The central questions were critical in developing a series of sub-questions which were asked of the participants involved in this research study (See Appendices C-E).

The following three central research questions were posed in order to address the purpose of the study:

Research Questions

1) What did student data reveal about student participation in the grant?
2) What were the perceptions, concerns, and suggestions of the participants relative to the resources provided in the program?
3) After a careful synthesis and analysis of the perceptions, concerns, and suggestions from all of the participants, what was the value-added information that will inform the stakeholders about the results and recommendations derived from this study?

Research Design

To address the purpose and the central questions of the study, a qualitative design was utilized featuring interviews and surveys with participants. Some quantitative processes were used to gather descriptive data, primarily in support of research question one. This approach is common when designing a survey or interview instrument (see Appendices B-E) particularly when showing if/how they are related (Bogdan & Biklen, 2006). Quantitative, descriptive statistics was employed to present student demographic data and show a relationship to the purpose and central questions guiding the study. Using descriptive data in unison with a qualitative approach is supported by the Concurrent Triangulation Strategy (Creswell, 2007).

By conducting interviews and surveys with the participants, the researcher analyzed and interpreted the data collected from the experiences described by the participants. In addition, through the implementation of qualitative interviewing techniques and survey methods, the study was further enhanced and then analyzed to reveal themes, patterns, and trends from the perceptions of the participants. This

qualitative approach offers the researcher an opportunity to collect "thick, rich data" while trying to understand phenomena in a specific context and to expose the participants' perceptions within that context (Patton, 1985). Patton goes on to further describe qualitative inquiry by adding,

> Qualitative inquiry is an effort to understand situations in their uniqueness as part of a particular context and the interactions there. This understanding is an end in itself, so that it is not attempting to predict what may happen in the future necessarily, but to understand the nature of that setting – what it means for participants to be in that setting, what their lives are like, what's going on for them, what their meanings are, what the world looks like in that particular setting. The analysis strives for depth of understanding (pg.1).

In this study the researcher became the primary research instrument using in-depth interviewing and surveying techniques in order to gather the data. As Bogdan and Biklen note (2006), application of inquiry allows the researcher to gather meaningful data, since the researcher becomes a frequent member at the location where the participants and events of interest naturally occur. Additionally, the inquiry process provides the researcher with data that is richly descriptive. As a result, these rich descriptions assist the researcher to understand the meaning participants have assembled to their lives in the context of their organization. Furthermore, it also describes their learning regarding the subject of interest (Bogdan & Biklen, 2006; Girvin, 2001, Merriam, 2002; Patton, 2002).

Research Setting

This study was conducted at one southern California public middle school. The total student population is approximately 764 students in grades six through eight, 26% of whom are ethnic minorities and another 4% are not identified. Approximately 16% of the 764 students are identified as socioeconomically disadvantaged based on

qualifications for the free and reduced lunch program. Two percent of the student body is English Language Learners (ELL) and 13% percent have been identified with learning disabilities. Sixteen percent receive inter-district status which means they live outside the resident boundaries of the school district (Ed-Data, 2010).

There are 52 staff members at the middle school. Two are certificated administrators (principal and assistant principal), thirty-two are certificated teachers, and nineteen are classified (secretarial, custodial). All thirty-two teachers are fully certificated and identified as highly qualified, meaning they have met the credential requirements under NCLB designated to teach all children and their ability levels (Ed-Data, 2010).

The school has consistently met Adequate Yearly Progress (AYP) requirements based on results from annual student assessments under the NCLB policy established in 2001. The school's academic performance index (API), or raw score from the assessments, continually places the school as one of the highest in the county and among schools in California with a similar profile. The school also has a strong character education program which has garnered recognition and is used as a model for other school districts. The school has been recognized as a California Distinguished School and has met criteria to become a National Blue Ribbon School. The school is visited regularly by educators regionally and globally. For all intent and purposes, the school and a large majority of the student population, is considered high achieving or high performing based on criteria mandated by federal statutes. However, there are students and groups of students performing below proficiency, including military dependent student groups.

This school, including some of its faculty and students, was selected to be studied for several reasons. First, the district has received a three-year federally funded grant, the only one in the state, in an effort to close the achievement gap among military dependent students performing below proficiency in mathematics. Second, the grant is currently completing the third and final year of implementation, and an assessment of progress toward the grant goals was timely considering the invitation for renewal. Third, the researcher is the principal of the school being studied and accessibility to the participants and gathering data from other sources in the study was fairly attainable.

Participants

The participants in this study included twenty students, three parents, and six faculty members, all of whom are involved directly, or indirectly, with the Project SATT-21 grant. The student participants were administered surveys by the researcher, while both the parents and faculty members were personally interviewed. All of the participants were asked similar questions throughout the assessment protocol (see Appendices C-E).

Student participants. The twenty students surveyed were 6th and 7th graders enrolled in the middle school's SATT-21 Math Plus class for the school year 2011-2012. The students were placed in the math class primarily based on results from state mandated standardized assessments revealing their proficiency levels from their previous 2010-2011 school year. All students who performed below proficiency falling into the basic, below basic and far below basic levels were placed in the Math Plus class. These students received enrichment since the math taught in this class is designed to support the math content in their regular math class. Essentially, these students had two math

classes. Students in the Math Plus class had one math class in the general, regular education environment with their own grade level peers. The second math class, or the Project SATT-21 Math Plus class, was composed of both military dependent and non-military dependent students in grades 6 through 7.

It should be noted that of the 20 students in the Math Plus class, only five were military dependent when the survey was performed. In addition, while the class is open to all three 6-8th grade levels, only 6th and 7th graders were enrolled in the course at the time of the survey. Due to the small sample size, when some of the findings, results, and recommendations are stated in the proceeding chapters, they need to be interpreted with caution as to not generalize all military and non-military dependent students in public school systems. These variables are described in greater detail in the limitations section of this chapter, as well as proceeding chapter, Chapter Four, and followed up by further discussion in Chapter Five.

Parent participants. The three parents interviewed for this study had children in the Math Plus class. All three were female military spouses of officers in the Navy, and each had one 6th grade male child in the Math Plus class.

The parents were surveyed because of their awareness of their child's involvement in the class. Since research shows that parent involvement is a key factor in supporting their child's achievement in school (Epstein, 2001; Henderson & Mapp, 2002; Jensen et al, 1989; MISA, 2010; Roeser, Eccles & Sameroff, 2000), it was important for this researcher to capture the parent experience regarding Project SATT-21. This included their understanding of the project, how and why their child was selected for the project, and the expectations for their child and the school, resulting from their child's

participation in the project. Furthermore, they were able to share a unique perspective because of their knowledge and experience as a military spouse with military dependent children enrolled in a public education school system.

Faculty participants. The rationale for including the six faculty members in the study was due to the nature of their duties and their role in facilitating and implementing Project SATT-21 at the middle school as well as within the district. As result of their roles, they had the most knowledge in the curriculum, instruction, and project evaluation and design to support military students performing below proficiency in mathematics. In addition, all faculty members were associated with a number (1-6) to provide a reference for the reader when reading Chapter Four.

The first faculty member described is the district director of curriculum and learning (Faculty 1). The director of curriculum and learning is responsible for overseeing the entire grant at the district and school site levels, coordinating meetings between the county, district and school personnel involved in the grant, reporting out data to stakeholders, the accountability of the grant, and communicating information about the grant to federal, county, and local officials (Boyle et al, 2009). Additionally, the director of curriculum and learning was just promoted in the 2011-2012 school year, and familiarity with her new role and the SATT-21 grant occurred simultaneously. Prior to this position, she held a two year position as the assistant principal at one of two elementary schools in the district and was a teacher at that same school for twenty-six years. She has also lived in the community during her employment in the district, she is a military dependent child herself, as well as a military spouse. While she did not write, or

have all of these duties when the grant originated, she assumed all of these responsibilities due to her predecessor's retirement.

The next faculty participant described is the assistant principal at the middle school who just began her fourth year in the position (Faculty 2). She was also teacher at the middle school for four years prior, teaching the subjects of English Language Arts and History. She has a total of 13 years experience in the profession. This year, she has assumed a much greater role in the grant. She is responsible for the grant at the middle school and works closely with the director of curriculum and learning to ensure implementation and fidelity of the program. Her responsibilities at the middle school include: identifying and placing students in Project SATT-21, making decisions at the site level on how the curriculum, materials, technology and tools will be used for teachers and students, reporting information out to stakeholders about Project SATT-21, evaluating the progress, and providing suggestions for the grant.

One of the four teachers being interviewed for the study was the current Math Plus teacher (Faculty 3) who is also the department chairperson for the five math faculty members at the middle school. He just completed his fifth year of teaching, has experience with all three grades of students, and teaches a variety of math levels. While he teaches the Project SATT-21 Math Plus class for one class period, the remaining class periods he teaches are in the school's regular math classes with the general population of students who are not supported by the grant. He was selected by his principal for the position after his predecessor for the Math Plus class changed teaching assignments.

The next teacher participant taught the Math Plus class for two years at the middle school (Faculty 4). She was also the SATT-21 liaison for each school site and shared

knowledge with district officials about the grant in its first year, 2009-2010. She teaches the one 6th grade math class of general education students performing below grade level, and because the grant allows for resources to be used in general education as well, she still uses several.

The last two faculty participants for the study include a 7th grade math teacher who teaches a class of general education students performing below grade level (Faculty 5), and a teacher at the high school who has a SATT-21 class (Faculty 6). Both use resources of the SATT-21 grant at their sites. However, the high school teacher uses the resources more exclusively since she teaches a class similar to Math Plus and is directly funded by the SATT-21 grant. Her perspective is also valued since she has been teaching the class at the high school since the beginning of the grant. She has extensive history with both the middle and high school math programs since she has served as a faculty member for both schools at different times during her career.

Researcher Role

In a qualitative study, the primary instrument for data collection and analysis is the researcher (Bogdan & Biklen, 2006, Glesne, 1999, Merriam, 2002). As the researcher, I conducted in-depth interviews with the participants and collected data from both interview and survey instruments. By doing so, I was able to examine the experiences of the faculty in the program, as well the students and parents participating, in order to determine if the implementation of the grant was meeting the proposed outcomes.

It should be noted that I was also the principal of the school being studied. I recognized that my professional position as a principal in public education, and the

school being studied, could raise questions regarding my own subjectivity. Therefore, it was important for me to closely check my interactions, perceptions, and actions, and to be open in describing them to ensure that my positionality was well articulated and accounted for. I took every precaution to report the data objectively. As stated by Patton (1990) in Girvin's study (2001), "The point is to be aware of how one's perspective affects fieldwork, to carefully document all procedures so that others can review methods for bias, and to be open in describing the limitations of the perspectives being presented" (482).

Data Collection and Analysis

Data Collection

The study followed a mixed methods approach in an attempt to confirm and corroborate the findings of the research. The three central questions of the study were utilized in developing a specific set of sub-questions for the interview and survey instruments which were then used with the research participants (See Appendices B-D). The interviews and surveys involved open ended questions and discussions in order to cross-validate data through the Concurrent Triangulation Strategy (Creswell, 2007). In this study, and noted by Concurrent Triangulation Strategy (Creswell, 2007), priority was given to the qualitative approach since most of the central questions in the study, and the involvement from the participants, were qualitative in nature and supported this approach. As described by Creswell,

> This model generally uses separate quantitative and qualitative methods as a means to offset the weaknesses inherent with one method with the strengths of the other method, and in practical application, the priority may be given to either the quantitative or qualitative approach. Furthermore, data can be gathered concurrently, happening in one phase of the research study, which will allow for a shorter data collection time period as compared to other approaches. This type of

> traditional mixed methods model can prove to be advantageous because it's quite common among practitioners and researchers and typically results in substantiated and well-validated findings (pg. 217).

The qualitative approach used featured interviews and surveys with participants following the program evaluation models of Stufflebeam, Foley, Gephart, Guba, Hammond, Merriman and Provus (1971) and Patton (1997). The Context-Input-Process-Product (CIPP) evaluation model by Stufflebeam et al, (1971) constitutes four years of work specifically intended to produce an evaluative model for educational programs. As described by Isaac and Michael (1990), the CIPP model incorporates three basic tenants of program evaluation,

> First, the evaluation is a continuous, systematic process. Second, this process includes three pivotal steps: (1) stating questions requiring answers and specifying information to be obtained (2) acquiring relevant data (3) providing the resulting information as it becomes available to potential decision makers who can consider and interpret it in relation to its impact upon decision alternatives that can modify or improve existing educational programs. Third, evaluation supports the process of decision making by allowing the selection of an alternative and by following up on the consequences of a decision (pg. 6).

Patton (1997) defines program evaluation as a, "systematic collection of information about the activities, characteristics, and outcomes of programs, to make judgments about the program, improve program effectiveness, and/or inform decisions about future programming" (p. 23). While his definition of program evaluation is similar to Stufflebeam's and many others that are widely accepted among researchers and practitioners, it's his Improvement-Oriented Evaluation model that will also be used for this study since it incorporates an additional focus on improvement, more than just rendering decisions based on evaluation results. Both the CIPP and IOE models parallel each other and were useful for this study since the research required answers to questions, the acquisition of relevant data, and the provision of a platform for which decisions by

stakeholders could be made. However, the intent of this study was not to exclusively provide information for decision making purposes, but also to provide information geared toward improvement and making things better.

Data Analysis

Data analysis is the process of bringing order, structure and meaning to the mass of data collected. While it does not proceed in a linear fashion or follow one specific model designed by researchers and theorists, the first step of analysis is to develop a manageable classification or coding scheme (Marshall & Rossman, 1989; Patton, 2002). In this study, the analytic procedures to address the central questions were placed into the following steps as outlined by Marshall and Rossman (1989): organizing the data; generating categories, themes, and patterns; testing the purpose of the study against the data; searching for alternative explanations of the data; and writing the report. Even though different types of methods to address the research questions were being used, including quantitative methods for descriptive statistics and qualitative methods for interviews and surveys, the analysis of the data followed the same outline above.

Also supporting the analysis of this study was the Constant Comparative Method by Glaser and Strauss (1967) and further described by Bogdan and Biklen (2006). This model is very useful when analyzing multi-data sources. In this study, both surveys and interviews were being conducted with three different participant groups, and this model facilitated the process of controlling the scope of data collecting when multiple participants were being researched (Bodgan & Biklen, 2006). This model supported data analysis particularly when comparing the perceptions, concerns and suggestions from the participants in the program.

Research Questions: Participant Data Collection and Analysis

1) **What did the student data reveal about student participation in the grant?**

Data collection. Research question one had ten sub-questions (see Appendix B) that relied on general, descriptive statistical data. As a result, the following methods were used in order to collect data. It should be noted that while question one and the accompanying ten sub-questions were quantitative in nature, this approach is common when designing a survey or interview instrument particularly when showing if/how they are related (Bogdan & Biklen, 2006). Quantitative, descriptive statistics were only used during this research to show a relationship to the purpose and central questions guiding the study as supported by the Concurrent Triangulation Strategy (Creswell, 2007). Demographic data was collected using a variety of methods based on the following six specific criterion (A-F) described in the grant as measurements to address goals and benchmarks among military dependent students participating in the SATT-21 Math Plus class at the middle school:

A) State Mandated Assessments- The researcher collected and reported student data from the annual, state mandated assessments. The current mathematics score from each student was reviewed and compared (if applicable) to previous scores on mandated assessments to determine level of achievement and progress relative to participation in the program.

B) Pre- and Post mastery assessments – The researcher collected and reported student data from the MAP software program which gauges student progress throughout the year.

C) Improved Classroom Performance – The researcher collected and reported data based on teacher observations, teacher written records, and other teacher rubrics used to determine improved classroom performance.

D) Higher Grade Point Averages (GPA) - The researcher collected and

reported data based on grades distributed six times yearly from school report cards made accessible by Genesis, the school's student information system.

E) Reduction in School Absences – The researcher collected and reported data on absence reports made accessible by Genesis, the school's student information system.

F) Reduction in School Discipline Referrals – The researcher collected and reported data based on discipline reports made accessible by Genesis, the school's student information system.

Data analysis. The researcher organized the data into a document using a Microsoft Office Suite program. This was accomplished by using features of the program that allowed for the management and analysis of quantitative and qualitative data. In order to compose the data, students in the Math Plus class were organized alphabetically by last name, and tabs were created at the top of the document to include the multiple categories described for question one in Appendix B (IE: question(s) 1b-male to female, 1c-officers to non-officers, etc.). As themes or patterns emerged from the statistical descriptive data, notes were taken right on the document. This data provided a general description of the military dependent students who made-up the Math Plus class and was further analyzed in conjunction with remaining central questions described below to address the purpose of the study.

2) What were the perceptions, concerns, and suggestions of the participants relative to the resources provided in the program?

Student Survey: Data collection. Question two for the student participants had seventeen sub-questions (see Appendix C). The method to collect data regarding the sub-questions for the students was accomplished through a survey of the students on one day during the SATT-21 Math Plus class. A survey questionnaire was distributed in class after the researcher prepared the students, and their parents, in advance about the purpose

of the survey. This "frontloading" took place through personal conversation with the students during class. Parent notification took place through a personal phone call and was followed up by a written document describing the program, including a permission form for the parent and student to sign. Parents had to approve their child's participation in the survey in order for the survey to be conducted. All parents and students agreed to participation in the study, so all 20 students enrolled in the Math Plus class at the time of the survey were included.

The surveys with the students took anywhere from 30 minutes to one hour and a half. While the questions for all of the participants were the same, the expectation for middle school students to respond in detail to questions, and for extended periods of time, was unrealistic. Therefore, every attempt was made to make the questions clear and concise. In order to assist in this regard, technology was used since students were engaged with this type of format. Furthermore, technology was a thrust of the program, so the survey questions were not only used to stimulate engagement, but also to observe students knowledge of using the netbook devices and other technology skills sets learned in the program.

While the intent was to use the netbooks themselves for the actual survey in the Math Plus classroom, the school's new P.C. technology lab was utilized due to its reliability and the greater control afforded to the researcher. The surveys were performed at 20 individual computer stations using a simple word document format which was downloaded by the researcher for convenience to the student and researcher. After students completed the survey, they simply informed the researcher who then downloaded it to a flash-drive. After the surveys were properly stored on the flash-drive,

the survey was deleted from the student computer. All documents were confidential and didn't include an area for any names or descriptions. Students were randomly assigned to a computer station, and numbers were assigned to each computer so all participants were known as 1-20.

Student Survey: Data analysis. The researcher analyzed and synthesized the data collected from the student survey questionnaires by reading and re-reading each response document looking for key terms and recurrent themes. Directly in the margins of each student survey, the researcher began to select categories for the significant themes that emerged. Once categories were established for major re-occurring themes, codes were given to the common key terms and those codes were placed under the major theme categories. Through the assistance of technology, all key terms and relevant patterns were organized using the actual Word survey questionnaire from the students. Therefore, integration of data from the questions were readily organized, identified, and compared in order to gain valuable insights about the SATT-21 program.

Parent Interviews: Data collection. Question two for the parent interviews had six sub-questions similar and adopted from the seventeen sub-questions in the student surveys. All six questions were used for interviews with the three parents whose children were participating in the SATT-21 mathematics program (see Appendix D). From the data collected during the student surveys, the researcher teased out factors that needed further clarification, sought confirmation on factors that revealed similarities and differences, and provided each parent interviewee the opportunity for an open-ended discussion on some of the themes that emerged from the student questionnaires. The researcher compared and contrasted the interviewees' responses based on the three

central research questions posed, their perceptions, concerns and suggestions regarding the SATT-21 program, and with the findings in the literature.

The interviews with the parents were conducted individually. The interviews provided the researcher with an opportunity to gain a better understanding of how the parents described their perceptions, concerns and suggestions of Project SATT-21. The interviews were digitally recorded and notes were taken by the researcher. The interviews with the parents were approximately one half to one hour in length, and the recordings were transcribed verbatim by the researcher within a 48 hour time after the interview.

Parent Interviews: Data analysis. In order to make sense of the data collected from the interviews with the parents, the interviews and the field notes were transcribed by the researcher. After reading and re-reading the interviews and the researcher's field notes, data was organized under titles given to major themes that frequently emerged. Similar to the student survey questionnaire, codes were added in the margins of the transcriptions when purposeful terms and patterns related to the central questions continued to develop. There were then placed under the major theme categories. Based on the responses from all of the participants, for both questions two and three, common major themes, key terms, and relevant patterns, were integrated into a Word document for organization, identification and accessibility purposes. Since the perceptions, concerns and suggestions from the participants were primary themes in addressing the purpose of the study, any responses that had common terms, similar descriptions and patterns, were coded and categorized within these primary themes. The common and reoccurring information shared by the participants provided descriptions and interpretations in order to substantiate the findings in this study.

Faculty Interviews: Data collection. Question two had fifteen sub-questions (see Appendix E) that were used for the interviews with teacher and administrative participants or faculty participants. Similar to the parent interviews, the researcher teased out factors that needed further clarification, sought confirmation on factors that revealed similarities and differences, and provided each interviewee the opportunity for an open-ended discussion on some of the themes that emerged from the earlier survey and interview responses. The researcher compared and contrasted the interviewees' responses based on: (1) the three central research questions posed, (2) their perceptions, concerns, and suggestions regarding the SATT-21 program, and (3) the literature reviewed.

The interviews with the school faculty were conducted individually. The interviews provided the researcher with an opportunity to gain a better understanding of how the school personnel described their perceptions, concerns and suggestions of Project SATT-21. The interviews were digitally recorded and notes were be taken by the researcher. The interviews with the school employees were approximately 45 minutes to one hour in length, and the recordings were transcribed verbatim by the researcher within a 48 hour after the interview.

Faculty Interviews: Data analysis. Data collected from the interviews with school personnel were transcribed by the researcher. After reading and re-reading the interviews and the researcher's field notes, data was organized under titles given to major themes that frequently emerged. Similar to the questions asked by the students and parents, codes were added in the margins of the transcriptions when purposeful terms and patterns related to the central questions continued to develop. Those were then placed

under the major theme categories. Based on the responses from all of the participants, common major themes, key terms, and relevant patterns, were integrated into a Word document for organization, identification and accessibility purposes. Since the perceptions, concerns and suggestions from the faculty participants were primary themes in addressing the purpose of the study, any responses that had common terms, similar descriptions and patterns, were coded and categorized within these primary themes. The common and reoccurring information shared by the faculty participants provided descriptions and interpretations in order to support the findings in this study.

3) **After a careful synthesis and analysis of the perceptions, concerns, and suggestions from all of the participants, what was the value-added information that would inform the stakeholders about the results and recommendations derived from this study?**

Data collection. Data collection regarding question three relied on data collected for question one, as well as all of the responses from the participants in question two and the accompanying sub-questions in Appendices C-E. Both survey questionnaire and interview data were critical to address the analysis for question three. Using the organized data already analyzed from question two, key terms and patterns were placed under major category themes. Those terms and patterns revealed the similarities and differences based on the responses described by the participants. Categories were appropriately titled, and further analysis continued as the development of this question was the foundation for recommendations to the school district regarding the SATT-21 program and described in Chapter Five.

Data analysis. Analyzing data from the survey and interview responses with the assistance of a computer program for organization, identification, and accessibility, allowed for recommendations to question three. By teasing out major themes and key

terms from the questions posed in Appendices C-E, synthesis and analysis of the perceptions, concerns and suggestions described by the participants about the program, composed the recommendations to inform the district in the final year of the grant. The analysis of the data and the subsequent recommendations will be useful for CUSD implementing the grant, and the federal government providing the resources for the grant, in order to review program effectiveness. Also, these core categories described by the participants were compared to discover any relationship to the literature that had been described in this study, including the analysis of the perceptions, concerns, and suggestions from the participants in the SATT 21 program. This also includes information related to the current literature on the challenges and supports military dependent students experience in school systems.

Limitations

There are limitations to this particular study. First, the sample size of the military dependent student population within the Math Plus program was much smaller than anticipated. This created challenges in order to capture a greater picture of the experiences military dependent students encounter with their education. Therefore, when some of the findings, results, and recommendations are stated in the proceeding chapters, they need to be interpreted with caution as to not generalize all military and non-military dependent students in public school systems.

A second limitation also relates to the small sample size of military dependent students in this unique middle school mathematics program which limited the generalizability of the findings. The student participants for this study were a relatively small number, both military and non-military dependent, and they came from the same

southern California public middle school. Studies conducted on students in non-middle school grade levels, in other regions and other demographics, may elicit different results. This sampling procedure decreases the generalizability of the findings and will not be generalizable to all students and all school systems (Creswell, 2007).

A third limitation pertains to the specificity of the grant including, the goals and objectives, the curriculum and assessment procedures, and the student population of the school being studied that is composed of 37% military dependent students. Part of this military dependent student population makes up the participant sample group, and as a result, the sampling population is exclusive. Salant & Dillman (1994) state, "We have no way of knowing the accuracy of non-probability sampling, hence whatever new information is gained through the research applies only to the sample itself" (pg. 64).

The sample population also extended to the topic of self reporting. The student participants, due to their age and maturity, may have had difficulty understanding the questions or even fatigued during the survey questionnaire. While the nature of self-reported data is limited by the fact it can rarely be independently verified, student participants may have exaggerated or represented outcomes as more significant than is actually suggested from other data (Salant & Dillman, 1994).

A fourth limitation is the nature of the research and the research setting. As the researcher, I brought potential scrutiny from the reader to the study since I'm the principal of the school being investigated. In this regard, I carried my own personal knowledge of the profession and experience of the school / school district to the study. I remained aware that my own bias did not impact the data or what Patton (2002) would

describe as empathetic neutrality. Therefore, I made every effort to be sensitive to my own objectivity and report the findings accurately.

A fifth limitation is the fact the study is occurring in my own *backyard* (Glesne, 1999), as all of the participants had prior experiences with me. These prior experiences could have confined the quantity of data provided, since the participants may have perceived I already had knowledge of their experiences. In addition, this potential confinement of data from the participants included my role in the school and my positional authority. Therefore, every attempt was made during the interview process, and throughout the course of the study, to provide the participants with opportunities to openly express their perceptions based on the research questions.

CHAPTER IV

Findings

Chapter Overview

The purpose of this study was to provide additional, value-added information to the findings of CUSD's annual assessment report of a three-year federally funded grant designed to close the mathematics achievement gap for military dependent students performing below grade level at their middle school. The first section of this chapter presents the districts' findings of the annual assessment report of the intervention strategies provided through the grant the district has identified as currently supporting students performing below grade level in mathematics. The second section of this chapter describes the findings, as well as an analysis and summary of the participants' responses and experiences with the Math Plus class, and ancillary services supported by the grant. Three central research questions supported the development of the assessment protocols, or specific questions, used with the participants in order to understand their experiences with the Math Plus class; the middle school math intervention program provided by the SATT-21 grant.

CUSD's Annual Report for Project SATT-21

Evaluation: Goals and Study Questions

According to the annual assessment report, three overarching goals were established by the SATT-21 grant in order to help close the achievement gap between, "CUSD's military population and the total population via integration of technology into curricula and instruction" (pg. 2). In the area of mathematics, CUSD identified this as goal #2, and it read, "To improve the math skills of students in grades 2-Algebra 1 or

grades 2-5, 6-8, and 9-11" (pg. 2). While this was the district's goal for all students performing below grade level in math, this was also the primary focus for this study. In order to address this goal, the district included several key questions in the annual assessment report designed to assist their evaluation of the grant. The questions included:

- Will military-identified students meet school year 2010-2011 targets in grades 2-5, 6-8 and 9-11 in mathematics?
- What is the overall impact of the SATT-21 DoDEA grant on CUSD?
- What other means of supporting the academic progress of military-identified student in CUSD are in place?

In order to address CUSD's goal for mathematics and the questions used to evaluate SATT-21 progress in this area, the district had their own evaluation methodology. This included specific methods and types of data collected to analyze and interpret progress on the goal(s).

Evaluation Methodology and Types of Data

CUSD has a strategic plan that is reviewed throughout the year, updated, and shared annually to multiple stakeholders in the district. The strategic plan is comprised of five goals with specific key actions related to each goal. Furthermore, all schools in the district have their own strategic plan which follows the same review format. The strategic plans hold the district accountable as measured by the state, and some district's strategic plan goals and key actions were intentionally integrated into the evaluation and annual assessment report of the SATT-21 grant. The following Strategic Plan Goals and Key Actions were specifically used in the assessment of the grant:

1. Learning: Discern the unique characteristics of 21st century students and implement plans to educate students using online instructional techniques and digital tools.
2. Fiscal: Communicate the District's fiscal prudence and stress the need for additional significant financial support in order to sustain and expand student success
3. Assessment: Encourage a culture where all shareholders seek the highest level of performance and develop assessments that evaluate progress toward this goal

In addition to utilizing the strategic plan goals and key actions for evaluating the SATT-21 grant, there are several district staff members responsible for overseeing and ensuring it's progress, as well as other stakeholders who provide valuable input in the assessment. This is described in greater detail in the annual report.

> Under the supervision of CUSD Superintendent, monitoring progress and ensuring accountability and the success of SATT 21 is the responsibility of the Director of Curriculum and Instruction. Site administrators report to the Director on grant-related issues such as staffing, instructional schedules, student assessment and progress, data, technology, and training needs. The Director visits each site several times a month. Since the inception of the SATT 21 grant, CUSD continues to maintain a relationship with an external evaluator who is a retired administrator from the County Office of Education (COE). As a small school district with limited resources, CUSD also contracts with COE's assessment division for data analysis and compilation assistance in order to show SATT 21 grant progress. The Director and the External Evaluator collaborated often during SY 2010-11, including several visits to all CUSD target schools by the external evaluator. Along with formative and summative performance/quantitative data, observations by the Director and External Evaluator, as well as both verbal and written feedback from intervention and classroom teachers, site administrators, parents, students, and other district office administration, provide qualitative data for all SATT 21 grant evaluations. A cross-section of stakeholders from the community, including military parents, contributes to the CUSD annual strategic plan and each site annual strategic plan. The Director reports on SATT 21 progress to the Governing Board and the public annually (pg.3).

Findings and Impact on Student Achievement

Goal 2: Mathematics. According to the findings from the district's annual assessment report, military dependent students in grades 6-8 made significant gains in performance in 2010-2011 school year. This growth was measured by comparing the end

of the year STAR/CST results of 2010 to 2011. The total growth of all students in the mathematics was 10.93%, exceeding the SATT-21 grant target by 1.93%. In addition, the military dependent students at this level outperformed the total population (SATT-21 Annual Report, 2011)

The district felt the supplemental Math Plus course required for below proficient students in grades 6-8 was, "a complement to their regular math course and provided students with a *double dose* of mathematics every day" (pg.5). In addition, some of the web-based programs, such as ALEKS, seemed to offer students very specific, individualized assessments and tutorials via a diverse instructional delivery. Utilizing the netbook computer hardware purchased by the grant, ALEKS would frequently assess and reassess each student to determine if math topics were learned, as well as retained.

Another area the district noted in the annual assessment report was high student motivation to perform well in the Math Plus class. Since the Math Plus class takes place of an elective course, as students are continually re-evaluated through the web and software based programs, a determination can be made if placement in the class is still necessary (Gallant, 2011). CUSD noted that several students were able to exit the Math Plus class at the semester and participate in another elective course.

Also, other software programs such as *Skills Tutor* and *Destination Math* were used as resources for the Math Plus class and throughout the middle school. Lastly, all math students in the Math Plus course were assessed with the new Measures of Academic Performance (MAP). As stated by the district,

> The MAP mathematics' data on strengths and areas of need were shared with each student, who in turn set goals for improvement. Timely feedback to students on their performance through programs like MAP and ALEKS is a growing practice at CMS and is positively impacting student achievement" (pg.5).

Contributing Factors to Student Achievement

In the annual assessment report, the district identified three major categories linked to student achievement: (1) Instruction, (2) Technology, and (3) Serving the needs of military connected students. These categories provided an organization to the evidence later described by the district in this section of the chapter.

Instruction. According to the annual assessment report, all schools continually identify military and non-military dependent students for, "additional support, the development of individual learning paths, integrated use of technology, and ongoing progress and monitoring, which has caused the instructional culture at all sites to shift to that of intervention and increased accountability in meeting the needs of all students via these resources" (pg. 6). This culture is also identified and supported in the district's strategic plan.

In addition, the district pointed to the pilot program of MAP in 2010 which allowed additional instructional support for a limited number of students at the middle school. The technology based MAP program is a diagnostic tool and benchmarks individual student progress in math, as well as providing "small group individual standards-correlated instructional paths for students" (pg. 6). Furthermore, those students and teachers who participated in MAP received ongoing professional development in order to better understand the program and in turn support teaching and learning specifically designed to meet the needs of individual students. Lastly, due to improved student achievement reported by CUSD, especially in grades 6-8, and lessons learned from the pilot year of MAP, CUSD expanded the use of MAP to more than 1200 students district-wide for the school year 2011-2012 (Gallant, 2011).

Technology. The district purchased an additional 300 netbook computers during the 2011 summer, for a total of nearly one thousand netbooks purchased with grant funding since 2009. According to CUSD, "Netbooks are being used with fidelity in intervention and other classrooms at all sites" (pg. 7)." Also, during 2011-2012 school year, some school sites' administration allocated community-based funding towards additional netbooks and other technology computing devices, such as I-Pod Touch devices and I-Pads, resulting in a growing culture of one-one computing on CUSD campuses. At this point, the middle school has more than enough computer devices provide each student with their own device at any given time.

The annual assessment report also includes data on the Instructional Technology (IT) services and technology infrastructure. Because of the technology demands required by the SATT-21 grant, the district had to address it's increased technology needs. One factor was the number of current IT staff at CUSD had not increased in several years, and this resulted in delays in meeting the growing demands of instructional technology at all sites. In addition, CUSD's entire network infrastructure was overhauled during the summer of 2011, and approximately 1.2 million dollars was spent on replacing or renovating every component of the district's technology, "including the addition of over 130 wireless access points district-wide, required for many grant-purchased resources such as netbooks and web-based software programs" (pg. 7). Furthermore, the District IT structure was reorganized including the hiring of personnel. According to the annual assessment report, most of the technology overhaul has been completed, and new robust systems have significantly improved service to sites. The district claims that,

> The management and success of every technology-based program and service to district sites continues to be a priority for CUSD. Frequent professional

> development opportunities in the area of technology have been provided to all district teachers in many ways, including two full-day professional development days focused on a variety of technology topics, including grant-based initiatives, during March and August 2011 (pg. 7).

Serving the needs of military-connected students. California Unified School District has one of the largest military installations in the world, and well over 37% of their students are military dependent. As a result the district points to the, "understanding of the connection between the social and emotional health of children and their academic success, as evidenced by the district mission statement:

> Through rigorous academic standards, high expectations, and a coordinated curriculum, the California Unified School District, in partnership with our small, involved community, will graduate students with the knowledge and skills necessary to excel in higher education, careers, society, and life, with the confidence not only to dream, but to determine their futures" (pg.7).

A majority of this evidence displaying CUSD's commitment and understanding of the fact that military dependent students have unique needs is noted below. Subsequently, the district has emphasized how the SATT-21 grant has furthered the awareness of these unique needs of military dependent students and the school services significant to supporting them (Gallant, 2011).

- Assistant Superintendent for Student Services is CUSD point person for all military issues
- Local Planning Council compact with Naval Base California; meetings are held three times a year; Director of Curriculum and Instruction is a participant; periodic attendance by Naval Base California Commanding Officer and CUSD Superintendent
- CUSD has a designated Navy Region Southwest School Liaison Officer
- Assistant Superintendent for Student Services serves on the local Navy Exceptional Family Members Program
- Military Family Life Counselors serve at each CUSD site
- District and site websites for military families
- Military identification a part of registration/enrollment

- With permission from military families, support services are established immediately at enrollment
- New student orientations held at each site annually
- Military Family Information nights are held annually
- Ambassador Clubs and Student to Student Clubs are at each CUSD site to assist all transitioning students
- Local California community Student and Family Enrichment (SAFE) Organization alliance and coordination of services with School Liaison Officer
- California Connections Corner meeting room located at the High School for Skype conferencing with deployed military parents and their child's teachers, meetings, college resources, etc.
- Skype conferencing at the Elementary Schools for parent-teacher conferences
- High School Graduation webcast allow for deployed parents to view the ceremonies
- Military representation on site and district strategic planning and other district committees
- "Bring a Veteran to School Day" and "Elementary School 1 Honors Military Heroes Day", Veterans Day observances
- Operation BIGS and Operation PALS at Elementary School 1 which connect local service men and women with students
- Services from YMCA, FOCUS, Fleet and Family Services, and other support services, especially at Elementary School 1
- Elementary School 2 Military Parent Group
- Excused absence for military family reunification
- SOAR at Home resource promoted for all CUSD families (pg. 8).

Conclusions and Recommendations

According to the annual report for the 2010-2011 school year, the following conclusions and recommendations below were made for 2011-2012 school year; the third and final year of the SATT-21 grant. As noted previously, that school year was when this study took place. A review and analysis of these recommendations are described in greater detail in the proceeding chapter. Recommendations from the district annual assessment report include:

- Continue professional development for all CUSD teachers on the integration of software and netbooks into all classrooms to individualize instruction for ELA and mathematics
- Continue professional development for all CUSD teachers on formative assessment Measures of Academic Progress (MAP) and individual goal-setting conferences for students
- Provide MAP information nights for parents
- Study *Compass Learning* web-based intervention software programs, which are completely aligned to MAP and can prescribe learning paths for students based on MAP performance as a possible replacement for *Destination Learning*
- Identify web-based program for grades 9-11 in English Language Arts that meets criteria for provide appropriate intervention for students reading and writing below grade level and earning English credit and how it integrates with District's adoption of new ELA curriculum for special education (*Read Well* and *Language!*)
- Establish a district-wide Response to Intervention committee
- Work with California High School administration, counseling staff, and military students in grades 9 -11 to increase credit recovery in these grades
- Include military student(s) on secondary strategic planning teams
- Work with School Liaison Officer to provide more training for CUSD staff on the needs of military students and their families
- Create an assessment battery for Elementary School 2's incoming new students similar to Elementary School 1.
- Continue to work with Elementary School 1's administration to examine the needs of ASE teachers in order to better ensure retention of staff (pg. 9)

CUSD's military dependent students are the largest subgroup in the district. This includes other subgroups such as English Language Learners, socio-economic groups, and race/ethnicity. Military dependent students span across all grade levels and subject areas, and they are also a part of every other subgroup in the district (Gallant, 2011). The district feels, "The award from DoDEA for the SATT 21 grant has had a major affect on CUSD staff's awareness of the unique needs of military students, the growing philosophy of intervention and personalized education for each student, the overall instructional

model at each school site, 21st century skills, and ultimately, improving student achievement in many of the outcome areas" (pg. 9).

As described in the overview at the beginning of this chapter, the first section focused on presenting the findings from CUSD's one, and currently only report, for the SATT-21 grant. The second section of this chapter focuses on the findings from the participants' responses and experiences with the middle school's SATT-21 intervention program, the Math Plus class, and ancillary services supported by the grant.

Math Plus Class: Demographics

Student Data and Participation

The initial question was designed to gather general descriptive information on both military and non-military dependent students who make-up the Math Plus class. The research question read: *What does the student data reveal about student participation in the grant?* This data provided a general description of the students who participated in the Math Plus class.

During the time of the student surveys in March 2012, there were currently twenty students in the Math Plus class. Five of those students, or 25%, were military dependent, while the remaining fifteen, or 75%, were not. Even though the class started in late August with twenty-five students, five students moved during the school year. Four of the five students who moved were military dependent and left school due to parent military work related reassignments, and the one non military student moved for reasons unknown to the researcher. All other students remained in the class for the duration of the school year and only one military dependent student joined the class after it started in late August 2011. Therefore, data gathered on all military dependent students in the class,

regardless of the time they entered or left the school, was gathered with an understanding that those who began the class in August would not be present for the student survey. The survey was the primary piece of student data collection. Since data was collected in March 2012, only those twenty students who were enrolled in the class at that time and present for the survey, were referenced during specific portions of the findings in this chapter.

Of the five military dependent students enrolled in the Math Plus class during data collection, one was female (20%), and she was in 6th grade while the other four males (80%) were 6th or 7th grade students. There were no 8th grade military dependent students enrolled in the class during the survey. Two of the five military dependent students' parents were non commissioned officers, one of the two being the female student, while the remaining three males' parents were all commissioned officers. All students were in the class for one full school year, from the first day of school in late August, 2011, until the last week of school in early June, 2012. However, all five of the students have varying degrees of enrollment dates in the school district. The longest tenured student has five years in the district, where the shortest tenured military dependent student is new, enrolling just this year. The table below shows the entire military dependent student population enrolled in the Math Plus class, regardless of how long they were present in the class.

Table 3

Military Dependent Student Demographic Data and Participation:

Student I.D.	Grade Level	Gender	Parent Status	Duration in Class
Student A	6	Male	Officer	1 School Year
Student B	6	Female	Non-Officer	1 School Year
Student C	6	Male	Non-Officer	8/2011-2/2012
Student D	6	Male	Officer	1 School Year
Student E	7	Male	Non-Officer	1 School Year
Student F	6	Male	Officer	1 School Year
Student G	8	Female	Non-Officer	8/2011-12/2011
Student H	8	Female	Non-Officer	4/12-End of Yr.

While the purpose and over-arching goal of the SATT-21 grant is to address the achievement gap of military dependent students in the district, each school site has specific benchmarks from which data is collected in order to review and gauge the effectiveness of the grant at each campus. These benchmarks include data gathered from the overall general military dependent student population at the middle school and those specifically in the Math Plus class. A description of the benchmark categories are presented below.

The Standardized Testing and Reporting program (STAR), also known as the California Standardized Test (CST), was used to collect academic performance level data from the past 2011 school year against the current 2012 school year. This score was a

primary variable for placement in the Math Plus class, as well as a baseline to chart progress over the course of the year. Since all states are mandated to have a standardized achievement assessment for students, California's term for their mandated assessment, STAR/CST, was used in this study regardless of which state a child may have taken their standardized assessment in the 2011 school year.

The Measure of Academic Progress assessment score (MAP) was taken by all Math Plus students three times throughout the 2012 school year in order to gauge progress. This computer adaptive assessment is considered a pre- and post mastery assessment. The results provide immediate feedback for the student and the teacher in math areas that need remediation. All military dependent students in the Math Plus class did not have previous MAP scores in mathematics since it was a pilot program in 2011. None of the current 2012 Math Plus students participated in the class before, therefore, they had no previous MAP scores. Since the Math Plus students are assessed by MAP three times per year, fall, winter, and spring respectively, the scores were compared against each other to determine progress.

Grade Point Averages (GPA) were also considered to determine placement into the Math Plus class, as well as to chart progress. At the middle school, GPA's are collected six times yearly in approximately six week increments. For purposes of the grant, progress was measured by the GPA from the previous 2011 school year against the GPA of 2012 school year.

In addition, absences and discipline (referral documents) were considered for placement into the Math Plus program and reviewed for student progress during the course of the school year. In this regard, absences and discipline referrals were compared

against the 2011 and 2012 school year. The table below provides the benchmark categories and the data collected from those categories related to military dependent students in the Math Plus class.

Table 4

Military Dependent Student Benchmark Categories and Data

Student ID	STAR/CST	MAP	GPA	Absences	Discipline
Student A	2011 = 354 2012 = 326	Fall= 214n Winter=222 Spring=217n	2011= 2.7 2012 = 3.0	2011= 10 2012= 8	2011 = 1 2012 = 0
Student B	2011 = 305 2012 = 278	Fall = 203n Winter = 220y Spring = 205n	2011= 2.5 2012 = 3.0	2011= N/A 2012= 7	2011 = N/A 2012 = 0
Student C	2011 = 265 2012 = 269	Fall = 202 n Winter= 198 n Spring = 209n	2011= 2.5 2012 = 2.5	2011= N/A 2012= 6	2011 = N/A 2012 = 0
Student D	2011 = 334 2012 = 338	Fall = 231 y Winter = 224y Spring = 226y	2011= 2.4 2012 = 3.0	2011= 4 2012= 2	2011 = 0 2012 = 0
Student E	2011 = 349 2012 = 339	Fall =228 y Winter= 230 y Spring =222 n	2011= 2.0 2012 = 1.5	2011= 5 2012= 8	2011 = 0 2012 = 0
Student F	2011 = 382 2012 = 369	Fall = 230 y Winter = 231y Spring = 227y	2011= 3.2 2012 = 3.3	2011= 8 2012= 12	2011 = 0 2012 = 0
Student G	2011 = 302 2012 = N/A	Fall = 222y Winter = N/A Spring = N/A	2011= 2.5 2012 = 2.5	2011= 6 2012= 2	2011 = 0 2012 = N/A
Student H	2011 = N/A 2012 = 342	Fall = N/A Winter = N/A Spring = N/A	2011= 3.0 2012 = 3.2	2011= 7 2012= 2	2011 = 0 2012 = N/A

Measures of Academic Progress (MAP). The majority of the military dependent students in the Math Plus class increased their scores on the pre- and post mastery MAP assessments when compared to the national averages. While MAP is an individualized assessment using results from a student's score to prescribe math focus areas they need to work on, you can also access data averages for an entire group, or class

of students, when compared to the national averages. In this case, most students averaged in the area of proficient throughout the course of the year. This includes the entire class averaging proficient or above on math skills.

The two students who did not continually perform proficient over the three testing periods with MAP were 6th grade, male and female students. Furthermore, both had parents who were non-commissioned officers. Additionally, the male student dis-enrolled from the school for a period of time during the school year, only to return a month later. This was due to a military reassignment, and the family realizing it would be better to keep the student at the same school until the end of the year.

Grade Point Averages (GPA). As described above, grade point averages were used to determine growth and progress. Most military dependent students increased their GPA's during the course of the Math Plus class when compared against the 2011 and 2012 school years. This is an average of all grades, in all classes. However, since all students in the Math Plus class had two math classes in their 2012 schedule as opposed to 2011, there was an expectation for an increase in GPA or a proficient grade in their regular math course, as well. In this regard, all students in their regular math class scored proficient grades or above. A letter grade of B would be considered proficient, while a letter grade of A would be advanced.

Attendance/Absences. Another criteria of measurement was for students to show a decrease in absences and referrals. Military dependent students decreased their number of absences in school compared against the 2011 and 2012 school year while enrolled in the Math Plus class. However, most military dependent students in the Math Plus class were not considered to have a high number of absences when compared to the

overall student population. To the contrary, most of these students had good attendance in school, and absences didn't appear to be an issue. The same could be said for discipline referrals in school.

Discipline referrals. No military dependent students in the Math Plus class had referrals in 2011 or 2012, so growth could not be measured. While one student did have a referral in 2011 for talking too much in class, he didn't have one in 2012, so one could say growth was achieved. This young man was a 6th grader with a father who was a commissioned officer.

Standardized Testing & Reporting (STAR/CST). In addition to data gathered from the Math Plus class to determine individual or group military dependent student progress, the SATT-21 grant also requires that information be collected on all military dependent students in the school. This information includes CST proficiency levels for all military dependent students currently enrolled and the gradual increase of CST scores of among those students until they reach the proficient levels on the CST assessment. The eventual goal is to have 100% of all students, not just military dependent, achieve proficiency by 2014, as required by the federal mandate of No Child Left Behind (NCLB, 2001).

It should be pointed out that a district wide system to identify military dependent students did not occur until the school year 2010. As a result, the school was unable to gather accurate STAR/CST results for individuals or groups of military dependent students any year prior to 2010. Therefore, when the grant was approved in 2009, the district included STAR/CST results for all 6-8th grade students in order to get an initial baseline average for future comparison against military dependent students. In this case,

the score was a total average of all three grade levels combined and portrayed students in the proficiency level and above. The average was 68% in the 2008 school year, and this average was used throughout the three year cycle of the SATT-21 program to compare military dependent students and their STAR/CST growth. Below are the specific questions from the SATT-21 grant and the data responding to them. In addition, these questions were included in the assessment protocols in order to support the three major research questions of this study.

1. Question: What percent of military dependent students in grades 6-8 at the target middle school were proficient or above on the CST for mathematics?

   Response: 2011 Proficient and Above = 74%
   2012 Proficient and Above = 72%

   Benchmark: By June 2010, an average of 71% of the 6th through 8th grade military dependent students in the target middle school will score proficient or above on the CST for math, an average increase of 3% over the school year 2008 level.

2. Question: What is the data on this goal/was this goal met?

   Response: No
   2008 = 68 % = Average, all 6-8th grade students
   2010 = 62% = Average, all 6-8th grade military dependent students

   Benchmark: By June 2011, an average of 74% of the 6th through 8th grade students in the target middle school will score proficient or above on the CST for math, an average increase of 6% over the school year 2008 level.

3. Question: What is the data on this goal/was this goal met?

   Response: Yes
   2008 = 68%% = Average, all 6-8th grade students
   2011 = 74% = Average, all 6-8th grade military dependent students

Benchmark: By June 2012, an average of 78% of the 6th through 8th grade students in the target middle school will score proficient or above on the CST for math, an average increase of 10% over the school year 2008 level.

4. Question: What is the data on this goal/was this goal met?

Response: No
2008 = 68%% = Average, all 6-8th grade students
2012 = 72% = Average, all 6-8th grade military dependent students

According to the benchmarks set forth by the original SATT-21 grant approved in 2009, growth by military dependent students in the area of CST's is mixed. Again, it's important to point out that military dependent students during the course of the three year grant were being compared against the entire student population from 2008 STAR/CST score results. This was due to the district not having an accurate reporting system to gather specific information on students, including data from STAR/CST results identifying military dependent students. However, by the end 2010 a new student information technology system was implemented in the district, and specific data on all students was available. With this system, accurate data can be gathered on military dependent students including STAR/CST results, placement into the Math Plus class, and measuring growth and outcomes.

As the benchmarks were established for the grant in 2009, the district was using assessment data that was available to them at that time. Since identification of military dependent students did not exist, the district used baseline data from score results averaged from all students. This information does in fact assist the district since all students, by NCLB mandate, are supposed to be at 100% proficiency in math, as measured by the STAR/CST results, in the 2014 school year. While 100% proficiency in

math is a goal stakeholders want for all children, many believe this will be an impossible goal to accomplish for most schools across the United States. Regardless, the SATT-21 program allowed CUSD to begin the process of obtaining accurate information on military dependent students, a group commonly misunderstood and not represented when studying groups of students performing below proficiency.

After spending more time with the district director of curriculum and learning, reviewing the data, and asking many questions, the district is being realistic and looking for growth among its military dependent students. The original benchmark percentages were set with targets of student growth in mind, while still trying to be accountable to NCLB to achieve 100% proficiency for all students by the 2014 school year. This continues to be a challenging task for several reasons: (1) military dependent students were unable to be identified through a formal system that would assist in gathering accurate STAR/CST and student data until the grant finished its first year in 2010, and (2) achieving 100% proficiency in math for all students in the nation is a lofty goal due to the unique needs of each student and each school under the parameters of the current NCLB accountability criteria.

Overview of Findings: Student Survey and Parent and Faculty Interviews

Introduction

This section of the chapter will be organized by integrating the participants' responses from the survey and interview questions relative to the resources provided in the program. These questions were addressed using a qualitative approach, and the data was continually analyzed. The analysis resulted in the identification of three major focus areas: (1) communication, (2) curriculum, and (3) professional development. Additional analysis

generated common themes and key terms that were placed within the three major categories. The categories and themes were summarized within the context of the perceptions, concerns, and suggestions from the participants' experiences in the program.

Communication

Notification. Once placement in the Math Plus class was determined by the school administration and faculty through a review of specific criteria as described in Chapter Three, students were notified via mail about their placement into the program. This notification took place during the summer and up until the day before school started when all students were able to access their class schedule. From the students' perspective, there were a variety of responses regarding how they were notified about being placed in the Math Plus class. Those are reported below in Table 5.

Table 5

Notification

Type of Notification	Number = 20 Total Students	Percentage
Letter Mailed Home	7	35%
On Schedule	7	35%
Parent Told Student	2	10%
E-Mail	1	5%
Unsure	3	15%

Similar to the students, the three military dependent parents interviewed for the study also responded with varying degrees of how they were notified about their child being accepted into the Math Plus class. However, according to the parents, the primary notification was by seeing it on their child's class schedule the day before school started.

> We found out on the day before school when we got his class schedule and we saw that he was not in an extra activity, was not in band like we thought he would be, he was in this extra math class.
>
> (Parent 1, Survey, Q-21)

While the school's intent was to notify all students via a mailed letter during the summer, this didn't occur for everyone placed into the Math Plus class. There were several reasons for this, one of them being school readiness. The program and class structure for the upcoming school year was not planned until after student dismissal for the year. This made it difficult for the school to have meaningful conversations and meetings with students and parents to disclose the nature of the program and placement in the class.

Another factor was the change in school personnel within the SATT-21 program. The program was new to certain staff members at the district and site level. As a result, the primary staff members who have involvement in the SATT-21 program and the Math Plus class, needed time to be trained and become knowledgeable on past and current program practices and structures. This includes having knowledge of effective systems to notify students and parents of their placement into the Math Plus class.

In addition, the master schedule created scheduling issues that impacted notification or placement in the Math Plus class. For example, as each individual student's schedule is finalized during the summer, unfortunately some students are not able to enroll in all of their requested classes due to times or periods of class offerings. These needs or requests are termed *conflicts*, and many variables play into master scheduling conflicts including, the need to balance class sizes, not having enough elective classes, student requests, budgetary constraints, and legal issues binding specific students to certain classes. In the case with the Math Plus class, it's only one class offered at one

time during the school day. Therefore, every student who needs the Math Plus class has to take it at a certain time while still having mandated, required core courses such as English, history, science and math.

Additionally, there were communication delays with staff surrounding the Math Plus class and notifying and scheduling students into the class. Staff who coordinate the scheduling efforts were off duty for the summer recess. Most faculty and staff conclude their work calendar year immediately after the students finish their school year in early June. School personnel are not required, nor encouraged, to continue to come to the school and provide work related services for many reasons, including the fact they are not compensated. Since school resumes normal hours of operation in August, scheduling students into the Math Plus class was communicated to faculty and staff at that time. Moreover, this was three days prior to the students returning for the first day of the new school year.

Furthermore, one of the larger issues was data availability in order to appropriately place students. Specific data to support student placement, including teacher recommendations, final exams, and end of the year grades, is typically supplied at the very end of the school year. Again, this delays student placement because teachers and others responsible for utilizing such data were off duty. Also, the STAR/CST scores were not released by the State Department of Education until then end of August, as well. In order to get a comprehensive picture of a child who needed the Math Plus class, you needed to have accurate data, and these factors added to the complexity of placing military dependent students in the Math Plus class.

Lastly, many military dependent students who did end up qualifying for the SATT-21 program, relocate and become mobile prior to, or immediately following, the end of a school year in numerous public school systems across the nation. In this respect, since the middle school office closes during a portion of the summer, little to no information is known about any of the new enrollees unless parents have been proactive prior to the school closing. As a result, data and critical information to place those students in the Math Plus class was delayed until the school year started.

Faculty member's notification about the SATT-21 program took place in the beginning of 2009 when district communication about the acceptance of the grant was disclosed at school board and faculty meetings, and in district and school publications. Considering the SATT-21 grant had the potential to provide great opportunities for students and was a huge accomplishment for the district in general, faculty notification about the grant seemed to be recognized and understood by many in the district despite their direct or in-direct involvement. However, those directly involved in the SATT-21 grant at the district and site levels were notified by their administration about their potential role. In particular were teachers at the site level who had conversations with their site administration about the program, their interest in the program, and how they could be involved. Typically, involvement in the program was initiated by the administration, and faculty were targeted because of their strengths, knowledge, and experience with students with specific needs, primarily those performing below grade level.

Reaction to notification and placement in class. Despite the efforts for the school to notify students and their parents about placement into the Math Plus class,

generally it appears most were surprised about both the placement and lack of advance notice. This is further corroborated through some the student responses.

> I wasn't very happy, because I really wanted to be in another elective, because sometimes kids make fun of you and think you're stupid for being in this class. I, again, wasn't happy at all. I had these feelings because I just didn't want to be in an extra math class.
>
> (Student 2, Survey, Q-2c)

> I felt disappointed because of how I got into this class. I thought people would make fun of me, because I'm not that good in math. I really wanted a different elective this year, but I didn't because I had to be in this class.
>
> (Student 15, Survey, Q-2c)

Most of the students reaction to being placed in the Math Plus class surrounded their knowledge of having an additional math class and their disappointment of the class replacing a choice for an elective class. In addition, students were concerned about the perception from their peers. Their disappointment seems to stem from the notification process rather than the reason for placement in the class. This is evident in many of their later responses which convey their understanding of placement, general appreciation of the class, the teacher, and the program supports. While parents similarly shared their reaction over the notification process, like the students, they too understood the rationale for placement in the class, even if it was difficult for their child or themselves at the beginning.

> Initially I thought it was not a very appropriate placement, but after I thought about it and really looked at his school work and the way he was functioning in math, at the beginning of the 6th grade, I realized he did need it and it was an appropriate placement.
>
> (Parent 1, Interview, Q-2m)

> I think so, because I think he needed the extra help. He was not getting math the way everyone else was and he wasn't where he should have been for math.
>
> (Parent 3, Interview, Q-2m)

Even if the school was able to contact all students and parents about placement into the Math Plus class via a mailed letter, this notification took place after school was out for summer recess. Therefore, any intent for the school to have a meaningful conversation with students and parents about placement was impacted because the school was now closed. As a result, many students and parents became very anxious and concerned when they received the notice.

Adding to the complexity of the notification and placement process was knowledge that all students would be required to take an additional math class, on top of their core math class, in lieu of an elective class. Understandably, this initially drew heavy criticism from the students and parents. However, over time, many became increasingly understanding and appreciative. Particularly parents who were supportive of the school's desire to remediate their child's math skills.

Lastly, students also noted their reaction and concern about their peers knowing they were placed in the Math Plus class. Middle school students are highly sensitive to standing out amongst peers, and feeling singled out has a significant impact. This concern is acknowledged and understood by school staff who make efforts to ensure students that the class will benefit them in the long run. As the year progressed, this concern became less significant, and many grew to appreciate the support provided.

On the other hand, faculty had strong, positive reactions about the SATT-21 programs being offered to students.

> I was ecstatic. 1.2 million dollars for intervention services to provide people, resources, netbooks, technology, software. I was ecstatic.
>
> (Faculty 1, Interview, Q-3a)

> It was a new opportunity. I had been teaching the same thing for a while and was looking to some kind of branch out with the classes I was teaching.
>
> (Faculty 6, Interview, Q-3a)

The faculty's notification and reaction to the SATT-21 grant had a lot to do with their advanced knowledge of what the program would provide for student learning. This is combined with their preparation and insider knowledge of this special program that was only awarded to three schools across the nation. The potential for the SATT-21 program was significant from a teaching and learning standpoint given the circumstances around shrinking budgets and increased accountability for all schools.

Overall, the faculty felt the students in the program were placed appropriately and significant attention was given to those students who needed class supports to increase their performance levels. This sentiment was also shared by the parents, once they seemed to get over their initial reaction to being placed in the class. However, many faculty at the middle school felt they could do a better job in capturing more military dependent students in the Math Plus class.

> I do feel the students are appropriately placed. However, I do feel there are other students who can be appropriately placed as well. Based on some data that we have, students are placed, but with the help of the SATT-21 grant, we have some data that will help us make even better decisions when we place students.
>
> (Faculty 2, Interview, Q-2a)

> A majority of them, yes. As far as it being a military grant, there are a few students who are not military related, but the large majority are low performing and do need the extra supplemental class.
>
> (Faculty 3, Interview, Q-2a)

> We have students who definitely have been appropriately placed in the class. I have found it to be a little frustrating over the years because of our schedule which locks some of those kids being allowed into that class. Then there is the parental side of it, to be in the class, you need to give up an elective and some parents are pretty adamant their child needs to have an elective, which is certainly understandable, but at the same time, it's hard when you also want them to have that additional support in the core subject areas. (Faculty 4, Interview Q-2a)

Many of the faculty comments are consistent with earlier information regarding placement being difficult, however, importantly with program improvement and time, they've been able to adjust and better the placement process. Moreover, it's not that students who are in the program appear to be misplaced, it's more about how the school can get more students who qualify for the SATT-21 program into the Math Plus class given the issues that tend to prevent enrollment.

Purpose and understanding. As stated in Chapter Three, students are selected for the Math Plus class based on specific criteria that provides data influencing student achievement. This same criteria is also used to assess the program curriculum outcomes and generally creates a central purpose and understanding of the program. While school faculty may be aware of the criteria and purpose of the SATT-21 grant, including selection for the Math Plus class, it's equally important for the students and parents who are participating in the class to understand the purpose, as well. This formulated the content of question 2b in the student survey. Some of the student responses are described below.

> I think I was selected for Math Plus because my math grades and STAR test grades were not good. The goal for the Math Plus class is to help your math grades go up and that hopefully you can do better on the next STAR test.
>
> (Student 2, Survey, Q- 2b)

> I feel that my last year teacher thought I needed extra math help. My understanding of the Math Plus is like this extra math class that could help me understand the curriculum better. I feel like the purpose of this program is to get that extra help in math.
>
> (Student 16, Survey, Q-2b)

Most of the students and parents had a clear understanding of the purpose and goal of the Math Plus class. Despite some of the student comments about their placement

in the class, they generally seemed to understand why they were selected. Understanding came about through their actual participation in the class and their experiences and progress throughout the year. While there wasn't any formal presentation specifically for the SATT-21 program or Math Plus class, there was a Back to School Parent Night which described more about all of the school programs, including the Math Plus class. From one of the parent responses, this seemed to help her understand even more about the program when she visited the Math Plus class and met the teacher. The other parents seemed to generally understand the program and the selection of their child because of his/her previous struggles in math.

> I know he was performing a bit sub-par in math in 5th grade here in (school district name) that is why he was selected.
>
> (Parent 1, Interview, Q-2m)

> He was selected because of his inability to master math in 5th grade, understanding the concepts. My understanding of the Math Plus class is technology based computers to help them with mastering multiplication, adding, mastering those basic skills they didn't master in elementary school and I think it's working well for him. I think he is mastering those skills.
>
> (Parent 2, Interview, Q-2m)

The teacher administered a syllabus that provided a general outline for the course expectations, and developed his own webpage for both students and parents to view. However, the specifics of the course, including the types of programs and curriculum, assessment protocols, and benchmarks for student progress, didn't appear to be very clear for parents. While parents were able to contact and have meetings with the school faculty as arranged by both parties, there was not a specific orientation for parents and students on the SATT-21 program and Math Plus class at the beginning of the year. Although, there was a district wide education and information night hosted at the middle school site for all district SATT-21 participants one evening in the spring of 2012.

This common understanding of the purpose for the SATT-21 program and Math Plus class was also expressed by the faculty. Their understanding for the purpose of the program was grounded with their insider knowledge and prior experience about the SATT-21 program. The purpose of the SATT-21 program is also intertwined with one of the basic tenants of teaching which is to support students in their learning, whether they are performing at grade level or not. These basic tenants of teaching seem to permeate from the school and create a school culture with high achievement expectations for every student. This understanding from the faculty regarding the purpose of the SATT-21 program, then provides a common understanding of the goals for students involved in the SATT-21 program.

> I have a high understanding of Project SATT-21, I'm the program director for Project SATT-21 in the (name of district). The purpose of this three year grant is to close the achievement gap for students who are military impacted. They move from duty station to duty station and have gaps in their learning and are moving from state to state and honestly, they have not been taught standards sometimes and the 50 states have 50 sets of different standards. So it's definitely to close the achievement gap.
>
> (Faculty 1, Interview, Q-3b)

> Just so you know, I actually, a couple years ago, asked for the grant so I could understand it better. As I read it, my understanding is that we are trying to support families in the military who, I think because they move so much they don't have a consistent education, we are trying to put in supports for them so that they can kind of bridge the gap in their performance and the performance of children in (name of district) pretty much for a lifetime.
>
> (Faculty 6, Interview, Q-3b)

The majority of the district faculty is aware of the SATT-21 grant and much of this has to do with the several years the program has existed in CUSD. Faculty has consistently been informed about the program through district and school bulletins, e-mails, faculty presentations at meetings, and updates to school board members and various government officials. Therefore, faculty working directly with the program

whether it's the teachers who are teaching/or taught in the Math Plus class, or math department members who work collaboratively to discuss students receiving services from the SATT-21 program, have a greater understanding. The math department and administration consistently meet throughout the year, to discuss the program structures, their role and participation, and students who need support services. Their role in the program and knowledge of student performance could be considered the most important factor in placing students into the class.

Curriculum

Faculty role and participation. Although administration plays a key role in selecting the Math Plus teachers, the math teachers themselves, are also vital decision makers. Since many teachers desire professional growth and involvement in new programs, this element is factored into the selection process. At the middle school, open conversations with specific teachers in the math department, as well as the entire math department, occur with administration regularly, including decisions about programmatic changes in curriculum, technology, and personnel. One of the questions to the staff specifically read: *How were decisions made regarding resources, course content, and selection of materials to support Project SATT-21 in mathematics in your district / at your school including the selection of students? What was your role in the decision making process for all of the topics listed above?* Some of their responses are below.

> I, along with the math team, came up with a list of students who we thought would benefit from the Math Plus intervention class. We looked at CST stores, we looked at MAP scores from last year, we looked at grades as well as teacher recommendations and we put together a class roster. As far as resources and course content and selection of materials, I was one of the people involved in that along with district administration and some teachers, some math teachers, to look at the resources, ones that would be beneficial to intervention.
>
> (Faculty 2, Interview, Q-3c)

> I was given quite a bit of autonomy on this. Both (name) the principal of Palm and (name) the principal of our school, made suggestions of software, I did a pilot in the classroom and then did some research and played with some resources over the course of the summer. My feedback and feedback from the other school sites, was taken into consideration when (name of former district coordinator for SATT-21) made the initial purchase.
>
> (Faculty 6, Interview, Q-3c & e)

Responses from faculty did vary on this question. Although, this appears to be the case primarily from the initial decisions regarding the program when it was first implemented. Once the SATT-21 grant was approved and ready to begin, all faculty, namely the teachers directly involved, became more aware and part of the decision making processes. Most of the decision making processes at the beginning of the grant, until now, involve feedback and ideas on all aspects of the grant from curriculum, technology and professional development. Most of the faculty's lack of knowledge about the SATT-21 grant or Math Plus class, stemmed from the first implementation of the grant until data was gathered on the program. All shareholder feedback was of greater value during and toward the end of 2009, year one of the grant.

> A lot of the decisions were made before I took this position. They were made by (name of former district SATT-21 coordinator) and the administration at the time, prior to the grant actually starting. They did a lot of research as to what would be the appropriate purchases for intervention software. Those kind of decisions were made collectively.
>
> (Faculty 1, Interview, Q-3e)

> Well I think, well I'm not completely sure of this, but I believe it started at the district and it was the district that provided what was available and they pretty much made the decisions as to which programs, including Destination Math, ALEKS and My Skills Tutor. Then the teachers were included in that, in terms of learning about the materials. As far as the selection of students, students were looked at in terms of performing below grade level and then it was looked at to see which students were military students. The district made the decision as to what type of programs were available to us, but then how it was implemented, those kinds of things, those were teacher decisions that were implemented.
>
> (Faculty 5, Interview, Q-3e)

The faculty felt their input of ideas and involvement in decision making regarding the grant were generally welcomed, and they have had meaningful collaborative discussions with administration. However, one area that seems to be a concern from the majority of the faculty was the type of decisions made in year one of the grant regarding software technology programs. Since some of the programs didn't work very well, this caused frustration and led to the piloting of another software program in the Math Plus class. The pilot was led by the Math Plus teacher with an understanding to explore a future purchase with grant funds the following year if the program was successful for students.

As the year progressed and the pilot software program was successful in the Math Plus class, input was provided by the teacher about purchasing the software program before the free trial period expired. Unfortunately, as much as this was conveyed to administration at site and district level, nothing could be done until the end of the year when new purchases were approved. In addition, the district was awaiting an invitation to reapply for the SATT-21 grant and was hoping for an approval in order to keep the grant programs going. This also included new features that would benefit students, as well as the Math Plus teacher's recommended software program. Therefore, the software program was in a holding pattern until decisions could be made. This reflects in his response below.

> This question, I wish my input was taken by our district administration. I have tried to fight for one program, which you know, Learning Upgrade.com which to my knowledge, has been basically shut down by our administration at the district office. So the resources that we are using, I was basically just told by our administration, this is what we have, this is what we are going to be using. I wish

> my role was more involved in this, where we can use more teacher friendly programs that we approved of.
>
> (Faculty 3, Interview, Q-3e)

Interestingly, the timing of this particular interview was ironic at best, since the teacher was told during the interview the software program he ultimately piloted and recommended, was going to be written into the new grant proposal which was up for renewal. The district had literally found out during the interview time frame with faculty, that they had just been invited to re-apply for a grant continuance for another three years. This ultimately pleased the teacher.

While timing certainly could have played an issue into the teacher's frustration over this topic, as well as how he responded to the question, there still seems to be a lack of communication between the administration and the teacher regarding the progress of his recommendation. However, another issue related to technology purchase decisions surrounded a program that wasn't successful due to its lack of middle school relevancy. Unfortunately, this program was purchased in year one of the grant and was a permanent, lifetime purchase.

> Companies are coming out with more programs and more products. So the downside for the grant in how the software was selected was that we were locked in for three years to certain things like Destination Math, which did not work out for the middle school. And we couldn't trade it for some other programs that would work. I think now though, because we have gone through a cycle of it, we have a really good idea of what we really want, how we can use it, and what would benefit middle school students. I'm excited to see that. So I think with like anything, the first go around you have limited information and now the second time when you have actually had a chance to see what it looks like, just like anything in education, you can revise, revamp, improve.
>
> (Faculty 4, Interview, Q3-e)

Unfortunately, while decisions regarding the curriculum and technology software programs were researched and given careful consideration prior to purchasing, it was still

unknown how well they would perform in the actual classroom setting. These are sometimes the unknowns, regardless of how much research a school does prior to purchasing software programs.

Any faculty's lack of knowledge about the grant and some of the decisions that didn't include specific faculty groups, happened prior to the grant being submitted for approval. According to some faculty, there wasn't necessarily a need to share this information with stakeholders, because the grant still had to be written, submitted, and then approved by the federal government. Once the grant was approved, greater communication and involvement by all faculty became more appropriate and necessary.

It can be argued that sharing knowledge and gathering ideas prior to grant being submitted was necessary for all shareholders, namely teachers. However, there weren't many teachers involved initially and those who were, have either left their positions in the SATT-21 program or in some cases left the district due to retirement. Furthermore, some of the faculty's input was limited primarily due to their newness in the program. Additionally, their input at that time wasn't necessarily gathered prior to the grant being submitted, nor during its first year of implementation. This tended to be the case since year one involved a very limited pool of faculty as the program rolled out for the first time. The only knowledge faculty would need if they were not directly involved in the first year of the grant appears to be knowledge about the purpose and goals of the grant. Any greater knowledge for faculty about the SATT-21 program would be revealed as they became involved with students who started to receive services associated with the grant.

Technology. Technology is a major component of the SATT-21 grant and the Math Plus class. Students are provided with opportunities to have their own individual computer, or netbook, and use software programs as a resource to chart their progress and support their learning. Overwhelmingly, student response about being able to use computers in the class was positive. Some described the opportunity to use computers in math as "fun," "amazing," and "cool." They looked at using the technology and computers in class as a unique opportunity since not all of their classes used such a format.

While having the ability to use technology in the Math Plus class was a definite plus for both students and parents, there were also equal frustrations when it actually came to the hardware, thus impacting a students' potential to learn. For example, one question for the participants read: *Do you find the technology to be helpful or not helpful in your learning?* In this case, there were mixed reviews. Students enjoyed the opportunity to use a netbook in class, and they found it helpful in learning, however, the hardware problems created some frustrations and at times made learning difficult.

> It's amazing to have a laptop in our class, but they don't work good.
>
> (Student 10, Survey, Q-2e)

> Having my own min-netbook in the classroom was good and bad because the good part was, it was your own and you don't have to go to the computer lab and be quiet in the halls, you just stay in your class, but sometimes I had to shut it down because it just froze.
>
> (Student 17, Survey, Q-2e)

Parents generally responded similarly when asked the same question, however, their primary focus was on the great opportunity to use technology in the classroom, not the hardware issues. Much of this appears to stem from the parents non-direct experience

in the classroom where the hardware issues seemed to exist and lack of communication regarding hardware issues.

> I think it must be (helping) because I discussed it with him once recently. He is very computer savvy and he loves computers, so that would be just a bonus to have hardware and software to use in the classroom.
>
> (Parent 1, Interview, Q-2m)

The faculty also shared the students and parents perspectives when it came to student learning via technology. Some expressed how the students loved using the technology in class, as well as the opportunity to meet the needs of varying learning styles. As a result, students became greatly engaged with the teaching and learning in the classroom while using their computers. Other faculty pointed how the technology was helpful due to the immediate feedback for both student and teacher provided by some of the devices and the software programs. However, all agreed that technology was an exceptional tool that worked alongside the teaching, and that technology didn't replace the experience of being in a classroom with student and teacher discussion and hands-on interaction.

> Oh, I definitely think they are helpful. They are definitely helpful because they provide that instant feedback to kids. That's sort of the bottom line, to help give specific feedback.
>
> (Faculty 1, Interview, Q-3h)

> Absolutely, I do. I feel there are some others out there that we could use as we re-apply for the grant again, that there will be some new programs that we will replace with Destination Math or add to the project.
>
> (Faculty 2, Interview, Q-3h)

> Yes, just looking at the MAP results and seeing how the students have improved. I find it very helpful. It's not something I would recommend to replace a classroom teacher or a classroom lesson, but it's definitely great for a supplemental math class.
>
> (Faculty 3, Interview, Q-3h)

> I think students love technology these days. So I think anything with technology is helpful if it's used appropriately. I don't think it's something that you can just say, here you go, and leave them. They need guidance and they do need help. It does give instruction, but that doesn't necessarily mean they are going to get it from just reading it. They do need more support than maybe you just can give you with instructions.
>
> (Faculty 5, Interview, Q-3h)

A large majority of the participants felt that technology, both the computer hardware and the software programs, were great tools in supporting the learning in the Math Plus class. For each student to have their own personal computer and other technology supports on a daily basis in the class, instantly created a "wow" factor and immediately provided an engagement piece to the learning. Additionally, some of the students felt fortunate since many of their peers did not have these opportunities or privileges. There is only one Math Plus class on campus, making it unique or special. In this regard, where some students may have felt negatively singled out among peers, the same could be said for them being positively singled out, because of their special access to technology and other program opportunities not available to most of the general student population.

Another point brought up from the participants, mostly the faculty, was the instant feedback provided by the technology for both the student and teacher. While much of this has to do with the types of programs and software used with the computers, without the computer devices, the ability get feedback quickly and in a meaningful way is very difficult in large classroom settings where teachers typically have multiple classes and teach a variety of subject areas and grade levels. These variables make planning, teaching, and feedback from assessments or other classroom assignments, challenging.

Technology plays a significant role in supporting communication and feedback on the learning in the Math Plus classroom.

Another area shared primarily among the faculty, was the healthy balance between technology as a support tool in the classroom to accompany the teaching. All of the faculty felt the teacher was responsible for guiding and facilitating the appropriate usage of technology in the classroom in order to have it be meaningful to the teaching and learning. While all acknowledged technology as a tremendous resource and helpful in the learning, it was clear it's not a stand-alone to be used exclusively during the class. Although the computers and technology used in class were an exciting resource for the students, there were some drawbacks to using the technology hardware and the netbooks.

Technology hardware. The students' largest concerns were their frustration with the netbook computers' ability to connect to the network, their speed, and the fact that they'd often freeze. Interestingly, as a result of the issues with the netbooks, some of the students chose to bring their own laptop computers to use in class. Furthermore, some students preferred the familiarity with their own device. CMS has a school wide, one-to-one computer laptop program in which students may bring their own personal technology device from home to school on a regular basis. Any laptop computer brought by students is specifically used in class as a support tool. Some of the students in the Math Plus class were also in the one-to-one program for their other classes, and as a result, favored their own device over the temperamental netbooks.

> I don't like using those little computers because they are really slow. They don't always connect to the internet and sometimes they don't even save your work, so you have to do it over.
>
> (Student 4, Survey, Q-2e)

> I have my own laptop that I bring to class almost every day, and that worked out really well. I am in the laptop program so that helped with having my own laptop for this class.
>
> (Student 5, Survey, Q-2e)

> The hardware technology is pretty awesome! It's really cool to have your own netbook to work on your math stuff, but the netbooks are really slow. Some of them don't work good.
>
> (Student 16, Survey, Q-2e)

The majority of the faculty supported the student concerns regarding the hardware. The same issue surfaced as described below by the former teacher of the Math Plus class, as well as another math teacher in the department. Both use the resources from the SATT-21 grant to support their general education, low performing math classes.

> Well, I have a serious issue this year. So, I'm going to say no. It doesn't necessarily come down to any one person, it probably comes down to a lack of IT support. If we're going to try to implement these programs, we need the infrastructure to be able to do it successfully. I have not been able to use my netbooks all year. I was one of the first ones to get a netbook cart, so something in my netbooks are dying.
>
> (Faculty 4, Interview, Q-3g)

> The beginning was really, really difficult for both of us here. The netbooks weren't working and it didn't really get going until about mid-October and so that was really difficult.
>
> (Faculty 5, Interview, Q-3g)

Another component to the SATT-21 grant is allowing students to take the netbook computers home in order to support school to home learning for those without technology at home. Interestingly, while this seems to be a component mentioned in the SATT-21 grant for the district, the middle school doesn't seem to utilize this practice in the Math Plus class. The primary reason for this was due to the fact that the majority of students in the Math Plus class had their own personal computer at home, including access to the internet. As a result, the web-based software programs used in the Math Plus class could also be accessed at home.

> I have a computer, so I'm used to it. It's great, I love having computers in our classroom. I have never used a mini-netbook at home, sometimes they can be confusing.
>
> (Student 2, Survey, Q-2e)

> Well, I have my own laptop, so I don't use the mini-netbooks. I see kids using it and I can appreciate how fortunate our school is to have them. Yet again, I never used them and we weren't able to take them home.
>
> (Student 19, Survey, Q-2e)

At this point, the school has not encountered students in the Math Plus class who need a netbook at their residence due their personal access at home. However, if this were to be the case, the school would have to consider how to provide netbooks for safe and responsible home usage. Furthermore, if a student does not have internet access at home, the district and school would have to come up with a plan for providing the student with this service.

The philosophy of the Math Plus class is to assist students in remediating their math focus area and provide the support they need without assigning math homework on a daily basis. Part of the rationale is to facilitate student learning and success in math without making this second math class a burden for the students. Since the students are performing below proficiency and traditionally have not been successful in math, their attitude towards math can be challenging. Therefore, the purpose is to keep the focus of the Math Plus class on enhancing skill sets and supporting the teaching and learning taking place in the students' core, general education math class.

Most of the math faculty members do have the ability to use netbooks in their classes, but choose not to use them as frequently for several reasons. First, they use netbooks because of their familiarity with them and their ability to have students learn alongside their curriculum. They consider the netbooks a resource for supporting the

instruction and learning in their classrooms. Second, with the exception of the Math Plus teacher, most of the math department is not required to use the netbooks regularly, because they are not directly part of the SATT-21 grant.

Technology software and web-based programs. In regards to the specific software and web-based programs students were able to access through the SATT-21 grant, some were frequently used and appealed to the students, while others were not used and seemed to be less favorable. Of the programs purchased by the SATT-21 grant and supported by the district office, ALEKS, Skills Tutor, and the MAP programs were used the most in the Math Plus class.

The Measures of Academic Performance (MAP) software is designed to be used three times yearly and was done so in this manner. Because this is a software program with specific software capabilities and license agreements, it is only used at the school site in the "wired" new technology lab. This program was not available via netbook use. Due to the importance of the data collected from this assessment, faculty preferred a wired environment to ensure an uninterrupted testing period.

ALEKS is a web-based program that students can use anywhere they have access to a computer, including home. The ALEKS program was used frequently in the Math Plus class, and students generally enjoyed it, as noted in some of their responses below. This is also the case with the Skills Tutor web-based program which can be used anywhere a student has a computer with internet access.

> My Skills Tutor we have done has helped me a lot. ALEKS is nice in some ways, but the site doesn't really give any example to what we are doing, but it is a good learning site.
>
> (Student 7, Survey, Q-2f)

> ALEKS, Skills Tutor and MAP have helped me throughout the year. It is easy for me to set goals on the programs. They can also be really fun.
>
> (Student 9, Survey, Q-2f)

Software and web-based programs that were not used at all, according to the student responses, were Destination Math and SOAR. While Destination Math is not used in the Math Plus class, it is used frequently at the elementary schools. This software program has been determined by the district and middle and elementary school faculty to be more appropriate at the elementary grade level.

The SOAR web-based program was not purchased through the SATT-21 grant, but provided to the entire school district by the government, free of charge, because of the large military dependent population. The SOAR program has multiple uses including survey inventories for college and career choices, as well as tutorials and assessments in various subject areas. The high school tends to use this program more frequently, primarily due to college and career readiness assessments and survey inventories.

Generally, many of the students and parents conveyed their appreciation of having increased access to mathematics program applications. This included the ability to use the programs at school and home, as well as how the programs provided another way to review the curriculum, even when a student was absent from class. One parent also relished in the fact that her son had become more of an independent learner, because he'd using the technology since elementary school. While another described the programs as being helpful in math, as well as other subject areas.

> We have had a lot of computer experience, since fourth grade I believe. He has been using a computer in school, on a daily basis, in school and also at home. He loves using computers, so that is a good thing. They feel so independent.
>
> (Parent 1, Interview, Q-2n)

> Absolutely, I think it's helped him, not only math, but its reinforcement and practice. He enjoys being on the computer, so he doesn't mind.
>
> (Parent 3, Interview, Q-2n)

The faculty supported the students and parents experience regarding increased access to web-based mathematics programs as a result of the SATT-21 grant and the Math Plus class. This experience was generally shared by all participants and the numerous opportunities the programs provided for student learning. While both students and parents alike discussed how students seemed to understand the programs and their accessibility at school and home, the faculty expanded on this concept by sharing other uses of the programs.

> Well, they have a good amount of access to it. They can access it from home. ALEKS is something that kids can have access at home because it is web-based. Skills Tutor is also web-based so they can access it at home.
>
> (Faculty 2, Interview, Q-3f)

> The programs they are enrolled in, they can access them from home. So, there programs normally they would have to pay for on their own, which costs about 60 dollars a program, where as now they are free through the school district.
>
> (Faculty 3, Interview, Q-3f)

Since summer school has been eliminated due to budgetary restraints at the state level, the SATT-21 program allows for resources and support all year round. Students in the Math Plus class have the ability to continue their learning through some of the web-based software programs. Currently, the high school uses SATT-21 resources for military and non-military dependent students in their summer school class, which subsequently is also taught by the SATT-21 high school teacher during the regular school year. The high school has found this class to be incredibly advantageous for several reasons. One, students can continue their learning and not play catch-up when school begins after a two month hiatus due to the summer recess. Two, students who are low

performing and credit deficient towards graduation, can use the SATT-21 resources for credit recovery in order to meet graduation credits and college entrance requirements.

At one of the elementary schools, SATT-21 resources are used before and after the regular school day. Students who are part of the SATT-21 program at this elementary school receive support services during regular school day, as well as in the before and after school programs. This is very similar to the double dose of math provided at the middle school via the Math Plus class.

Using technology early and often in one's educational career can create a set of expectations for both a teacher and a student. Since the school district does have an established technology emphasis embedded in their strategic plan, already, there is a technology culture within the district that supports technology expectations. These expectations appear to make implementation of the SATT-21 grant clearer, since technology use is an expectation at the middle school and the presence of technology can be observed throughout the campus.

Technology instructional expectations. Since the focus of the SATT-21 grant is heavily dependent on technology, the expectations of the teacher's instruction and the students' learning via technology is critical in order to determine which supports are valuable for student achievement and programmatic effectiveness. Therefore, one of the questions in the SATT-21 grant evaluation matrix read: *Do you feel your teacher has the knowledge and skills of how to apply web-based applications in your class in order for you to learn and improve? If, yes or no, did you notice growth with the teacher as the year progressed?* The majority of the students and parents felt the teacher's knowledge of the technology hardware and instructional programs was strong, and that he knew how

to problem solve and work around hardware and program issues. The students were confident in their teacher's ability to address technology problems and appreciated the support.

> I think the teacher does a great job teaching us. Yes, I have noticed growth with my teacher because whenever he teaches me something new, I pick it up very fast and then I know how to do it.
>
> (Student 5, Survey, Q-2g)

> My teacher does know the instructions of the software in the classroom. For example, in Skills Tutor he puts up the lessons we are being taught in our regular math class. I do feel what is being taught to me, because what is being taught to me is being taught to me in my regular math class.
>
> (Student 17, Survey, Q-2g)

Parent responses to the question were rather similar. While the parents did not have the benefit of being in the class every day and appeared not to have a lot of feedback from the teacher, they did in fact have knowledge of the teacher's skills in web-based applications in order to support their children in learning math.

> I haven't received any feedback, so I don't know. I can't speak for him, but I can speak for my son, and he's learning. He's on the computer, and those basic skills are being reinforced, then he has Math Plus and Math Skills right behind it. So he is getting a double dose in math, which I could never do at home. He would kick and scream for me, but he will do it at school.
>
> (Parent 2, Interview, Q-2f)

> Yes, I feel very confident in Mr. (teacher's name). I think he knows what he is doing. He does a really good job.
>
> (Parent 2, Interview, Q-2f)

Curriculum instructional expectations. From the student and parent perspective, it was obvious they felt the teacher knew the technology aspects of the Math Plus class, and he was very helpful. While this was the majority, some students had mixed responses when it came to their perspective of the teacher's delivery of the instruction or the actual teaching of the curriculum.

> I'm not saying that I don't understand Mr. (name of teacher), it's just that he doesn't really teach us anything. I think he just watches us go on the computer and scream at people.
>
> (Student 4, Survey, Q-2g)

> Well, everyday is the same, grab a laptop, turn it on and get working. He always says he stays in touch with our teachers, so we can work on what we need working on in class.
>
> (Student 7, Survey, Q-2g)

> Mr. (teacher name), doesn't really explain because we already know, but he also doesn't help. I just think that sometimes in my actual math class Mr. (teacher name) will teach it differently, and then when we do it and check it we get very different answers.
>
> (Student 18, Survey, Q-2g)

Reviewing some of the responses above, it's difficult to determine if some of the students' perspectives are connected with their disappointment of being placed in the class. Several of the comments within question 2g regarding the teacher's pedagogy and delivery of instruction, paralleled some responses in the proceeding question (2h, below) when the students' were asked if the tools and the instruction were helping their learning. Upon further analysis, the two students who had the more critical comments from question 2g, were also the same two students who had similarly critical comments in question 2h.

The student responses, however, about the instructional delivery of the curriculum seem to be supported as well by the parents. While the parents do feel confident in the teacher's abilities with technology, they seem to be unaware, or limited in their knowledge, of the delivery of the instruction. These limitations need to be taken into consideration with the parents' lack of knowledge since they are not in the class themselves. Furthermore, their knowledge is limited due to both student and teacher not consistently providing knowledge of the daily curriculum expectations. Below are some

parent responses in regards to their knowledge of the curriculum, the instruction of the curriculum, and how the curriculum is shared by their child and/or the teacher.

> He never does, never (son sharing curriculum knowledge or instruction). I know he really likes the instructor. He feels comfortable in the classroom. I know initially he was very disappointed being placed in the class, so I thought, "oh this is going to be a very negative thing for his self-esteem", but it wasn't. Everything turned out fine, he has friends in the class, and they are learning together and he really admires his teacher, so that helps enormously.
>
> (Parent 1, Interview, Q-2o)

> Well he tells me, "All he does is walk around the room and look at our computer." He doesn't, or I haven't received from him on how he's doing. As far as any sort of feedback from Mr. (name of teacher), I haven't received any sort of feedback.
>
> (Parent 2, Interview, Q-2o)

> He does, he says that (teacher's name) will show something on the screen. He also says that he will walk around individually talking to each student, asking each student how they are doing. He says he is constantly walking around asking where they are at.
>
> (Parent 3, Interview, Q-2o)

While communication about the curriculum and the instructional delivery is limited, it should also be noted that middle school aged children are known to have limited communication with their parents regarding the specifics of their education. Parents typically rely on information being provided by the school, or they pro-actively seek out information on their own via communication with individual teachers. Furthermore, due to the newness of the program, the information regarding the curriculum and instructional delivery may have been limited. The instructor for the Math Plus class was new to teaching the class, this year. The previous two years, it was taught by a different teacher who now teaches math in the general education population. The current teacher is new to the course, and therefore, new to all aspects of the program.

A positive relationship between the students and the teacher has been built on class communication and expectations. The Math Plus students seem to enjoy the

teacher, and this sentiment appears to be generally shared by a larger student body, as well. For example, this year, the instructor was selected by the students for a teacher dedication in the national award winning school yearbook. This honor is reserved for teachers who have great relationships with their students, deliver the instruction effectively, and provide an overall healthy learning environment in their classes. This sentiment seems to be reflected from both the students and parents as they described the instruction supporting the learning expectations.

Learning expectations. Regardless of the communication about the curriculum and its delivery by the teacher to the student or parent, there appears to be an expectation that the tools and instruction provided by the SATT-21 grant are supporting student learning and achievement. These learning expectations are imbedded in the individualized student goal development and assessment. Furthermore, the goals set in place track the learning path for the specific skill development and mastery. All of these learning expectations are designed to increase student achievement as measured by the STAR/CST assessment taken at the end of the school year.

> The teacher helps us for targeting our progress and not letting us skip through questions. I set goals for myself and get the highest grade I can get. Yes, I think what the teacher is doing helps us a lot.
>
> (Student 1, Survey, Q-2h)

> In this class, I set a lot of goals and meet them. I also think the class will improve my CST scores in the future.
>
> (Student 9, Survey, Q-2h)

> It is helping me with math a lot. The teacher is helping us with our assignments. This class is helping me reach my expectations in math.
>
> (Student 13, Survey, Q-2h)

> I think they are helping him. I think they are positive, because they are individualized. He has to fully master one skill, before he moves onto the next skill. Because it is so individualized, he is not missing out on the skills he would

> normally in a large classroom. And they do respect that particular teacher a lot, it's a good fit for him. And I think for boys in general, and I'm sure for all genders as well, but I think boys do like having that male role model and he is a very nice man. It helps.
>
> (Parent 1, Interview, Q-2p)

> I think it is helping because his math scores have gone up. He is doing better on math tests. Math isn't such a chore anymore like is used to be, so he enjoys it. He's more confident.
>
> (Parent 3, Interview, Q-2p)

The students and parents felt the learning expectations for the class were understood and goal setting, benchmarking, and increased achievement for the students during the course of the year was expected. This also included their expectations on the STAR/CST results which were revealed in late August. In addition, these learning expectations were grounded in the establishment of goals for each student based on their area of focus and monitored by both the students and the teacher. As students increased their level of mastery math focus areas, they would move onto the next skill mastery area. Likewise, students who needed remediation on certain math areas, would also get support and monitoring. This monitoring and communication between students and teacher, assisted in developing a positive relationship throughout the year.

The faculty also felt the learning expectations were understood by the students. In the Math Plus class, this was accomplished by the student self monitoring and teacher monitoring of ongoing work. Student goals and the technology programs used to assess those goals were frequently tracked. As a result, students took ownership of their goals and appeared to perform better in the class. As the students performed better in class with their mastery of math skills, they seemed to have less difficulty understanding curriculum as well as realized that extra work was needed to be successful in math.

> I do, I do feel the students understand why they are there and have a grasp on the expectations being taught to them. In regards to monitoring their expectations, I monitor about three times a year. Typically though the MAP assessment, I take all that data, I look at it. As far as certain classes, specific students, specific clusters for each student.
>
> (Faculty 2, Interview, Q-3i)

> Some of them came to term with the fact that they did have difficulty in math and that meant they were going to have to do some extra work. And by the end of the year, I was very impressed. I don't know if it's a developmental maturity think, but a lot of them actually felt the class was actually helping them in math and that they understood what was going on in math and the class better. So that was really exciting, just that confidence alone, that was pretty cool.
>
> (Faculty 4, Interview, Q-3i)

According to all of the participant responses, the learning expectations from the students were generally understood. Most indicated how important it was for goals to be set by the students and the teacher together, but more importantly, constant monitoring by both parties was significant, as well. Adding to this statement was one faculty member's assertion that the time set aside for a teacher to facilitate goal setting with the student was equally as valuable in relation to the learning expectations. The importance of teachers being able to set aside the time to monitor and conference with students was noted, and this system of time needed to be established and supported with administrative assistance.

Assessing the learning expectations. For the most part, both the students and parents felt the support tools and instruction were helping students learn enhanced skills sets to achieve math goals. When students were posed with the question regarding the tools and instruction helping with their learning goals, including their participation in setting and mastering those learning goals, 55% felt they were able to set their goals and monitor their progress with guidance from the teacher. Fifteen percent of the students described this process as not helping them at all, with one student being resentful for

being placed in the class. The remaining 30% of the students were unsure or didn't respond to this specific part of the question.

The achievement of individualized student goals is a major outcome of the SATT-21 program. In order to gauge this outcome, the tools and instruction in the Math Plus class help to identify student needs and appropriate goals are created based on those needs. The primary instrument used to create goals and assess student skills sets in math is the MAP assessment. As described previously, the MAP assessment is an ongoing benchmark assessment that gauges student progress in the Math Plus class. A greater description of how MAP and some of the other assessment programs are used in the SATT-21 program are shared below.

> Basically the students that are in any sort of prep. or skills class, or the specific intervention class, are looking at their MAP data, as well as their Skills Tutor data, and looking at their progress. Based on their progress, they are assessing themselves and looking at what direction they need to go in and setting their own goals so they can master the specific content and clusters they need to work on. They are involved.
>
> (Faculty 2, Interview, Q-3i)

> Right now, the biggest, I would say the main data is their MAP results. Every single student improved significantly. The other thing I use a lot of is the Skills Tutor component where they take a pre-test and then they are given several assignments and then they take a quiz here and there and several more assignments and then a post test. So I can compare pre-test and post-test and see how much they have learned from there.
>
> (Faculty 3, Interview, Q-3j)

The MAP assessment provides a fairly accurate prediction as to how a child will score on their end of the year STAR/CST assessment. This knowledge is based on anecdotal history the school district has gathered from other schools, including one well respected and high achieving large school district in the local area. Since this resource is in CUSD's "backyard," there have been professional development opportunities with

administration and some teachers to visit the school district and talk with their faculty about the MAP program. However, this professional development has been limited to certain individuals, at this point, since the MAP program has just been introduced to CUSD this year. There is an expectation that greater collaboration will occur next school year, and years thereafter. While the MAP program provides useful feedback for both the students and the teachers, the STAR/CST assessment is considered the single-most important assessment during the school year.

Due to the significance placed on the STAR/CST assessment and the role it plays in the SATT-21 grant, both students and parents were asked the following question regarding the Math Plus class. *Do you feel it will raise your/your child's achievement, particularly on your/his/her CST scores in mathematics?* When students were asked specifically about the Math Plus class helping to increase their STAR/CST score, 40% responded yes, 5% said no, and 55% didn't respond.

Table 6

Increase on STAR/CST score

Predicting increase on score	**Number = 20 Total Students**	**Percentage**
Yes	8	40%
No	1	5%
No response	11	55%

Of those students who didn't respond, or were coded as a no response, it's believed this may have happened for the following reasons. First, the overall question about learning expectations was quite lengthy and was integrated with multiple questions within the larger question about learning expectations. Additionally, it was the last

question within the multiple questions about learning expectations. Also, because of the multiple questions, it simply may have been missed. Lastly, the question appeared towards the end of the survey, and it's possible the students provided no response because they were fatigued.

Despite those reasons, the students who did respond to the question felt it would raise their score on the STAR/CST exam. Supporting this general feeling and expectation were the parent perceptions of how their children would perform on the exam based on their participation in the Math Plus class. One parent said, "Oh yes, definitely," while another parent responded, "Absolutely. I'm very confident that his scores will be raised due to this class." Lastly, the third and final parent shared, "I hope so. I really hope so. I don't know yet, but the expectation is there. I really hope that it will raise it." Faculty had similar comments regarding their expectation of the CST/STAR results.

> We know that from our data. We know that our kids are making progress. It's not every single kid, every single level and every single subject area, but we know that the double dose in math at the middle school, last year, made a big difference on our CST exams. We saw our scores go up, where as the previous years we were worried because we saw the scores had taken a dip. So putting this intervention opportunity in place I think was one of the significant factors to test scores going up on the CST last year.
>
> (Faculty 1, Interview, Q-3j)

> Well, (name of other district using MAP) has been using MAP for 10 years, and they have developed kind of a chart that norms grade levels within mathematics. Based on those norms and that data for the last 10 years, they have kind of created normed data that matches up with the CST's, so it helps to look at that information so we can get a better idea of how our kids will do on the CST's, as well. We are in the process of collecting data on our own kids, so we can kind of predict how our kids will do on the CST's. But I can definitely say that, how do I know the tools and instruction working is that I see increases in achievement based on MAP, based on test scores, based on grades within classes. As far as CST's, I can't say I really have enough data, yet, to significantly say that there is an increase in proficiency levels.
>
> (Faculty 2, Interview, Q-3j)

From a faculty standpoint, the STAR/CST data can be valid information when looking at a student's overall profile of academic achievement. As expressed, the STAR/CST exam is only offered one time, in the spring, and results are not available until late August. August is typically when the school year starts and students have been placed in classes. Having meaningful conversations with students and parents about STAR/CST results occurs after the results are provided to the schools from the state. The middle school faculty rely on and continue to use this data to inform curriculum decisions with their students throughout the year. This can arguably be said for most of the schools throughout the country. However, students and parents typically forget the importance or details of the exam due to the lapse in time from spring, to the beginning of a new school year. Therefore, alternative and progressive assessments to determine academic progress throughout the year, like MAP, are really where schools are discovering the most "bang for their buck."

At this time, the STAR/CST exam appears to be the main component in placing students in the Math Plus class and for other district wide SATT-21 programs. This emphasis seems to be placed on the accountability requirements for schools based on federal and state mandates. Through observations and discussions with faculty, other measurements used throughout the school year assist the faculty in determining how accurate individual progress is being made. STAR/CST is certainly important, and faculty prepare students for the exam through their instruction and state standards based curriculum. However, the exam is more of a validation of the work throughout the year and to determine if certain math goals have been achieved.

A large focus in determining how a student progresses in their education and achieves in school is measured by specific assessment tools. School stakeholders and legislators debate back and forth on the significance this should play in a student's education. The application of a student's knowledge, however, in the real world setting is also a critical goal for educators and shareholders alike. The application of knowledge learned in the classroom setting builds from one grade level to the next, one school to another, including college, and then eventually into the workforce.

Application of knowledge. The ability for students to apply knowledge is arguably one of the most critical pieces in bringing conceptual knowledge learned in the classroom, and connecting it to other subject areas and real life settings outside of school. Having students understand this conceptual knowledge, and then articulate it verbally and kinesthetically, fosters the ability for students to retain knowledge for the long term. When students and parents were asked if they would be able to use the knowledge from the Math Plus class and apply it to other math classes, to other subjects, and even outside of school, 70% percent of the students said yes, while 10% said no, and the remaining 20% didn't know.

> I learned how to divide, multiply fractions and decimals. Now when I get a job, I know how to work math to help me in future life. I can also help people with their math and homework. I think that my grades have definitely gone up way more than last year and the beginning of this year.
>
> (Student 5, Survey, Q-2i)

The majority of the students felt the Math Plus class directly increased their math skills in particular areas such as algebra, division, multiplying fractions and decimals, measurement, and integers. For those students who responded favorably, several shared how the skills learned in the Math Plus class would benefit other classes such as

engineering, science, and technology. Supporting the students in their responses were the parents who also felt the Math Plus class would be helpful for their child when applying math concepts in a variety of settings.

> Well, he is learning the basic building blocks of mathematics, so I expect he will use all of them as he progresses throughout math and he gets to algebra and things where you have to be very quick with your multiplication tables and be very quick with division. I think he will use those skills, definitely.
>
> (Parent 1, Interview, Q-2q)

> Well, I think he is touching on a lot of different math skills, not necessarily ones that he is using right now in math class, but he will be able to recognize how to solve a problem, one that hasn't been taught yet. Absolutely, because I know they use a lot of math in science and he loves science, so that of course will help him in science.
>
> (Parent 3, Interview, Q-2q)

While both the students and parents felt the Math Plus class would have applications in their education and beyond, the parents seemed to have a better understanding of what that would actually entail. A claim can be made that parents have greater knowledge regarding application to other subjects and real world settings because of their adult personal and professional experiences. Another discussion point would be that with time and greater experience in school, these students will grasp how to apply this knowledge elsewhere. However, based on the responses, it should be noted that some students were already applying certain skills learned in their Math Plus class to other educational subjects and settings outside of school.

This topic of application of knowledge in other settings was also shared by the faculty. The faculty pointed out the various applications of math to other subject areas including English language arts, science, and reading. In addition, the focus on technology in the classroom with 21st century learning skills acquired in the Math Plus

class through the resources provided by the SATT-21 program, were considered complimentary and useful as students move forward in their learning.

> They have learned to take ownership for what they know a little bit better. So that's one kind of skill. They have to be an active participant in their learning. I also think technology in this day and age, and kids being so connected to technology, is enticing. Kids learn in a unique way rather than just sitting in the classroom. So I think that a more global look at, maybe the problems are worded differently or the kids are shown differently, is really good for our kids.
>
> (Faculty 1, Interview, Q-3l)

> Well, they have kind of gone back and filled in the holes really. That's what ALEKS does, that's what Skills Tutor does, that's what MAP does, too. So that would definitely impact them in other math classes and maybe even in science.
>
> (Faculty 2, Interview, Q-3l)

> I think if you show them, like this is how to remember a science equation, for example. Like you have taught them slope intercept form and when they get into the sciences classes it's the same thing, but with different variables. They may not see that relationship, but then if you explain it to them, I think they can. They do need teachers at times to show them those connections.
>
> (Faculty 5, Interview, Q-3l)

The students and parents felt the knowledge learned in the Math Plus class, via the resources provided by the SATT-21 grant, would be helpful for students in their application beyond just the Math Plus class. The majority of the students felt strongly that their knowledge learned in the Math Plus class would be applicable in other settings, mostly other subject areas in school. Most of the students simply answered yes to this question, but didn't necessarily expand in great detail. When they did, there was a direct correlation to science and technology classes.

Similarly, the parents shared that the direct knowledge learned in the Math Plus class was useful to many different math classes. Additionally, they expanded by stating how the knowledge learned from the Math Plus class is useful because of the building blocks or step by step processes needed in mathematical concepts. Most felt the Math

Plus class provided the opportunity for mastery of basic concepts needed to progress from one concept or one subject to the next. For example, algebraic concepts learned in the Math Plus class will also be necessary for geometry, trigonometry and higher levels of math. Furthermore, the mastery of skill sets being learned in the Math Plus class was seen as giving students more comfort or confidence in their math abilities, which previously may not have existed in other math classes. Lastly, any exposure to new concepts in the Math Plus class, and a student's achievement of those concepts, was also seen as building student confidence or comfort level when facing new math concepts in the future.

The faculty supported both the student and parent responses regarding the application of knowledge, but added the importance of their role in facilitating students' connections to other subjects and real life. The faculty mentioned the significance of their teaching role to make connections with students, so in turn, students would see a bigger picture of the Math Plus class and how it relates to their learning. Furthermore, the students and parents discussed the building blocks and processes that relate the Math Plus class to other math classes. However, one area pointed out by the faculty that was not mentioned by the student and parents, was the factor of time associated with math skill building.

Several teachers mentioned that the Math Plus class helped students realize how important it was to give themselves an appropriate amount of time to do math work; not only setting aside time actually to do the work, but also that the work takes time and multiple steps. This, in many cases, proves to be true as students move from one math problem to the next, and similarly, from one math class to the next. Math is one of the

few classes that has a spiraling sequence that builds upon previous understanding. Without that previous understanding, concepts are difficult to comprehend, and achievement in math can become limited.

Another area the teachers brought forward was the correlation with other subject areas, particularly English language arts and reading. Reading, regardless of any subject area, obviously connects students with their daily interactions, and how they learn new knowledge. Understanding math textbooks, comprehending math word problems, and solving step-by-step equations, all require a strong command of the English language. Moreover, a strong understanding is needed when reading a math problem, connecting meaning to the problem, and applying knowledge to solve the problem. Whether it's writing out the math problem with the answer on a piece of paper, or solving it through the use of a computer, being a good reader with math literacy (listening, speaking, writing, understanding, and articulating) seems to be the separating factor between students who understand math and those who struggle.

Along with a students' engagement of technology and the tools that provide learning opportunities for them, all participants felt the technology was an exciting and unique way to deliver math instruction which does have direct connection and application beyond the classroom setting. The parents and faculty both felt that the regular use of technology in the Math Plus class was funneling out to many applications in other classes. Since technology is pervasive in many middle school students lives, and everywhere in our world, bringing this tool into school systems is necessary. Fortunately, the middle school and the district recognized this learning strategy well before the SATT-21 grant began, and established opportunities for students to use technology in the school.

However, through the grant, the benefit is providing low performing students with personal technology devices and programs, so they can become active participants in their learning. As technology continues to advance and evolve, so do the technology supports for teaching and learning in the classroom. With greater usage of technology in schools, more technology applications can be used inside and outside of the school day.

Professional Development

However, limited training resulting in a teacher's lack of knowledge with the netbooks may be another reason why they were not used more frequently in a classroom. Three of the five teachers in the math department, including the Math Plus teacher, have training and access to supports provided by the grant because, they work with military and non-military dependent below performing students. Even though the two math faculty members teach lower level general education math classes which are not directly part of the Math Plus class, there is an expectation for them to use the netbooks, because of some of their exposure to them. Most of this has to do with their limited training received in the past and their knowledge of netbooks compared to other math faculty members. As mentioned earlier, this is a benefit of the grant since non-military dependent students can utilize some of the SATT-21 resources, as well. Therefore, these two teachers and the Math Plus teacher, all of whom teach low performing math classes, have been trained in some capacity with netbooks and do implement some of the resources provided by the grant into their classrooms.

Faculty hardware training. Faculty training, or professional development, on the programmatic aspects of the SATT-21 program is built into the grant. While many of the software programs require a degree of training in order to understand their full

capabilities, hardware training on the actual netbooks didn't occur, according to the faculty.

> No, not the netbooks. I was just given the netbooks and they work o.k.
> (Faculty 3, Interview, Q-3h)

> Yes, I used them the whole year, but they were hard. There were a lot of glitches with them. Just the access to them, they weren't accessing the room. It wasn't hard using them, but it was more of a technology problem with using them.
> (Faculty 5, Interview, Q-3h)

While faculty expressed their concern for lack of training with the netbooks, the general consensus indicated there was truly no need for netbook training, but instead a need for the netbooks to function properly (connectivity to the network, increased speed, minimal freezing or locking-up by the computer). This concern was echoed by the majority of the students. Further discovery revealed that throughout the year this information was repeatedly relayed to district officials who handle such matters, namely the district IT department. Despite the effort made by the middle school faculty and administration to solve the problem, difficulties with the netbooks continued to occur, and the actual fixing or replacement of netbooks was sporadic.

Some faculty noted the need for netbooks and technology to be a priority for the Math Plus class due to the criteria in the grant. As a result, other non SATT-21 classes were given less priority when addressing the hardware issues. It was also acknowledged that the district IT department underwent some major overhauls, including the hiring of new personnel who were unfamiliar with the program. This may have created delays or misunderstandings of how to address the hardware needs surrounding the netbooks. An increasing concern for the district is how to purchase the latest and most efficient

technology devices. Moreover, a preeminent and growing issue of infrastructure support has begun to plague not only the middle school, but schools nationwide.

Netbooks are convenient at the middle school since they weigh less, are easy to transport, maneuver well in a classroom or on a desk, and meet the software and programs needs for the school. Therefore, it doesn't appear to be a need for a student to purchase a fully loaded, state of the art laptop. However, netbooks seem to carry a short shelf life before they start performing inefficiently and show their age. The netbooks for the SATT-21 program are starting to deteriorate, and the district is in the process of deciding how to replace them. As a result, when netbooks don't work, the IT department replaces them with other existing netbooks that function. This created a temporary solution until a more long term one was approved.

Since slow netbook speed, freezing, and other malfunctions have presented a major concern, the district has responded by improving their infrastructure. The district commissioned an outside agency to review the technology and infrastructure needs of the district. Subsequently, the agency's findings reported that improvement in infrastructure was critical in order to improve technology speed and consistency throughout the district. A portion of the infrastructure enhancements was completed in December 2011 with the last major portion scheduled to occur in the summer of 2012.

Faculty software and web-based training. The faculty had opportunities to utilize the software programs and web-based programs and expressed their satisfaction with some more than others. Many of the faculty responses are concurrent with students feelings about the programs. It appears, however, the responses from the faculty are based on their exposure and training with the programs, while the students responses

were from an engagement and "fun" perspective. When faculty were asked about the five software programs being implemented, as described in the original grant application, three were being used regularly.

> Yes, and ongoing as things arise. MAP - Not through the district, but I had a short introduction to it through the county office through my membership of county math leaders. Destination Math- Spent 20 minutes playing with it, that's about it 3)ALEKS - Yes, - I mean had training on it and spent the last 3 years using it 4) Skills Tutor - No, I have not and 5) SOAR - I don't even know what that one is.
>
> (Faculty 1, Interview, Q-3h)

> MAP - We had training this year. We had that one day at the district office. Destination Math -We had 3 days of training, and it didn't go so well at all. Even the facilitator of the training was realizing the problems within the program. ALEKS - had one training about two years ago. Skills Tutor - I think I have had about 2-3 trainings on throughout the past 3 years. SOAR - The only thing I really know about SOAR, was at the one staff meeting we had where the military liaison spoke to us a little bit about it, but other than that, I haven't really explored.
>
> (Faculty 3, Interview, Q-3h)

> The first year I tried Destination Math it was horrible, just horrible. I have used ALEKS with students and it's great, just very, very dry. It doesn't hold their interest. But it's fantastic with the assessment that it has because it adapts to what the students need and what they are learning. So from a teacher's end, it's just trying to find those creative ways to motivate to continue with that program.
>
> (Faculty 4, Interview, Q-3h)

There are several points to be made about the faculty's exposure and training on the various programs and the link to applying those programs in the SATT-21 grant and Math Plus class. While there were five programs originally written into the grant proposal, certain program components have changed over time as students and faculty became more familiar with the programs and how they worked within the Math Plus class and other school sites.

Using programs more frequently than others is a natural occurrence in education, since real life application may be different from the theoretical expectation. In a

classroom with dynamic learning needs, applications of new programs are reviewed by the practitioners implementing them. Sometimes new programs don't perform as expected and adjustments need to be made. An example of this would be the Destination Math program. As discussed earlier, Destination Math works well for the elementary school students, but not necessarily for middle and high school students. Therefore, any ongoing training for staff and usage of this particular program at the middle and high school, is irrelevant.

Another area mentioned was the limited professional development training on certain software and web-based programs. In addition, when certain trainings were offered, some were more productive and relevant to the SATT-21 program than others. Professional development is a key component in the SATT-21 grant and while understanding that professional development is typically extended to the role specific faculty play in the SATT-21 grant, it does appear that training with software programs designed for the program was limited.

Challenges

The responses regarding student concerns of the Math Plus class were broken down into two key areas. While all students were asked about challenging aspects of the class and their overall experience in the class, there was a specific sub-question within question 2j that read: *What are some of the challenges of being a military dependent child when it comes to your education?* This particular question was asked of all of the participants as it's a central theme of the study and one that is attempting to be understood in relation to military dependent student challenges and their education. As shared previously in Chapters Three and Four, not all twenty students currently enrolled

in the class during the survey were military dependent and most could not answer this particular sub-question. However, the challenging aspects and the overall student experiences in the Math Plus class were asked of all students and this is categorized in Table 7.

Table 7

Challenges and Concerns

Type of Challenge/Concern	**Number = 20 Total Students**	**Percentage**
No concerns or challenges	11	55%
Military challenges	3	15%
Peer issues	3	15%
Difficult math concepts	2	10%
Placement in class	1	5%

Question 2j was used as a tool to catch any responses from students that may have not been included in the questions from the Student Survey (Appendix B). The majority of the student responses indicated they didn't have any concerns about the Math Plus class that were not already expressed and described in previously asked questions. Based on their responses, it could also be suggested the students were fatigued since it was one of the last questions. While many of the students didn't have concerns at this point, of those who did, the responses varied.

In regards peer issues, two of the three students responded by sharing their displeasure of being made fun of by their peers for being in the class and this caused embarrassment. Another student didn't like that his friend was in a higher level math

course and he was in the Math Plus class. Two other students responded about the difficulty of the math concepts, indicating there were "advanced math problems" and "too much to focus on." While another student shared his concern about the placement and expressed his inability to choose about being in the class. Lastly, another student discussed a teacher challenge expressing that the teacher was a "little harsh." However, in the second part of question 2j regarding challenges for military dependent students, several responded by saying,

> When you are a military kid, you move a lot and have to deal about your father leaving or deploying for a while. I stress a lot over things like this and it moves a lot of school focuses to the back of my head and I easily forget things.
>
> (Student 9, Survey, Q-2j)

> Some of the challenges are my grades and my family.
>
> (Student 10, Survey, Q-2j)

The parent's insight into the challenges their military dependent child faces related to their education was equally compelling as one parent expressed.

> Well, I think the stress of the deployment is a big thing because sometimes the parents can be gone for 6-12 months, or longer, and just the stress of the parent being away and having to rely on only one parent. I think the constant reminder of watching the news, watching the T.V., just reinforces that stress and also a lot of other things. Like the father working with the child and maybe he can't do that anymore. Like outside sports or Boy Scouts, or helping with homework which he (father) is no longer able to do.
>
> (Parent 3, Interview, Q-2r)

While it's difficult to encapsulate the above quotes for definitive conclusions as to why military dependent students face challenges in school, their experiences help to support an understanding of what challenges may exist. Unfortunately, upon further analysis, the researcher had wished he included an area in the student survey that indicated if the student responding was military dependent or not. While two of the student responses to question 2j said they were military dependent, the remaining military

dependent students in the class (3 total) didn't express this in the survey, therefore, its unknown which of the remaining responses were from military dependent students. Originally, this was the design of the Student Survey on purpose for confidentiality and non-bias purposes, but after further reflection, the researcher would have preferred to indicate this on the survey while still keeping it confidential.

The faculty was more elaborate in their understanding of what challenges a military dependent student encounters in their education. Some of the responses were in congruence with the students and parents. The two most significant factors from a faculty perspective were: (1) the mobility/transiency issue associated with moving frequently and to the many different educational systems, and (2) fractured learning as a result of moving since different schools have different expectations including teaching, learning, and school policies and procedures. The question to faculty read: *What are some of the challenges military dependent students' encounter that may cause them to perform below proficiency?*

> Being a military junior myself and being one who was lucky to go to Coronado schools for the most part of my education, but having moved some, but A, the gaps of holes in your learning. That is definitely a challenge and that is going to change for our military students with the Common Core in the coming years. The other part is the emotional piece. Transition is hard. It's hard for everybody. That newness. We've got these young kids who just want to be loved, welcomed, and be part of the group. Our awareness of that is gigantic. We want them emotionally available to learn. That whole child piece. Not just for our military kids, but all of our kids. But those military kids who have some significant challenges in their lives. Sometimes they come to school and they are worried that their parents are far, far away and not safe. That makes it pretty hard to learn sometimes. Or they just miss them.
>
> (Faculty 1, Interview, Q-2o)

> Definitely, again the transiency. It's the different schools, it's the having one parent at home, and there are a lot of different factors that play into that. So that always is going to be a challenge for them.
>
> (Faculty 2, Interview, Q-3o)

> With math it's very hard to place a student in the correct math class if they have been bouncing around from school to school, especially if they are coming from state to state. California seems to be about a year ahead. So I would say the biggest challenge is placing them in the correct class.
>
> (Faculty 3, Interview, Q-2o)

> I think obviously moving. Again, I think sometimes they miss out on something, so they may not have access to the tools and at this point in their life they may not be able to advocate for themselves for what they need to do. It's interesting because they have these crazy gaps. Like even if you like learn it, but you have all of this transition or movement I think sometimes can just impact, you know just how they feel, how confident they are, their retention and understanding. And experiencing so many different stressors that come with that. You know we have our basic needs and some students just adapt. In math or reading maybe it just comes easy to them, but students who struggle with it and also have that on top of it they are worrying about so many things that do not have to do with learning. So math is just not where they are at that time. They miss out on things. Socially and others they miss out on.
>
> (Faculty 4, Interview, Q-3o)

> Yes, I mentioned that earlier. Moving around I think has a huge impact on students because their schools teach them things in different orders, different concepts, and they may not have reached the concepts where the school is and they may be below just because of moving. Not necessarily because they are having difficulty, they may have not gotten a good foundation and now math has become difficult for them, because they don't have that foundation. I also think there are challenges for the military students emotionally. Just the changes in coming into school, meeting new students. In middle school peers are really important. You know, just learning to be part of the group. All of those kind of things can be challenging. Then of course worrying about your parent, are they in the war? Are they coming home to you? These are all things that impact. Since math requires so much concentration, it's probably one of the very first subjects to go. If a student is depressed, sad, or irate.
>
> (Faculty 5, Interview, Q-3o)

Although the faculty pointed out several significant factors with challenges military dependent students encounter in their education, they are related to each other, as well as the components within them that can make educational challenges more pronounced for military dependent students. Transiency, or mobility, is a key factor in the relationship to military dependent students and their challenges in education, as well

as how this transiency impacts many different aspects of a students' educational and social emotional well being.

Another challenge also associated to mobility is the enrollment and placement process. When a student comes to CMS from another school, placement begins with reviewing previous school records in order to gather information about the student's educational knowledge. Additionally, conversations with military dependent students and their parents occur to determine placement in classes, as well as a class schedule. Placement exams are conducted to gather data on a students' comprehension. These placement exams contain learning standards which are typically new to a mobile, military dependent student. Moving around from school to school creates learning gaps, but also record keeping issues.

Official student records are ordered by the new school once registration is complete. While parents can have copies of school records, official records have to be requested by school officials and they usually take time to arrive. These are just some factors that can make placement difficult for a military dependent child when he/she enrolls in a new school for the first time. Once registration and enrollment is complete, the actual adjustment to the curriculum is another factor in military dependent students' challenges.

Different school systems in different states and countries have different expectations. While many stakeholders agree that student learning and achievement is a critical expectation, how that expectation is delivered through the instruction at each school is unique. Curriculum expectations create challenges for military dependent students because of their mobility. As students move from one school system to another,

the curriculum changes including, the state standards, textbooks, and the assignments and assessments associated with them. While the faculty shared their concern about the differences in curriculum, they were equally concerned about military dependent students learning being fractured as a result of moving. Since curriculum and standards are different in each state, faculty were concerned about missed learning opportunities and the incomplete understanding of math concepts.

As mentioned by some of the respondents, the new Common Core State Standards (CCSS) will continue to assist in this curriculum understanding among military and non-military dependent students. As of 2010, new teaching and learning standards were developed and agreed upon by 45 of the 50 states, thus making a common set of standards for a significant number public school systems across the country. Furthermore, the CCSS were developed with existing standards already implemented across most of the states. Therefore, it was a matter of enhancing much of the work already completed and placing these common standards in one, comprehensive framework. There is great anticipation among stakeholders about the positive, long term affects the CCSS will have for students in the future. Lastly, another critical piece to military dependent student learning is the social-emotional adjustment.

The social emotional piece is critical for military dependent students in order to get quickly acclimated in a new school environment. While peer relationships tend to be a significant factor for middle school students, being a military dependent middle school student just magnifies the challenges related to peer relationship development. This intensifies when a military dependent student is new to a school campus or a parent is

deployed. Based on the participant responses, this is probably the single most important factor challenging military dependent students.

Suggestions

On average, many of the participants were satisfied with the design and supports in the Math Plus class. Responses ranged from, "liking the programs and that it should continue," to, "it's good the way it is" and "nothing should be added because it helps me a lot." When students were asked about making suggestions to the program including anything they would like to see added, a third of them responded no.

Of those students who responded no to suggestions for the Math Plus class, it's possible many of them didn't think anything should be changed as a result of feeling they answered the question already. For example, many of the questions in the survey purposely asked questions that facilitated continuous feedback about the program, lending to the theory that students made suggestions already shared earlier in the survey prior to this question being asked. In addition, this was the last question of the survey and students did provide shorter answers than previous answers to questions. As mentioned previously, fatigue could have been an issue. Furthermore, it may have had to do with experience and maturity, since many of the parents and faculty always responded with more information and not just one line sentences answers.

Regardless, the students who did make suggestions about their Math Plus experience, did so with strong conviction with most centering on technology and the suggestions to add more programs and websites. Students felt adding different programs and websites to the curriculum would provide new experiences that would keep them

more engaged since many of the current programs they used during the year were the same programs since the beginning of the year, and seemed to get redundant.

Another suggestion with technology was the hardware component. The netbooks were perceived as running slow and there was a need to have them move faster to keep up with the software and web-based programs, as well as the learning in the class. One student suggested getting new and better devices could help solve this problem, like I-Pads. The responses about the hardware issues, such as the computers running slow or not connecting well to the network, was a theme that appeared from other responses throughout the survey.

Lastly, several students responded about teacher support in the class. Two of the students felt that an additional teacher should be added to the class because there wasn't enough time for one teacher to work with the students. By providing a second teacher, potentially more attention, instruction, and learning can take place.

> What I would like to be added to the class is maybe another teacher, because when I need help, and so does another couple of students, there isn't enough time. It must become really stressful for the teacher to have to go around the class room and spend like 9 minutes on each person's question.
>
> (Student 5, Survey, Q-2k)

Currently, the resources in the SATT-21 grant provide the funding for the class, as well as the teacher. At this time, there is not a plan for second teacher to be added in the class. Furthermore, adding another teacher to the Math Plus class, when there are much larger classes on campus, may be difficult to justify considering the current economic climate confronting public education.

From a parent's standpoint, suggestions for improvement of the SATT-21 program and Math Plus class were mostly about communication and notification. Much

of this had to do with their surprise of knowing later, rather than earlier, about their child being selected for the class. While most were aware of their child's struggles in math even prior to being placed in the class, as one parent pointed out, the placement without being prepared for it was problematic.

This late notification and lack of knowledge after their child was placed created anxiety for both student and parent. The notification, coupled with the awareness of losing an elective class as a result of being placed in the Math Plus class, made it difficult for the both the students and parents to start the class off on the right foot.

> My only disappointment with the class, or what am I trying to say, my only negative about the class, is that it does leave him without an extra activity, like band. That was really hard not being able to take an elective with his friends. And so when his friends asked him which elective he was taking, it was a real downer for him to say, I'm not taking an elective class, I'm taking this math class. That was hard on him.
>
> (Parent 1, Interview, Q-3o)

It appears the parents had the similar concern as the students when they were first notified of their child's placement in the program. Naturally this may have been heightened with their child's equal frustrations about being placed in an additional math class in lieu of an elective class. However, both parents and students initial concerns about the class generally seemed to dissipate over time once there was clear communication from faculty about the purpose and rationale for the selection into the class. Unfortunately, the concern about losing an elective was still apparent and there was nothing a student or parent could do regarding this loss if they were placed in the Math Plus class.

Faculty members also shared their suggestions about the SATT-21 program and Math Plus class. All faculty had a question that read: *What recommendations would you*

make that will inform the district for the final year of the grant including the district's plan for continuing the grant with or without government support? Similar to students and parents, the responses were overwhelming positive for the need to have the grant and the SATT-21 programs to continue. The faculty was very excited about the learning opportunities provided through the grant and knew how fortunate they were because of the grant. However, also similar to the students, most of their recommendations included the need to maintain an ongoing review of the current technology and software and web-based programs to determine which ones would help support student learning now and in the future.

> I feel like it's great and it's only going to get better. The only recommendations that I make would be that we really work hard to be able to continue to have this grant because it has been so beneficial for so many of our students and truly the data speaks volumes because there has been growth.
>
> (Faculty 2, Interview, Q-3n)

> I would definitely recommend, I love the program, Learning upgrade.com. It's a program that we could be currently working on. I also think that instead of a yearlong class, I think it could be a semester class. This way we can target more students.
>
> (Faculty 3, Interview, Q-3n)

> My recommendations would be to obviously continue it. And again, having that opportunity, now that it's the end, to re-evaluate the programs we are using and think about new and innovative things that have come out in the last three years. Because three years is a long time in technology, so there obviously been new and improved applications that have come out. So being able to do that would be fantastic. I think the kids get a lot out of it.
>
> (Faculty 4, Interview, Q-3n)

> Again, implementing some of the programs that our teachers like, that are motivating students and that feel right or are helpful for our students. You know, continue evaluation in the differences of students learning, because I do think that is huge in terms of how successful it is.
>
> (Faculty 5, Interview, Q-3n)

> Since the grant expires in about 6 months, I hope there is a maintenance plan for the technology that doesn't impinge on the general budget in other ways. And if

> there isn't, I hope there is a plan for clarity to the staff that we are going to have to phase out the netbooks, whatever out, maybe we transition from netbooks to BYOD, bring your own device. Because the infrastructure is not going to go anywhere, but the hardware is. I also think we need to be a better job of welcoming students in a real way and not just in a superficial way. I think transitioning all students in, making sure we do placement tests in reading and math at the high school. Making sure that teachers are aware of who the new 9th graders are. Like here is a list of kids who didn't go to 8th grade here. For example, if I was given a list of kids and knew that (name of student) didn't go to school in this district, (name of private school) or Florida when you walked in the door, I might make sure you would have someone to sit with at lunch, that you would know part of the cultural stuff that is part of this school. I think if we had more focus in August, what goes on prepping kids, to be ready for the first day of school. We do it for first graders, great, but we don't do it for 9th graders.
>
> (Faculty 6, Interview, Q-3n)

Certainly the faculty members had some insider knowledge the students and parents may not have access too, but their responses were enlightening, particularly the one about having the Math Plus class for one semester (half the school year) rather than the full year. This could support students in different ways from motivation to leave the class because of goal attainment and knowledge, but also in creating more spaces for other students who need the support services.

CHAPTER V

Discussion and Recommendations

Chapter Overview

The preceding chapters of this study presented research to provide additional, value-added information, to the findings of the CUSD's annual assessment report of a three-year federally funded grant designed to close the mathematics achievement gap for military dependent students performing below grade level at their middle school. While there appears to be a general understanding among school stakeholders as to why it's important to close the achievement gap for all students, less is understood on specifically how to accomplish this goal. Furthermore, very little research has been conducted on military dependent students in public school systems performing below proficiency in mathematics and the educational strategies to address their unique needs.

Military dependent students experience unique challenges such as, ongoing parent absence, extended parental deployments, and frequent moving and relocation. In California Unified School District (CUSD) where 37% of the student population is military dependent, these challenges can place military dependent students at risk of failing socially, emotionally, and academically. As a result, CUSD implemented Students Achieving Through Technology (SATT-21) a three year, 1.4 million dollar federally funded grant, in order to address the achievement gap of military dependent children.

This study sought to focus on the purpose of the grant through a review of the district's annual assessment report and from the perspectives of the participants involved in the grant including, the students, parents and faculty members associated in the SATT-

21 program at the middle school. This stakeholder perspective is critical considering the SATT-21 grant demands many resources including financial and human commitments in order to be successful. Furthermore, there is a strong interest from stakeholders to determine the extent to which the SATT-21 program has attained the goal of raising military dependent student achievement levels.

The findings in the first section of this chapter include discussion and recommendations from the researcher in response to the district's findings and recommendations described in their annual assessment report on the SATT-21 grant. The second section of this chapter provides a summary and recommendations from the researcher regarding the participants' descriptions of the SATT-21 grant program and Math Plus class at the middle school. This was accomplished using a qualitative approach by exploring the perceptions, concerns, and suggestions from the participants involved in the SATT-21 program. These experiences were a part of the participants' opinions, feelings, and actual practices which provided a foundation for this study.

The participant experiences, integrated with the analysis of the annual assessment report, led the researcher to three major understandings or domains in the study: (1) communication, (2) curriculum, and (3) professional development. All of these domains provide a framework to the district's annual assessment report and of the participants' experiences in the SATT-21 program. This chapter provides an analysis and summary of the participant experiences in combination with the district's annual assessment report, literature reviewed, the implications for practice, and the recommendations for future research.

Summary of Findings: SATT-21 Annual Assessment Report

Communication

Communicating expectations about the SATT-21 grant is a critical element in creating knowledge about the supports designed to increase achievement benchmarks for below grade level students. In order to have a common understanding of the expectations of the grant, seamless communication needs to occur between multiple stakeholders, including teachers, parents, board members and others. Involving multiple stakeholders in sharing common understandings about school wide expectations and programs has been revealed to support student achievement (Harrison & Vannest, 2008; Heller et al., 2003; MISA, 2010). As more communication is shared about the grant by key stakeholders, particularly as new programs are introduced, greater awareness and support for closing the achievement gap for all students can be further realized.

Faculty communication and school related representation. Communication about the grant and having key representatives sharing information on the purpose of the grant, involves specific administrators in CUSD. According to the evidence and recommendations provided in the annual assessment report, district level officials such as the Assistant Superintendent and Director of Curriculum and Learning, are primarily involved communicating expectations about the grant to faculty, parents, board members and other stakeholders. However, what appears to be absent from the report is the involvement of other stakeholders, beyond administrators, who interact with the grant and the students involved in SATT-21 programs. The annual assessment report (Gallant, 2011) indicates the following evidence as communication supports for military dependent students:

- Assistant Superintendent for Student Services is CUSD point person for all military issues
- Local Planning Council compact with Naval Base California; meetings are held three times a year; Director of Curriculum and Instruction is a participant; periodic attendance by Naval Base California Commanding Officer and CUSD Superintendent
- CUSD has a designated Navy Region Southwest School Liaison Officer
- Assistant Superintendent for Student Services serves on the local Navy Exceptional Family Members Program
- Military Family Life Counselors serve at each CUSD site (pg. 8)

While these key individuals play a major role in the grant, absent from the evidence and recommendations are how other stakeholders may also be able to communicate the expectations of the grant and play a role in its efficacy. This becomes significant to students and parents of individual school sites, particularly the middle school, when new enrollment occurs or transitions take place for military dependent students. As a result, if certain individuals with intimate knowledge of the grant are not site based, specific information about the grant and knowledge of support programs intended to increase below grade level students may not be properly conveyed to stakeholders.

Recommendations. Increase the role of the site level faculty and school related service providers including the School Liaison Officer (SLO) and the Military Family Life Counselor (MFLC) on district grant committees, including meetings with district administrators, board members, government officials and other key representatives. Teachers and school related service providers directly involved with the Math Plus class, and providing services to military dependent students, can add powerful knowledge about the current progress on the SATT-21 program and the progress of below grade level students at their site. Gathering the perspectives from the faculty who are providing

achievement opportunities to both military and non-military dependent students to increase their achievement is the cornerstone of the grant. Without including these perspectives, the management ultimately making decisions about the grant could lose valuable perspectives from those working in the classroom with students every day.

Furthermore, finding opportunities for both the district and school sites to involve more teaching faculty and school related service providers to engage in communication about the grant is essential to the success of the SATT-21 program. For example, the Math Plus teacher at the middle school and the MFLC and SLO are important resources for military dependent students and their families. Therefore, including them in discussions and meetings at the district and school sites is valuable. While the role of the Math Plus teacher at the middle school is fairly understood, less is known about school related service providers and how they can become ambassadors of the SATT-21 grant. Since their particular expertise is understanding, connecting, and providing services to military dependent students and their families, they are essential stakeholders in communicating the purpose of the grant and the services available. Although, the district references them in the annual assessment report, they are mostly absent from the participant responses. Therefore, the question remains if stakeholders know the resources offered by these school related service providers.

Also, it should be noted that there were no specific questions asked of the participants regarding the school related service providers (SLO, MFLC), but an assumption by the researcher would be the faculty mentioning them. A conclusion that all the more reason school related service providers need to be included in district and

school site SATT-21 grant meetings, programs, and various activities related to military dependent students and their families.

Finally, having more teacher and school related service provider representation at district and school site meetings will allow for more individuals to communicate to students, parents, and other stakeholders the purpose of the SATT-21 program and how students become eligible. The purpose and placement of students into the program were two significant findings, as referenced by all of the participants in the study and is described in greater detail later in this chapter.

Partners in education. Involvement from stakeholders not employed by school districts, such as school related service groups, parents, and other vested individuals, can be valuable contributors to school systems and supporting the achievement of students in the classroom (Epstein, 2001; Henderson & Mapp, 2002; Jensen et al, 1989; MISA, 2010; Roeser, Eccles & Sameroff, 2000). As described in the annual assessment report, the local Student and Family and Enrichment (SAFE) organization, the Parent Teacher Association (PTA) groups, as well as the larger community groups such as the local YMCA, all provide services to support military and non-military dependent students in the district. Some of these services are provided outside of the school day, and others occur during school hours when students are accessible depending on students needs.

In the annual assessment report, it discusses the various groups described above and how they provide supports for students at the school sites. Even though each school site may have unique needs where some partners in education may be more necessary than others, particularly Elementary School which has an 80% total school population that is military dependent, it appears some of these services should be duplicated at the

other school sites. In this regard, California Unified School District can become even more unified in providing partner in education services to both military and non military students performing below grade level.

Recommendations. To support consistent communication and support services available to both military and non military dependent student performing below grade level, promote and increase the involvement of the various partners in education. This also includes the duplication of programs already offered by these groups at the other school sites which have been determined successful.

According to the annual assessment report, several services offered by individual school sites should be at least attempted at the other schools as another support for military dependent students. For example, Elementary School 2 is mentioned as having a School Military Parent group, and Elementary School 1 has Operation Bigs and Operation PALS which connect local military service men and women with students on campus. Both are touted as, "helping grow both and increased awareness of the needs of military-connected students and the services critical to supporting them" (pg 8). However, both the middle school and high school do not have the programs.

Each school in the district should have its own School Military Parent group that meets frequently (one per month). These individual site parent groups should have various stakeholders including, district and site administration, teachers, parents, students, school related service providers (SLO, MFLC) and partners in education (PTA, SAFE) to discuss the needs of military dependent students and progress on the SATT-21 program. Utilizing these groups to further the communication, promote the resources,

and meet the needs of both military and non-military dependent students, is another support mechanism to assist in closing the achievement gap.

Other supports shared in the annual assessment report regarding communication which is isolated to several campuses that can be implemented at all school sites has to do with the ability to integrate technology for communication. According to the SATT-21 Annual Report (Gallant, 2011) the following exists at several schools:

- California Connections Corner meeting room located at California High School for Skype conferencing with deployed military parents and their child's teachers, meetings, college resources, etc.
- Skype conferencing at both the elementary schools for parent-teacher conferences
- California High School Graduation webcast allow for deployed parents to view the ceremonies

Another recommendation would be to include the Skype conferencing services at the middle school, as well. Since technology is main component of the SATT-21 grant, using it to communicate to various stakeholders, particularly parents deployed overseas, seems very realistic. The capabilities, infrastructure, and equipment is available, it's unclear why the middle school would not take advantage of this opportunity.

This is also the case with ability to perform a "graduation" webcast for the middle school. The middle school does have a very prestigious 8th grade promotion ceremony held on the grounds of the high school. In addition, the same equipment, chairs, and technology is used the following day for the high school graduation. The ability to webcast the middle school ceremony is realistic and needs to be considered by the school/district. Allowing deployed parents of military dependent students and all students who have family members unable to attend the promotion is valuable. 8th grade promotion is a culminating middle school activity. It's a memory that lasts indefinitely

and is the capstone for school achievement academically and socially. All factors contributing to the positive healthy environment of the school and supports provided to students to celebrate their educational accomplishments.

Lastly, the annual assessment report also promotes the value of orientation nights for parents and other stakeholders hosted by the district and school sites. This researcher also concurs with the district, and this is further described later in this chapter. While multiple family orientation nights are hosted in the district, from New Student Orientation, to Parent Back to School Night, it appears the school sites were actively engaging in this activity prior to the SATT-21 grant. However, with the onset of the grant, it's critical the district moves forward and hosts family orientation nights specifically tailored to the grant. The annual report recommends specifically a MAP assessment information night, a key program supported by the grant. Again, this researcher would also recommend hosting more family orientation nights as new SATT-21 program supports commence, and for the district to model their orientations on the existing ones at the schools sites.

Curriculum

Much of the research on developing effective curriculum in the classroom hinges on the careful planning and implementation from the teacher who will be delivering the curriculum to the student (Jackson & Davis, 2000; Heller et al., 2003). As described previously in the annual assessment report, the literature reviewed, and later in this chapter from the participant responses, involvement from key stakeholders in schools, supports academic achievement. Several specific curricular areas in the annual

assessment report are referenced as future recommendations from the district (Gallant, 2011).

- Military representation on site and district strategic planning and other district committees
- Study *Compass Learning* web-based intervention software programs, which are completely aligned to MAP and can prescribe learning paths for students based on MAP performance as a possible replacement for *Destination Learning*
- Establish a district-wide Response to Intervention committee
- Include military student(s) on secondary strategic planning teams (pg. 9).

Recommendations. As the district points out, and is supported by this researcher, is the value of having the various partners in education, including students, involved with aspects of curriculum development. This becomes more important when curriculum planning focuses on large school and district wide areas such as, strategic plans, goals, and vision and belief statements. The district's recommendation to include students is significant and one that often is missed when schools review curriculum and development. Currently the high school and middle school do include students in their strategic plans and other committees, but further exploration in this area to include military dependent students in particular, as well as other stakeholders, is recommended to promote the opportunities provided by the SATT-21 grant and the multiple interventions currently implemented to close the achievement gap for all students.

In addition, a Response to Intervention (RTI) committee needs to be established in some fashion, as this is a requirement for schools in order to meet the needs of below performing students. While this researcher would suggest CUSD does have programs in place considered RTI, in particular the SATT-21 grant itself, RTI is for all students performing below proficiency, not just military dependent. Again, that is a strength of

the SATT-21 grant; the district can reference this grant as one of their RTI programs. However, it appears the district is discovering ways to include the SATT-21 grant and its resources into one, comprehensive RTI program meeting the curricular needs of students performing below proficiency in math as well as other core subject areas.

Also, studying more programs especially technology and web-based programs that can be under the umbrella of the SATT-21 grant is commendable. This also includes the ability for the district to review programs that are currently provided by the SATT-21 program and not successful. An example is the Destination Learning program referenced by the participants and presented in the annual assessment report. Reviewing, analyzing, and critiquing curriculum for its effectiveness needs to be an ongoing process. The process should include multiple stakeholders and requires frequent meetings.

Lastly, the researcher recommends the willingness for the district and middle school to explore other curriculum opportunities for students supported by the SATT-21 grant, but particularly the Math Plus class. For example, exploring additional curriculum and teaching methodologies, such as project based learning activities and whole group instruction, to be integrated with the current technology and web-based programs in the Math Plus class for additional student engagement. While it's not mentioned in the annual assessment report, if there is flexibility of introducing multiple curriculum options or teacher pedagogy, the student and teacher participants specifically shared their interest in allowing for more curricular programs to be explored for usage in the Math Plus class. As stated in the SATT-21 grant the overall goal is to,

> abate the achievement gap between military dependent students and their civilian peers through a highly interactive, individualized, motivating instructional system which provides immediate feedback to the student, teachers and parents. Meeting

> the unique needs of each and every student is only possible through the use of specific, articulated computer-based instructional programs (pg. 1).

However, what is not necessarily clear at this point is how much differentiation of instruction, as well as differentiation of curriculum, can be utilized to meet the needs of learners in the Math Plus class who may become disengaged after a period of time because they have been using the same technology web-based programs. Furthermore, while there are specific instructional models that have to be taught and learned in very structured formats in order to meet student outcomes, this doesn't seem to be the case with the Math Plus class, nor the SATT-21 program, in general. Each school does have a limited variety of technology web-based programs within their SATT-21 program, including how they set-up their classrooms, but it appears much has not been explored regarding use other curriculum materials and teaching strategies. Again, encouraging the district and school sites to explore other supplemental materials, but more importantly at least, other teaching approaches and methodology to the instruction is recommended.

Professional Development

Collaboration time and professional development training for school faculty is a necessary and significant factor in supporting academic achievement for all students (DuFour, 2005; Fullan, 2007; Guskey, 2002, Murphy, 2005). In addition, this is a valuable component to the SATT-21 grant and resources are specifically allocated to the education of faculty on the various aspects of programs implemented through the grant. The following three conclusions and recommendations are referenced in the annual assessment report (Gallant, 2011).

- Continue professional development for all CUSD teachers on the integration of software and netbooks into all classrooms to individualize instruction for ELA and mathematics

- Continue professional development for all CUSD teachers on formative assessment Measures of Academic Progress (MAP) and individual goal-setting conferences for students
- Work with School Liaison Officer to provide more training for CUSD staff on the needs of military students and their families (pg. 9).

While it's encouraging to see the recommendation from the district to continue professional development for its faculty, the researcher adds to this recommendation by acknowledging the professional development have a specific focus supported by the unique needs of each school site. Even though the SATT-21 program has duplicate resources, such as technology web-based programs (MAP, ALEKS) and hardware programs (netbooks) allocated to each school site, due to the variety of the students the schools serve, including student age levels, ability levels, and personal learning needs, the professional development would need to be constructed to meet this criterion, as well. Certainly, there is much to be applauded in streamlining resources and professional development to include district wide faculty involved in the SATT-21 program, but it also needs to include site specific professional development to address resources special to each school.

This recommendation is parallel to the idea of differentiating the curriculum and teaching methodologies for students in the SATT-21 programs. Although this researcher agrees with a comprehensive, consistent focus of training and professional development, considerations have to be in place for the special needs of each school site. An example of this type of consideration was the Math Plus teacher's recommendation of piloting, and eventually receiving support through the SATT-21 grant, of a technology web-based program showing data of its usefulness for students in the Math Plus class. The same could be said for professional development. Feedback and input from faculty as to the

type of professional development needed for them to be effective in the classroom is highly recommended.

Also, as new programs are introduced, such as MAP, and new for 2012, Compass Learning, professional development is necessary in order to support teacher growth. This growth in turn will benefit students and their own learning as faculty will bring their new found knowledge into the classroom. Professional development, particularly specific types of training, was very important in the faculty responses from the surveys, as indicated in Chapter Four and will be further described later on this chapter.

Lastly, the district recommends working with the Military Liaison Officer (MLO) to provide more training for CUSD faculty and staff on the needs of military dependent students and their families (Gallant, 2011). This researcher couldn't agree more. What appeared to be absent from much of the participant responses, as well as the knowledge gathered by researcher in this study, was the role, but more importantly, the potential of the resources that can be provided by the MLO. The literature clearly describes the benefit of having such a partner in education who is valuable in supporting military dependent students and their families with transition and success in school, as well as someone who can educate and train faculty on the unique needs of military dependent students in order to achieve in school (Harrison & Vannest, 2008; MISA, 2010).

Summary of Findings: Participant Responses

Communication

Communication between students, parents, and educators is a significant factor of influence when reviewing student learning outcomes in the classroom. Arguably, if there is not a clear understanding between these stakeholders about classroom expectations as

well as the purpose, the curriculum, teacher instructional strategies, student learning goals and outcomes, and the policies regarding classroom behavior, then teaching and learning will not be as effective (Harrison & Vannest, 2008; Marzano, 2007; MISA, 2010). The communication for both military and non-military dependent students and their families regarding the SATT-21 program began with notification of student placement in the Math Plus class, as well as the explanation for the purpose and placement in the class.

Notification and placement process. After examining the results, there appears to have been a later than preferred notification process for both students and parents, as they were placed in the Math Plus class at the beginning of the school year in 2011. Notification about being in the class seemed to be a surprise for many of the students and their parents. In addition, when students and parents were given communication about placement, it occurred much closer to the beginning of the new school year since operations for the school close during summer recess. Even if students and parents became aware of placement through mail notification, as the school sent out, it would still be difficult to discuss the topic with faculty as many were still off duty for summer recess.

Discussing the topic with faculty, the notification process was not executed to their expectation. Several factors were taken into account for the problems with notification. First, communication between the math department and administration about student placement for the following year occurred much later as school was getting ready to close and school personnel were leaving for the summer recess. This includes obtaining much of the necessary learning results needed to place a student appropriately in the Math Plus class for the next school year. These results include grades and

assessment scores from teachers and other schools, and the availability of scores such as the STAR/CST provided by other outside agencies. Furthermore, the faculty were heavily involved and consumed with a multitude of tasks that occur at the end of a school year making placement yet another task to be considered.

Another reason for late placement was the misunderstanding between the school counselor and the assistant principal regarding the importance of placing students early on in the school master schedule. Once the school counselor was gone for summer recess, there wasn't a placement of students into the Math Plus class until right before the next school year started. At that point, there were numerous schedule conflicts with the students who were supposed to be in the Math Plus class, and moving their schedules around to accommodate the one period Math Plus class became problematic. The complexity of this problem multiplied after students received their schedules before school started, and placement in or out of the class would be difficult to explain with students and parents. While the Math Plus class stayed at the designed and desirable class size, the faculty expected to have more military dependent students in the Math Plus class, hence much of this problem was based on the placement process.

Recommendations. Establishing a consistent method of communication for notification and placement into the Math Plus class should occur for the student and families involved in an appropriate timeframe. Placement discussions with families should happen toward the end of the school year (spring), preceding placement into the Math Plus class for the following school year. A multiple method of notification should include mail notification to the home and follow-up with a phone conversation or e-mail about the class. The letter should include the purpose for the placement and information

about the class, as well as an avenue for students and parents to follow-up, discuss, and to meet in person with faculty.

In a perfect world where time is available, faculty should meet with students and parents prior to placement to discuss the importance of the class and the effective resources the student will utilize as a result of the SATT-21 program services. This can also include math teachers, counselors and other faculty communicating to students throughout the school year to discuss the math options and appropriate coursed placement for students performing below proficiency. One-on-one appointments are recommended due to the nature of the conversation and discussion of individual student achievement. However, if that is not manageable, a group orientation meeting could be held with students and parents to discuss the purpose and placement of the Math Plus class, but only after students and parents have been made aware or frontloaded with information about the program. These types of meetings should be considered toward the close of the school year, but with ample time to have meaningful conversations with all stakeholders. These meeting times could be flexible as well, taking place before or after the school day to accommodate families schedules.

Communication and articulation among faculty stakeholders needs to continue to develop, as well. Placement of students into the Math Plus class per the SATT-21 grant was considered following the established criteria of student assessment scores, grades, and performance observed by the teacher. However, it was the actual placement mistakes of not being able to get as many military dependents students into the class that created a problem. Continued discussions and meetings with all math faculty and administration from the middle school and other district school sites is encouraged so placement and

conversations with students and parents is clearly communicated and understood. These ongoing discussions and meetings could lead to the establishment of a consistent system of communication to all stakeholders about the SATT-21 program.

Educating stakeholders on the purpose of the program and the numerous learning opportunities for students in the Math Plus class will only assist when it's time to place students in the program. This communication becomes more complex for military dependent students because of their unique needs, and it is equally necessary to support their academic achievement (Harrison & Vannest, 2008; MISA, 2010). Communication about the SATT-21 program services and the Math Plus class will continue to develop as the program grows. In this regard, the expectations for the class may become clearer to a larger majority of the student population, and as a result, placement and understanding of the program may expand making the class more appealing and acceptable to a broader audience.

Purpose and understanding. Since the SATT-21 program and Math Plus course are relatively new to the district and the middle school, communicating the purpose and understanding to stakeholders is critical to capture buy in and participation with the goal of supporting student academic achievement (Epstein, 2001; Henderson & Mapp, 2002). Examining the responses from the participants, it wasn't so much that they didn't understand the purpose of the program, but their initial understanding was compromised due to the notification process.

> At first I was wondering why I was in the class. I was disappointed I didn't have good scores, and I was sad my scores were low, and I had to be in another math class. Now I feel it's really helping me with my math.
>
> (Student 3, Survey, Q-2c)

Although the notification process is important to begin the initial step of enrollment into the Math Plus class, it's merely a compliment to ensuring that students and parents understand the purpose of the placement and the purpose of the class.

Based on the responses from all of the participants, understanding the purpose of placement and the purpose of the Math Plus class wasn't too great of an issue. While certainly the students may have balked initially at having an extra math class in lieu of an elective class, eventually students understood the rationale for their placement as well as the class purpose. The same perspective was shared by the parents and teachers, as well. Much of this appears to be connected to the school's overall culture of academic success and articulated expectations for supporting students.

The middle school has two strongly identifiable characteristics that support the purpose for students to achieve in school: (1) various learning opportunities, and (2) character development. These characteristics also support the purpose of the school by providing a foundation for an overall school culture that stakeholders will understand, accept and appreciate. Research has indicated that a well identifiable purpose for a school imbedded with student expectations, supports a school culture that can ultimately have an impact on student achievement (Datnow, Hubbard & Mehan, 2002; Deal & Peterson, 1999; Fullan, 2007; Schein, 2004). At the middle school, the value placed on learning opportunities for students and character development are demonstrated by all stakeholders. Thus, everyone invested in the school has an understanding of the purpose for students.

All buildings, classrooms and walls throughout the school have character education signs, posters and statements related to school achievement. These visible

reminders of student success are on the school's letterhead, mascot, slogan, mission and belief statements. The purpose of the school is also branded on the webpage, through mass e-mail communication, the daily television broadcast to classrooms, assemblies, and the curriculum. To a larger degree, this purpose is also displayed in the community at various agencies such as the police and fire departments, and the city council and mayor's office. Lastly, there are designated weeks during the school year in which they community celebrates the development of character education and school achievement.

As a result, the strong sense of purpose and understanding of the school expectations for students is shared by all stakeholders inside and outside of the school. This helps to serve the purpose and understanding of the supports for students at the school, including the purpose of the SATT-21 program and Math Plus class. This purpose and understanding was shared by all participants in the study, regardless of how they were originally notified of being placed in the program.

> I was selected for this class because I need extra help in math. This class has helped me get the extra help I need. The goal was to help me (kids) see us get better and improve.
>
> (Student 9, Survey, Q-2b)

> Well, I think the Math Plus class touches on a lot of different aspects of math, and it will help him be more rounded and help him understand math a little better.
>
> (Parent 3, Interview, Q-2m)

> Well, the purpose again is to remediate and intervene for those military students who have lost academics because of moving, or transiency they encounter with their parents jobs. Also to kind of close that gap for them and to fill in any of those holes that need to fill in. Additionally, we do have students that benefit from the grant who are not military because they are students on campus who may also be working with some programs that the SATT-21 grant offers to our school. My understanding of the specific goal for students is to better their education, again, intervene with kind of those gaps that they have in their education so far.
>
> (Faculty 2, Interview, Q-3b)

For military dependent students and their families in the Math Plus class, it was even more critical to ensure that the school's purpose for student achievement was articulated and understood early on considering many were new to the SATT-21 program services and Math Plus class, as well as several new to the school and community. As mentioned earlier, mobility and relocation is just part of the military dependent student's life, and coming and going from school to school makes a difficult transition which can have an impact on learning and achievement (Baker, 2009; Chandra et al., 2010; Engel et al., 2008; Fowler-Finn, 2001, Walls, 2003). While notification of the Math Plus class was an issue, once faculty were able to articulate the purpose with students and parents, and student participation was occurring each day in class, the purpose was understood. Furthermore, as the year progressed, the middle school, along with district support, hosted an informational evening for all families.

Recommendations. The middle school and the district share a strong sense of purpose for student achievement. This is very well articulated throughout the school and generally is understood by all stakeholders who frequent the campus. Through this understanding, expectations are developed in each classroom, including the Math Plus class. The teacher in the program continues to work with students individually and in small groups to clarify and support the purpose of increased student achievement in the classroom. Because the school and district clearly articulate student achievement to all stakeholders, it makes the purpose of the Math Plus class more readily understood by those directly associated with the SATT-21 program.

This researcher encourages that the school continue the positive, ongoing work already well established for military dependent and non-military dependent students

alike. A greater emphasis for military dependent students to understand the purpose and underpinnings of the program can be done through more articulation on the school webpage. An electronic folder specifically dedicated for the SATT-21 grant and the Math Plus class will assist in frontloading those military dependent students and families who are planning to enroll in the school.

It's also encouraged the teacher of the Math Plus class continue to develop his website to display information relevant for both students and parents. Students and parents can monitor student progress, class assignments, achievement data, and their grades, via secure website access codes, which provide information about the Math Plus class and only as it pertains to them due to confidentiality. Once a clear purpose and understanding of the class has been established to both students and parents, this type of communication can lend itself to greater involvement by students and parents in the Math Plus program. More involvement by these stakeholders can lead to greater academic successes in the classroom (Epstein, 2001; Hallinan, 2008; Henderson & Mapp, 2002). Furthermore, ongoing communication between these stakeholders and the teacher, particularly with the students on a regular basis, can result in positive relationship development with the students and the teacher. Positive relationships between students and teachers, including parents, can support student achievement in the classroom (Epstein, 2001; Hallinan, 2008; Montalvo et al., 2007).

Student and Teacher Relationship. Student and parent responses indicate that the teacher and students in the Math Plus class had a positive relationship. Research suggests that students make stronger efforts in the classroom and increase their academic achievement when they are taught by teachers with whom they have a positive

relationship (Hallinan, 2008; Montalvo et al., 2007). Some of the faculty felt strongly about working collaboratively with their students. This relationship between student and teacher is an important dynamic in order to have academic success.

> I like the small classroom environment, being able to actually walk around the class and get to every single kid, every single day, make sure they are on task and make sure they are understanding what they are doing. That is definitely one of my favorite parts of it. I enjoy the class and the relationship I have developed with the students
>
> (Faculty 3, Interview, Q-3k)

> I really liked the Math Plus Class. That was a neat opportunity to really get to know those kids and kind of really know how to support them. It was more of an opportunity for them to really focus on what they needed to do and you could develop that relationship with them because it was more individualized. You could actually sit down and talk to them and about what they wanted to do and what they felt they needed to do. So I really enjoyed that.
>
> (Faculty 4, Interview, Q-3k)

Positive relationship development between the teacher and the students in the Math Plus class relied on how the teacher perceived his role and participation with the students in the class. An area that helped facilitate the establishment of teacher and student relationships in the Math Plus class was the size of the class. The small size allowed the teacher to have more time one-on-one with students, thus resulting in meaningful contact. All of the participants shared how the small class size and the ability for the student and teacher to have time together was beneficial to learning.

Recommendation. The teacher for the Math Plus class and other teachers associated with the services provided by the SATT-21 program, need to continue their great work already established in the area of student and teacher relationship development. District and site administration need to maintain small class sizes in the Math Plus class and other SATT-21 program services in order to provide meaningful interaction time between students and the teacher. As related by the participants, having

more time for student and teacher interaction as a result of the teacher not having as many students in the class, assisted in establishing relationships and providing time for the students and the teacher to discuss learning needs, as well as social-emotional needs. Having clear communication and time to discuss math concepts with the teacher, allowed for these math concepts to be understood and practiced correctly in class, thus resulting in greater math knowledge and increased math achievement.

The Math Plus class and other programs supported by the SATT-21 grant should have smaller populations of students when services are being provided to increase levels of student achievement. For students who traditionally have struggled in math, support from their teachers is necessary in order to learn from what is being offered by the curriculum (Klem & Connell, 2004). When students experience supportive relationships with teachers and classmates, they are motivated to participate actively in the learning expectations of the classroom (Battistich, Solomon & Kim, 1995; Hallinan, 2008; Klem & Connell, 2004; Felner et al., 1997; Montalvo et al., 2007; Skinner & Belmont, 1993).

Curriculum

Research has stated the curriculum provided directly by the teacher is a key component to supporting student achievement in the classroom (Jackson & Davis, 2000; Heller et al., 2003). While delivery of the curriculum by the teacher is just one step for allowing the learning to occur, establishing curriculum learning expectations for students is a piece of the larger achievement puzzle. Another piece of this puzzle is establishing instructional expectations for teachers by providing professional development and learning opportunities for teachers to grow in the profession (Borko, 2004; Fullan, 2007). Communicating instructional and learning expectations for student achievement by a

principal to a teacher, or a teacher to a student, is important when schools are focused on closing the achievement gap (Heller et al., 2003).

Instructional expectations. The majority of the students and parents felt the teacher in the Math Plus class had the skills sets and knowledge to instruct the students so learning outcomes could be met. The Math Plus class was heavily sustained in classroom routines and structures that revolved around technology, and this allowed for a very consistent delivery of instruction facilitated and supported by the teacher. Since a main thrust of the class was using technology to support the learning, much of the limited, direct instruction from the teacher usually began at the beginning of the class. Once students understood their objective for the day, they would work independently on their math focus area through the use of a netbook or laptop computer, while the teacher met individually with students to check for understanding.

For the most part, the students responded well to the independent learning tools afforded in the class due to the limited use of direct instruction by the teacher. This instructional consistency became predictable and comfortable for the students by knowing exactly what needed to be accomplished on a regular basis. This was significant for military dependent students considering a consistent and predictable classroom environment can provide the potential for greater learning opportunities (Davies, 2003). The consistency of the class schedule through the teacher's instructional model seemed to be appreciated by the students since they knew what was going to be expected daily. Where math may have once been difficult or intimidating for students traditionally unsuccessful in math, the class schedule allowed for less anxiety due to the predictability

of the expectations. One student added to this statement by commenting, "Getting used to the schedule was what helped me" (Student 1, Q-2d).

Learning Expectations. Routine and structure provided to the students through the teacher's instructional practice also helped to support the learning expectations. Increasing student achievement in mathematics was the learning expectation for the Math Plus class, but it was also an expectation understood by all of the participants. This learning expectation was aided by using technology tools which engaged the students in their own learning while providing immediate feedback for both student and teacher on learning outcomes. The learning expectations for the Math Plus class reflect common elements of instructional models associated with increased student achievement including: (1) rules and procedures, (2) communicating learning goals, (3) tracking student progress, and (4) celebrating success on learning goals (Davies, 2003; Hunter, 1984; Marzano, 2007).

Recommendations. The instructional expectations were generally understood by both the students and parents. While they may not have been explicitly communicated to the parents on a regular basis by the teacher, the students knew the classroom structures and routines established by the teacher and the design of his lesson delivery. A suggestion to increase this awareness for students and parents is for the teacher to host a student and parent Math Plus orientation program at the beginning of the school year. This needs to be supported and facilitated by the site administration and the teacher in the Math Plus class. An orientation program calendared around the parents' schedule, perhaps an evening orientation, will promote the purpose and understanding of the class and begin to further foster positive relationships between all school stakeholders. These

positive relationships between the various key stakeholders help to support student achievement in school. (Epstein, 2001; Hallinan, 2008; Henderson & Mapp, 2002).

As previously mentioned, the articulation of instructional and learning expectations in the school was very recognizable. However, since the SATT-21 program and Math Plus class is fairly new compared to the other already established programs at the school, there should be a push by the administration to promote the program and create awareness of the meaningful learning opportunities afforded by the SATT-21 grant. This can be done in collaboration with the district and other school sites to promote their SATT-21 programs, as well. One method of accomplishing this goal would be meeting with various stakeholder groups to share the opportunities provided by the SATT-21 grant, including partner in education groups, school board members, government officials, local businesses, community members and other interested stakeholders. This objective of promoting the instructional and learning expectations of the SATT-21 program also filters down to the site level, as well, through staff meetings, department collaborations, and professional development trainings.

Another prominent way to enhance the instructional and learning expectations for all of the students in the class, with particular focus on military dependent students, is through awareness education and learning activities. As suggested by Harrison and Vannest (2008), teaching core curriculum while integrating elements of military dependent student challenges, such as deployment and parent absence, is a tremendous value to everyone in the class. These curriculum strategies directly associated with military dependent students and imbedded with the instruction and learning expectations

of the Math Plus class, can support total student engagement, thus resulting in greater student learning and achievement.

Lastly, as pointed out by several of the students, the class seemed to have too much routine, or in this case, the same structure every day with the same programs. While the responses were generally favoring this type of structure, the Math Plus class does work with specific software and doesn't necessarily deviate from outside those software programs. Most of this is to get baseline data and benchmark learning outcomes throughout the year while providing students with intensive math remediation in order to increase proficiency. Based on the few students who did not like the structure and routine, it appears they were not satisfied with some of the instructional expectations. However, the methods of instruction, along with the specific software programs in the Math Plus class, are producing positive results regarding student achievement levels.

However, what is encouraged is for the district and middle school, is to pursue additional instructional programs that may meet the needs of its unique learners, while still accomplishing the goals and criteria of the SATT-21 program and Math Plus class. This includes teaching pedagogy and the method in which the curriculum can be delivered to the students. As mentioned by the students, many were excited by the ability to use the technology web-based programs, but over the course of the year became less engaged due to the monotony. A recommendation would be to discover if there is the ability to introduce supplemental curriculum, similar to what the Math Plus teacher did with his passion for the pilot program that was eventually approved. This would also include the way he could deliver instruction to the students such as through project based learning or whole group class instruction. Since the structure of the Math Plus class lends

itself to a lot of independent learning, it's recommended to explore other delivery models that will accomplish the same goal of elevating student achievement levels.

Technology. The primary resource to support the goal of increased student achievement for military dependent students in order to close the achievement gap is through the implementation of technology in the Math Plus class. As stated in the SATT-21 grant, "In order to close the achievement gap, we (CUSD) identified the need to implement an individualized, computer-assisted instructional model with specific educational software programs (Boyle et al., 2009)." The technology hardware and software tools in the Math Plus class had an immediate, positive impact on the students, as expressed by all of the participants.

Technology hardware. Providing students with their own, personal computer (netbook) was significant on many levels. First, students were appreciative of using the laptop computers in the Math Plus class. All of the students in the class don't have the opportunity to use a laptop computer in their regular math class, so this was unique. Second, students were entrusted to use the netbooks in a safe manner and take responsibility for their own assigned device. This responsibility appeared to have aided in building a level of trust between the students and the teacher, as well as the school. Third, and most importantly, the students received learning opportunities they didn't necessarily experience in their other classes.

> I love the mini-netbooks! They make the class fun. I love the programs we use too. My Skills Tutor and Aleks has helped me A LOT.
>
> (Student 9, Q-2d)

> The technology in our class is great. Having mini laptops in our class helps us with our math.
>
> (Student 11, Q-2e)

The hardware is cool because it is my only class with it.

(Student 13, Q-2e)

Allowing students to use hardware technology, such as the netbooks, was a very successful way to engage the students in their learning. In addition, for those military dependent students who have not experienced success in math, providing them with a computer and all of the responsibilities associated with it, created a trust among the students and the teacher in the Math Plus class. These responsibilities helped support the confidence of the students, which in turn was also viewed as developing their overall confidence in the class and confidence in math.

Although the ability to use the hardware in the Math Plus class was well received and provided great learning opportunities, there was concern from both students and faculty about the connectivity and slowness of the netbooks. Additionally, this was source of concern among the faculty and site administration, and feedback to the district for support was regularly expressed. Even though the district IT department worked on understanding the actual cause of the problem, the issue didn't get resolved until the late spring of 2012. Much of this had to do with identifying the problem, the netbooks themselves, or the actual school infrastructure, and therefore, a resolution came later in the year. Once the problem was identified, the issue was resolved through support at the district level. However, identifying and fixing the issues took time, and consistent functioning of the netbooks happened much later in the school year. This resulted in frustration among the students and some faculty at the school site, since the main tool to support the learning in the Math Plus class was through netbook usage.

Technology software and web-based programs. Many of the software and web-based programs provided by the SATT-21 grant and implemented in the Math Plus

class received mixed reviews from all of the participants. For example, while students expressed their personal preference over one program to another, the intent of the program and the data it produced regarding student growth in math was the preference considered by the faculty. In this case, the faculty was excited with most of the programs as they provided different ways of delivering the instruction to students, all tailored around each students need in math. On the other hand, students seemed to be expressing their preferences of programs based on engagement. Certainly engagement is an element necessary for student achievement, but the feedback and information provided by the software and web-based programs was the most critical from a faculty perspective.

All agreed, however, that some programs were not suited for middle school. In this case, one of the math programs purchased had more relevancy at the elementary level. While it was a loss for the middle school, the elementary schools found its functionality. Therefore, from an implementation perspective, the program was not a significant educational or financial loss. Although, since there were a limited number of software and web-based programs purchased by the grant, any programs not utilized by a school, also limited the school as to what was available for students to use in the classroom. In this case, only four specific programs were purchased by the SATT-21 grant for use in the Math Plus class, including the one program that didn't have relevancy. As a result, only three were left to use in the classroom.

Recommendations. An ongoing assessment of the netbook functionality in the Math Plus class is encouraged. Although it appears the issues of connectivity to the network, slowness and freezing were minimized later in the school year, its unknown at this point if these issues will persist in the future. However, after speaking with several

faculty members in late spring, including a follow-up conversation with the Superintendent of CUSD, it appears much progress has been made in the area of technology infrastructure. This is due in large part to the Superintendent requesting an outside agency to review the entire district infrastructure during the course of the 2011-2012 school year. As a result, this agency made recommendations, and it does appear that the recommendations from that agency have been and will continue to be followed. This explains why the netbooks may have been functioning better in spring, since much of the progression on the infrastructure was completed, with the remaining to be completed in the summer 2012. Again, testing of the netbooks after the completion of the scope of the infrastructure is suggested.

In regards to software and web-based programs provided by the SATT-21 grant, feedback from faculty involved with the Math Plus class has been considered, and as a result, the district added new software programs into the renewal proposal for the grant. It should be noted that at the time of completion for this study, the district was invited to reapply and was renewed for another three year grant. The recommendations made by the faculty for new programs were considered and approved, including the program recommended by the current Math Plus teacher and the other math department members.

Furthermore, it's recommended that the district continue to review ways to provide innovative and meaningful software and web-based programs that synchronize with the achievement goals for students in the Math Plus class regardless of whether the programs are provided by the grant or not. Since technology software continually changes, it's important to realize which programs will meet the needs of individual students while keeping the integrity of the goals for the SATT-21 grant and closing the

achievement gap for military dependent students. Because this is a very difficult challenge for any school, it's encouraged that the school and district continue to communicate about programs that meet the needs of the program. This includes supplemental software programs not financially supported by the grant, but programs that still support the goal of increased student achievement. An example would be piloting software and web-based programs, as demonstrated by the Math Plus teacher, which subsequently were written into the new grant. This innovative thinking is encouraged as long as any supplemental programs keep students engaged, provide meaningful teaching and learning, and correlate with the goals of the SATT-21 grant.

Assessing the learning expectations. A primary focus to determine student progress and achievement in mathematics with the curriculum provided in the Math Plus class is through technology related assessments. As referenced in the grant, the main components to measure student progress include: (1) state mandated assessments, (2) pre- and post mastery assessments, (3) improved classroom performance, (4) higher grade point averages, (5) reduction in school absences, and (6) reduction in school discipline referrals (Boyle et al., 2009). The evidence suggests the Measures of Academic Progress (MAP) pre- and post mastery assessments were a critical factor in monitoring and benchmarking the progress of students in the Math Plus class.

The MAP assessment program was new to the middle school Math Plus class in the 2011-2012 school year. While piloting of the program existed in limited classes at the elementary, middle and high school settings, a larger scope of the program commenced in 2011-2012 for various grade levels and low performing students in the school district. Students in the Math Plus class took the MAP assessments three times

yearly (fall, winter and spring) as a means for both the students and the teacher to review growth on math goals. This measurement was well received by the faculty at the middle school and truly was a precursor to determine how a student could score on the mandated STAR/CST assessment taken in the spring.

> Because of the MAP assessment, it has a cluster score breakdown that really allows myself, as well as the teachers, to target specific learning needs of each of their students within those clusters.
>
> (Faculty 2, Interview, Q-3h)

> Right now, the biggest I would say, the main data, is their MAP results. Every single student improved significantly. So I can compare pre-test and post-test and see how much they have learned from there.
>
> (Faculty 3, Interview, Q-3j)

> I think right now the primary tool for that would be MAP for us, as far as the assessment. This is our first year, and last year was the first year we tested anybody with it. So it will be interesting to see the numbers and kind of how that lays out for our school and our population because to me it's kind of a baseline year for that to see how they move along that continuum.
>
> (Faculty 6, Interview, Q-3h)

The faculty were able to get a fairly good picture of how a student was performing in the Math Plus class through their MAP assessment results. Additionally, the other technology programs that helped support the development of math skills in the class were the ALEKS and Skills Tutor program. MAP provided a diagnostic and prescriptive component to the teaching and learning, while the ALEKS and Skills Tutor programs provided the actual instruction and lesson delivery. All of these programs used in combination with each other provided information to students and faculty on how a student would hopefully perform on the mandated STAR/CST assessment, which was another measurement tool to determine student success in math according to the SATT-21 grant.

The STAR/CST student performance data collected in the spring was a measurement used to corroborate the results being discovered during the course of the year in the Math Plus class. Since the exam is considered high stakes because of the leverage with NCLB mandates, generally the students, parents and faculty are always very eager to see these results. However, the results usually don't arrive until late August or sometimes early September the following school year. Therefore, faculty review the results when they arrive, identify students performing below proficiency, and make adjustments to curriculum and instruction as necessary for students who perform below proficiency in math and other subject areas.

The other assessments referenced in the SATT-21 grant such as teacher observations, grade point averages, and attendance and discipline, are criterion used for placement into the Math Plus class, as well as to gauge progress throughout the year. As described in Chapter Four, many of the military dependent students were successful in making progress in these areas when comparing the 2011 school year to the 2012 school year. Evidence from the faculty responses, particularly the teacher in the Math Plus class, suggest both the military and non- military dependents students were successful in these areas.

Recommendations. The assessments used to measure mastery of mathematic skills for below performing military and non-military dependent students in the Math Plus class provide data regarding progress of students. The use of the technology programs as the primary means to diagnose, prescribe, and provide feedback to both students and faculty, is innovative and resourceful for instruction and learning. Studies have shown the usage of technology to support instruction and learning in the class have

slightly stronger effects than just application of direction instruction (Barnett, 2002; Becker, 2000; Dynarski, 2008; USDE, 2009; Means, 2010; Tamin, 2011). Furthermore, blended instruction of combining both face-to-face with software and web-based technology applications, shows a larger effect on learning and achievement than just face-to-face only instruction (Means, 2010; Tamin, 2011).

It's encouraged the schools in the district continue to work collaboratively to discover new and effective technology programs and assessments that will stimulate engagement while providing meaningful data to determine student mastery in mathematics. This philosophy of collaboration among teaching colleagues also extends down to the classroom between the teacher and the students. The more instruction and learning that is collaborative among teachers and students, the more the teachers, as well as the school, will discover what types of instructional programs are effective with students. Studies have shown that collaborative or teacher facilitated instruction with technology/web-based programs has greater impact for students than just working independently with technology/web-based programs (Means, 2010; Tamin, 2011). However, it should also be pointed out that collaboration between teachers and students can also lead to information about teaching practices and effective instructional programs, as was the case with some technology web-based programs in the Math Plus class.

Even though it appears the technology programs were determined once the grant was approved for the three year cycle, continuing to explore other technology programs is recommended. An example of this collaborative success was the Math Plus teacher's pilot of a program he discovered from another colleague. Although the program was

outside the scope of the grant, because of its effectiveness, it was eventually proposed in the renewal of the grant. Ultimately, this ongoing communication between faculty and district level officials resulted with the approval of his technology program pilot and created another learning opportunity for students in the Math Plus program.

Due to the initial successes of technology assessment programs offered by the SATT-21 grant, the district and school faculty have been dialoguing about increasing the scope of the assessments to reach more students in the general population. Since the SATT-21 grant allows for some of these privileges, it is recommended for the district and schools to continue the exploration, dialogue, and eventual expansion, with the MAP assessment program in particular, to other grade levels and subject areas. Since CUSD has been visiting another local school district who has been using the MAP program for the last 10 years, it's encouraged to increase the ongoing communication and professional development opportunities with this other school district in order to understand the opportunities afforded through the program.

Application of knowledge. Assessing a students' knowledge to determine mastery of skill sets in math relies on a student to understand the curriculum, as well as the instruction in the classroom. However, a student applying that knowledge as learned through the curriculum is another major component of math skill mastery and can be considered the next step in the process of learning (Heller et al., 2003). In the Math Plus class, students were learning about math in a unique way, separate from a traditional delivery of math instruction. Using personal laptop computer devices, applying various software programs to support the teaching and learning, having a small class size of mixed grade level students, and taking two math classes during the regular school day, all

provided a different approach to learning math. The delivery model in the Math Plus class appears to give students time to reflect and work with the teacher to understand the connections beyond the Math Plus class. This includes students applying math knowledge in other course, such as science, engineering, and physical education. Furthermore, accomplishing these connections through technology increases the awareness for Math Plus students on how to apply technology innovations in mathematics to other subjects, potential careers, and real life scenarios (Dynarski, 2008; Means, 2010).

Recommendations. While the Math Plus program has provided more time and opportunities for students to recognize and be exposed to math applications in other settings, the next step would be to further this exposure and knowledge when appropriate. For example, guest lecturers or professors from local universities could visit the class and speak to the students. Since most of the military and non-military dependent students in the Math Plus class had previous unsuccessful experiences in math, providing them with outside visitors who can speak about the application of math could draw upon some real life connections.

These real life connections can be further attained by guests visiting the class or students going outside of the school (field trip experiences) to businesses or organizations who promote math in professional careers. Exposing students to careers through field trip experiences is very powerful when providing connections to curriculum learned in school (Harrison & Vannest; 2008; Means, 2010; MISA, 2010).

Additionally, this concept further promotes the relationship development of partnering with support groups who can assist military and non-military dependent

students in their learning by drawing connections to the curriculum and providing resources associated with increased student interest in school and achievement (Heller et al., 2003; Klem & Connell, 2004). CUSD has such a large military dependent population with military installations located in the immediate vicinity of their schools, therefore involvement and support from the military is very accessible. This includes the potential for parents employed by the military to visit the school, and for the school to use these parent resources to establish partnerships with military agencies that have related jobs in math. It's highly recommended that CUSD continue to forge its already positive relationships with their partners in education for the advantage of providing students in the Math Plus class with opportunities to apply their math application knowledge to real life settings.

Professional Development

Professional development and training for faculty is a component of the SATT-21 grant. Education and training for faculty on the various supports provided by the SATT-21 program is critical for the delivery of the curriculum and the proper integration of technology hardware and software. The majority of the training for faculty involved the hardware and software programs students were using in the Math Plus class. Trainings included the Math Plus teacher and were extended to other math teachers within the department because of their instruction with students performing below proficiency in math. Again, since the SATT-21 program did allow for support services to go beyond the Math Plus class, both military and non military dependent students performing below proficiency in the general education math settings did receive some services associated with the grant.

Hardware professional development and training. As described by the faculty, there wasn't too much training on the actual hardware devices, or the netbooks, which were a primary component of the SATT-21 grant and Math Plus class. However, the faculty also described that there wasn't necessarily a need for them to have training. Since the middle school has a large technology focus as part of the curriculum, teaching, and learning at the school, the faculty has received training in the past, but also continues to receive trainings on hardware technology when appropriate. As a result, the faculty was rather familiar with technology hardware including the multiple types of computer devices and various technology platforms.

Technology at the middle school appears to be part of the culture where students and faculty alike bring their own personal computing devices to the classroom. Since technology has become a part of students' everyday life inside and outside of the school, much of the same can be said for the faculty. As a result, the faculty are well versed on the various hardware devices used by the students in the classroom due to their professional and personal use. Teaching students in the 21st century demands the use of technology (Barnett, 2002; Becker, 2000; Dynarski, 2008; Means, 2010), therefore, the middle school faculty integrates the usage of hardware technology into their regular instruction. Despite the focus of daily use hardware in the Math Plus class, many of the faculty at the middle school incorporate hardware technology as well making larger, school wide training unnecessary.

Software and web-based professional development and training. The SATT-21 grant also provides resources in the area of technology software and web-based program professional development/training. Technology program training and education

to the faculty on the appropriate uses of the various programs offered by the grant is significant in order to meet goal outcomes. It's essential to the Math Plus teacher, but it's equally important for faculty members who are teaching below performing math students in the general education setting.

Training for the Measures of Academic Progress (MAP) software program was held for faculty prior to the commencement of the 2011-2012 school year. The training was limited since many of the faculty had just returned to campus per their duty contract, which is three days prior to the students starting their first day of school. Regardless, the training was designed to be brief, since a further training occurred closer to the first student MAP assessment in early fall, 2011. According to the faculty, the training was educational and provided information on the program areas they needed to know in order to meet the students' needs. Additionally, ongoing training and development occurred throughout the year for faculty using the MAP assessment tool.

Training also occurred for the ALEKS and Skills Tutor web-based programs. These trainings began at the commencement of the grant in the 2010-2011 school year, since ALEKS and Skills Tutor were the first original programs written in the grant application. These trainings extended to all of the participants in this study. According to the faculty, both the ALEKS and Skills Tutor programs were fairly understandable with little direct training needed. So much so, that ALEKS and Skill Tutor have web-based programs accessible at home or anywhere a student or faculty member has a working computer with internet. The step by step processes used in the dynamics of the programs, including the training for faculty and students to comprehend the programs, appears to be minimal and requires basic knowledge of computer related skills.

However, the training for another program wasn't understood or well received, according to faculty.

The Destination Math technology program training occurred prior to the 2010-2011 school year, but the frustrations over the professional development, namely the program itself, still resonate with faculty who experienced that particular training. According to the faculty, there were two areas of concern regarding the Destination Math program and the training: (1) the training was poorly executed and, (2) the program was not suited for middle school aged students performing below proficiency in math.

The Destination Math training was hosted at the middle school site for all CUSD faculty who were going to be using the program with their below performing students. In this regard, both elementary and middle school faculty were trained, including district personnel. Most programs typically include ongoing professional development for faculty. As indicated by faculty, the trainer for the Destination Math program was unfamiliar with specifics of the program and couldn't address important questions. Additionally, there were complications with the program during the training, resulting in multiple recesses due to a lack of functionality. Lastly, after the middle school faculty began using the program with the students, they found it was not conducive for middle school students, but more suited for a younger, elementary audience. As a result, the middle school has not used the program with military and non-military students performing below grade level in math since the 2010-2011 school year.

Recommendations. Technology hardware is pervasive in the middle school setting. As a result, both students and faculty use computing devices fairly regularly during the school day. The consistent usage of technology hardware has provided

ongoing practice for the middle school faculty, and therefore, training appears not to be as necessary at the middle school. When new technology hardware is introduced by either a student in the classroom or a teacher, generally the faculty quickly becomes educated on the new technology. This includes taking the time for faculty to learn it on their own or acquiring this knowledge through formal trainings as identified and supported by the administration at the district and site level. It's recommended the district continue this practice and include technology hardware training for faculty, when necessary.

Software and web-based trainings provided by the SATT-21 grant occurred when the grant commenced in the school year 2010-2011 and still do today. Especially is the case with the MAP software program when it was introduced later during the three year cycle of the grant. Furthermore, the district has provided trainings with MAP and is considering expanding the program to other grade level and subject areas. Therefore, it's encouraged the district prepare and set aside time to train teachers in the area of MAP. This includes training time prior to the school year beginning and continued training throughout the implementation of the MAP program.

In addition, training time is recommended to include more cross curricular professional development with the CUSD faculty, and the faculty at the neighboring school district who has implemented the MAP program for the last 10 years. Collaboration and professional development among faculty is a critical piece to supporting academic achievement (DuFour, 2005; Fullan, 2007; Guskey, 2002, Murphy, 2005). Having a significant resource in one's own backyard appears to make the

development and enhancement of the curriculum, teaching, and learning for the students receiving services from SATT-21 grant a win-win situation.

As technology continues to develop globally in education, so will the training needed for the faculty associated with the SATT-21 program, particularly in the area of hardware, software and web-based technologies. This includes training and professional development among teaching faculty, administrative faculty, and the IT faculty at the district level. Considering there were numerous concerns about technology hardware and infrastructure, it would be wise to have bi-weekly or monthly meetings with key stakeholders involved in implementing the grant.

This communication is vital since the software and web-based programs provide the majority of the curriculum, instruction, and learning, which is delivered through hardware technology devices. Subsequently, the district technology infrastructure supports the hardware devices, as well as the software and web-based programs. Additionally, collaboration through professional development, implementing meaningful trainings, communicating about student and faculty needs, and meeting regularly with each other to discuss student outcomes, is critical in supporting student learning and achievement.

Conclusion

Closing the achievement gap in public education for all students continues to be a primary goal and necessary requirement for schools across the nation (NCLB, 2001). This study examined how one California middle school was addressing this goal through a three year grant designed to close the mathematics achievement gap for military

dependent students performing below grade level. As a result of this study, several important conclusions can be drawn.

First, this study emphasizes the need for military dependent students to be included in the research when identifying particular groups of students who are at risk of performing below grade level. While researchers and practitioners alike have been paying greater attention to closing the achievement for all students, most studies on the achievement gap focus on specific groups of students identified by their socioeconomic status, gender, race / ethnicity and their relationship to academic achievement in schools (Duncan & Magnuson, 2005; Gay, 2000; Hubbard et al., 2006; Ladson-Billings, 2001; Lee, 2004; Ogbu & Simons, 1998). However, few studies have centered on military dependent students, including the challenges these students encounter in their education which ultimately cause them to perform below proficiency in school.

Second, this research highlights the unique challenges military dependent students encounter with their education as a result of their military lifestyle. Military dependent students who move often, transition frequently between schools, and have parents deployed or absent from home for long periods of time are at risk of not achieving at grade level in school (Chandra et al., 2010; Engel et al, 2008; Heinlein & Shinn, 2000; Paredes, 2003). As a result of understanding the challenges military dependent students encounter regularly in their learning, teachers, counselors and educators in school systems can be more prepared when addressing the needs of military dependent students and provide supports to close the achievement gap for this student population.

Third, having school support systems in place for military dependent students can impact their academic achievement in the classroom and their overall success in school.

Schools that have ongoing methods of communication between military dependent students and their families prior to enrollment and throughout the education process at school, have an influence on student achievement (Harrison & Vannest, 2008; MISA, 2010). Communicating and establishing relationships with military service providers is another avenue for schools to get support with military dependent populations. Schools that consistently communicate and share the many support services that can be offered to military dependent students whether it be orientation evenings for families, counseling groups for parent deployment, or having military personnel visit and guest lecturer in the classroom, are just some of the ways communication between schools and military dependent students and their families can complement the curriculum, instruction and learning in the classroom.

Fourth, schools that integrate real life learning opportunities and activities into the curriculum, provide military dependent students with a stimulating and engaging classroom environment (Harrison & Vannest, 2008; Heller et al., 2003; MISA, 2010). These activities are beneficial for both military and non-military dependents students since it creates sensitivity and awareness to some of the challenges military dependent students encounter in their education. In addition, curriculum that creates real life connections to learning outside of the classroom and engages and supports critical thinking skills, is known to increase student achievement in school (Heller et al., 2003). When the curriculum becomes part of the teaching and learning expectations in the classroom and is supported by the school, this becomes imbedded in the culture. A school culture with clear, consistent and understood learning expectations can result in overall student and school achievement (Datnow, et al., 2002; Deal & Peterson, 1999;

Fullan, 2007; Schein, 2004). As learning is an expectation for students, so is learning for teachers and faculty. These expectations can be established through ongoing training and professional development opportunities.

Fifth, ongoing training and professional development for faculty is necessary if schools are going to support academic achievement for all students (DuFour, 2005; Fullan, 2007; Guskey, 2002, Murphy, 2005). This becomes even more critical as faculty need to be trained to identify and understand the unique challenges military dependent students encounter with their learning (Chandra et al., 2010; Engel et al, 2008; Heinlein & Shinn, 2000; Paredes, 2003). Schools that are successful in meeting the needs of military dependent students and supporting student achievement have ongoing trainings and professional development that offer strategies and teaching methodologies associated to the learning challenges military dependent students encounter. Education to school faculty from military support service staff/military liaisons, teachers in DODEA schools, and spouses of deployed military service personnel, are just some ways to bring in expert knowledge to train school faculty on how the address the needs military dependent students.

Sixth, public school districts need to actively pursue grant opportunities and other resources available for schools with small and large military dependent populations. Budgets continue to shrink for public schools due to the economy, yet, the demands for student academic achievement are greater and have more interest from numerous stakeholders (Crusifulli, 2006; NCLB, 2009). Schools need to be active participants in researching what resources are available for their school. CUSD explored various

resource opportunities, and now they are the beneficiaries of a six year grant to support military dependent students performing below proficiency.

Finally, the results of this study are important for CUSD and others attempting to procure funding as a resource to assist in closing the achievement gap for military dependent students performing below proficiency in mathematics. In addition, this particular study may also be utilized by government officials responsible for assigning resources to schools targeting military dependent students falling below grade level in math. Furthermore, middle school educators may discover support mechanisms that are successful, or not, when addressing the needs of military dependent students. They may also determine how to effectively maximize the resources provided to these students in order to increase their proficiency in math. The addition of the perspectives from students, parents, and faculty involved in the SATT-21 program provided value added information about the grant and the efforts to close the mathematics achievement gap for military dependent students performing below grade level at California Middle School.

Recommendations for Future Research

In many respects, military dependent students may appear just like any other students in a public school system with needs not uncommon to their peers regarding learning and achievement in school. However, when military dependent students are challenged with constant mobility and relocation, parent absence and deployment, along with the frequent moving from to school to school, their education becomes fractured and gaps of knowledge impact learning and achievement. In order to close the achievement gap for military dependent students performing below proficiency, California Unified School District (CUSD) was awarded a three year, 1.4 million dollar grant titled, Students

Achieving Through Technology (SATT-21). At the conclusion of three years, CUSD has observed increases in achievement among its military dependent populations performing below proficiency in mathematics. As a result of CUSD's efforts and outcomes, the federal government sponsoring the grant approved the renewal of the grant for an additional three years beginning in the 2012-2013 school year. While this is positive news for CUSD and the military and non-military dependent students the district serves, much work still needs to be accomplished for CUSD as the grant services expand to a larger target audience in future years.

New, Three Year Study for the SATT-21 Grant

Toward the completion of this study, CUSD was invited to reapply for a renewal of an additional three years with the SATT-21 grant. Subsequently, they were approved while this study was in the final stages. Despite having that knowledge, the reviewed literature, perceptions from the participants, and recommendations for CUSD to support the grant, with or without government resources, still holds true today. While CUSD faculty did have knowledge of this study and many conversations were had with the researcher, all data collected was still valuable, especially as the grant moves forward in the next three years. It's beneficial for CUSD and the middle school to use the research from this study and integrate it into any reports or practices that may benefit the objectives and outcomes of the grant, particularly as they pertain to military dependent students performing below proficiency in mathematics. This includes having access to greater amounts of data resulting from new district technology infrastructure and computer programs, as well as the increase of student participation in the SATT-21

program. The researcher hopes for someone to perform a similar study regarding the future three years of the grant.

Data Availability

As the SATT-21 grant expands and more data is gathered from various participants in future years, then stronger support to substantiate closing the achievement gap for both military and non-military dependent students could be claimed. Data for the current study is limited, but CUSD has been responding to technology infrastructure and systematic needs that make the cultivation of data more accessible and easier to collect in subsequent years. In the upcoming years, availability of data to gain a greater understanding of student achievement levels and progress will be important to review and compare with this study's findings. This includes district reports and evaluation of the grant, as well as the potential for another similar study.

Expand Participation

Participation locally. CUSD and the middle school are slowly expanding the services provided by the SATT-21 grant to both military and non-military dependent students. For example, there have been discussions among the faculty for all students at the middle school to participate in MAP testing services since the results of this program were very successful. For this study, only the Math Plus class was examined with particular focus given to military dependent students. However, in the future if the district continues to expand services for many students a much larger sample pool could be used when studying military and non-military dependent students. In this case, comparing and contrasting data against each other with multiple groups of students to

determine short and long term increases in student achievement would be beneficial for the school and the district.

Participation regionally and globally. This study focused on a specific group of students in a unique middle school mathematics program which limited the generalizability of the findings (Creswell, 2007). The student participants for this study were a relatively small number, and they came from the same southern California public middle school. While CUSD and the middle school is the only one of its kind with such a grant in the state, there are several other federally funded grant programs with the same purpose in other parts of the nation. Exploring other schools who have the grant program to support military dependent students performing below proficiency would be a worthy study. By doing so, much information could be gathered and compared by CUSD, and the other schools participating, to review teaching and learning strategies designed to close the achievement gap for military dependent students performing below proficiency.

Challenges for Military Dependent Students and Their Education

The need to understand military dependent students and the relationship to academic achievement in schools seems more relevant now than it has ever been. With the growing number of deployed parents, including the number of base closures and consolidations due to the economy, more and more military dependent students are entering public school systems (BRAC, 2010). While the majority of the studies on the achievement gap focus on specific groups of students identified by their socioeconomic status, gender, race / ethnicity and their relationship to academic achievement in schools (Duncan & Magnuson, 2005; Gay, 2000; Hubbard et al., 2006; Ladson-Billings, 2001; Lee, 2004; Ogbu & Simons, 1998), few studies address the achievement gap of military

dependent students (Engel et al., 2008). Therefore, as a result of the challenges military dependent students encounter, combined with the increased level of accountability for student achievement in schools (NCLB, 2001), new and greater research needs to take place regarding the impact of student achievement for military dependent students in public school systems.

Technology as a Tool in Education

Technology, and its uses, are constantly growing, evolving, and changing, on a regular basis. However, growth, evolution and change in technology within organizations, particularly school systems, is much slower and more complicated to implement. As stated by Felix (2007) and supported by (Ethier & Gold, 1996; Ferrandino, 2001; Fuller, 1996; Gates, 2000), "As students change, as families change, as communication tools and user expectations change, so the teacher should change. One could argue that the typical classroom of today would feel just as familiar to a person transported in time 200 years ago (pg. 244)." Technology has provided students and educators with many different tools to support the teaching and learning in the classroom. However, as technology changes, so should the users. Therefore every effort should be made to continue to examine how technology, both hardware and software, can be used to support closing the achievement gap for military and non-military dependent students in school systems.

Accountability: Curriculum, Instruction, Learning Professional Development

Much like technology evolving and changing, so has accountability for public school systems, teaching and learning standards, and teaching pedagogy and professional development. The United States has recently adopted national Common Core State

Standards (CCSS). Forty-five of the fifty states now have common core curriculum standards which are designed to assist in establishing a common language among practitioners with the main focus of common standards being delivered through instruction for student learning (CCSS, 2012). As a result, the CCSS will help to support military dependent students who frequently move from one school to another during the course of their educational careers. Since many military dependent students currently receive a fractured curriculum due to frequent moves, having a common set of standards for all students across the nation will assist both military and non-military dependent students in achieving academic success. This researcher encourages future studies on the CCSS and how CCSS will relate to closing the achievement gap.

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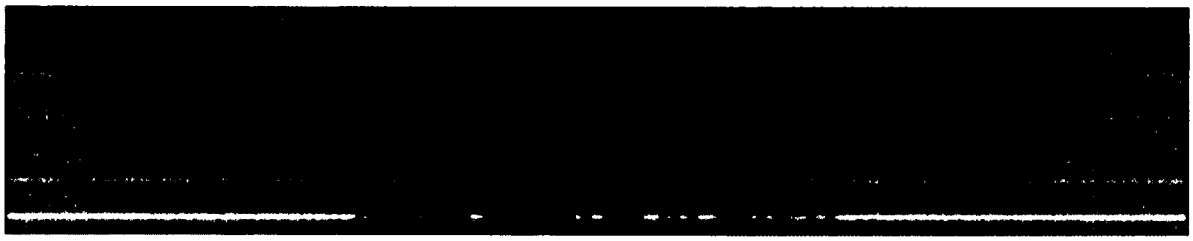
Appendix A

SATT-21 Annual Report



Submitted by

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October 31, 2011

Background

California Unified School District (CUSD) is a preschool through grade 12 district serving a large Naval Base in California. It had a total student enrollment of 3070 during the 2010-11 school year; 38% of our students were from military-connected families.

Military dependent students are subject to frequent relocation. Many students enter CUSD during the course of a school year. For example, California Elementary School, with a military-identified enrollment of 76%, had a mobility rate of 45% during SY 2010-11. Military students' academic development is often compromised. Many of these students are at-risk of failing socially, emotionally, and academically. They exhibit inconsistent skills and content area knowledge gaps and are subject to extreme variations in state standards, adopted curriculum, school cultures, socio-economic strata, and infrastructure support mechanisms.

During SY 2010-11, CUSD implemented Year 2 of the Students Achieving Through Technology (SATT 21) grant, an award of funds in the amount of $1.2 million over three years from the Department of Defense Education Activity (DoDEA) program. Since receiving the DoDEA grant award in August 2009, Project SATT 21's primary goal has been to close the achievement gap for below proficient military-identified students by implementing a district-wide individualized, technology-assisted instructional model. All California Unified School District students who are performing below proficient levels also benefit from the SATT 21 project's intervention services. The success of SATT 21 is measured through grant funded technology-based formative assessments, improvement in classroom performance, higher GPAs, increases in standardized test scores, increases in student opportunities to recover credit, higher levels of proficiency in Algebra I, and other district-wide support services, dispositions, and administrative procedures for the benefit of transitioning military students. Since 2009, implementation has involved hiring certificated facilitators to serve as intervention specialists for each target school site, purchasing new software licensing, training staff, and purchasing mini-notebook computers for enhancing student practice while at school and at home.

Evaluation for SY 2010-11

Goals and Study Questions

Three overarching goals were established by the SATT 21 grant in helping close the achievement gap between CUSD's military population and the total population via integration of technology into curricula and instruction:

- to improve the English Language Arts skills of students in grades 2-11 (grades 2-5, 6-8, and 9-11)
- to improve the math skills of students in grades 2-Algebra 1 (grades 2-5, 6-8, and 9-11)
- to increase the number of course credits recovered by credit deficient high school students

Evaluation study questions for SY 2010-11, as reported in the Quarter 2 report are as follows:

- Will military-identified students meet SY 2010-11 targets in grades 2-5, 6-8, and 9-11 in English-Language Arts and mathematics?
- Will military-identified students meet SY 2010-11 targets for credit recovery in grades 9-12 in 2011?

Additionally,

- What is the overall impact of the SATT 21 DoDEA grant on CUSD?
- What other means of supporting the academic progress of military-identified students in our district are in place?

Evaluation Methodology and Types of Data

Several CUSD Governing Board Goals Key Actions are related to SATT 21 initiatives, specifically all Key Actions of Board Goal 1 for Learning, Key Action 2.2 for Fiscal, and Key Actions 5.1 and 5.3 for Assessment (see attachment A). Under the supervision of CUSD Superintendent, Dr. Name of Superintendent, monitoring progress and ensuring accountability and the success of SATT 21 is the responsibility of the Director of Curriculum and Instruction, Faculty Participant 1. Site administrators report to the Director on grant-related issues such as staffing, instructional schedules, student assessment and progress, data, technology, and training needs. The Director visits each site several times a month. Since the inception of the SATT 21 grant, CUSD continues to maintain a relationship with an external evaluator who is a retired administrator from the California County Office of Education (CCOE), Name of personnel. As a small school district with limited resources, CUSD also contracts with CCOE's assessment division for data analysis and compilation assistance in order to show SATT 21 grant progress. The Director and the External Evaluator collaborated often during SY 2010-11, including several visits to all CUSD target schools by the external evaluator. Along with formative and summative performance/quantitative data, observations by the Director and External Evaluator, as well as both verbal and written feedback from intervention and classroom teachers, site administrators, parents, students, and other district office administration, provide qualitative data for all SATT 21 grant evaluations. A cross-section of stakeholders from the community, including military parents, contributes to the CUSD annual strategic plan and each site annual strategic plan. The Director reports on SATT 21 progress to the Governing Board and the public annually.

Findings and Impact on Student Achievement (refer to attachment B)

Goal 1: English Language Arts (ELA)

In grades 2-5, 82.19% of military students at both CUSD elementary schools performed at proficient or above levels in ELA on the California Standards Test (CST) in 2011. While this is above the CUSD target of 80% proficiency for all significant subgroups, military students' performance overall did not meet the 3% increase set as a target for the SATT 21 grant for SY 2010-11. The high mobility rate of 45% at California Elementary School, with a military-identified population of 76%, is a contributing factor. Military

students at California 2 Elementary did meet the target set for 2011. At both elementary schools, military students outperformed the total population in this area.

California Elementary is CUSD's most heavily military-impacted site. Noted in past quarterly reports to DoDEA, Principal, Name of Principal, at California Elementary has used SATT 21 grant funds and other local funding sources to the greatest advantage possible. Intervention, small group instruction, and meeting the needs of military students, as well as all students, are integral to the culture of the school. All students receive small group instruction in reading, writing, and mathematics every day at their instructional level due to creative scheduling which utilizes every credentialed classroom teacher, six part-time intervention teachers, and other specialists. The needs of each incoming student are assessed immediately, every student's progress is carefully monitored by the principal and staff, and SATT 21 software and hardware resources are used throughout the school in order to individualize instruction. Though this year's SATT 21 grant target was not met by this site, by other measures Elementary School has made significant and steady academic growth over the last several years. California's Academic Performance Index (API) rewards schools for growth in moving students from below proficient levels to proficient and advanced levels based on students' performance on the CST. The State set a score of 800 as the target for all schools which indicates that a school is high-performing. A school scoring over 900 is considered well above average and in the top 10% of schools throughout the State. This year California Elementary earned a score of 906, its highest score to date. Among similar military-impacted elementary schools in the California County, California Elementary is the highest performing as measured by the API.

Academic Performance Index	**2011**	**2010**	**2009**	**2008**
California Elementary	906	898	883	870

Military-identified students in secondary grades exceeded SATT 21 grant targets in the area of English Language Arts significantly. In grades 6-8, military students' performance improved by 4.60% over last year's performance on CST, and exceeded the SATT 21 grant target by 1.60%. In grades 9-11, military students improved by 11.42% over last year's performance, and exceeded the SATT 21 grant target by 5.42%. At both California Middle School and California High School, military identified students performed better than the total population. Since the SATT 21 grant award, intervention courses and periods in English Language Arts are a part of the offerings at both secondary sites. At California High School, credit recovery and remediation are also options for students using grant-purchased software such as *Aventa* and *E2020*. As reported in previous DoDEA reports, in SY 2010-11, CUSD piloted the use of NWEA's Measures of Academic Progress (MAP) as a formative assessment tool. California Middle School students in intervention courses and periods took MAP assessments in the fall, winter, and spring. Teachers used MAP results to set goals with individual students

and use grant-purchased software such as *Skills Tutor* and *Destination Reading* to remediate deficit skills. At California High School, the pilot group for MAP included approximately 100 students in 9th grade as well as below proficient students in English Language Arts in two periods designated for intervention. The significant improvement for both military students and intervention students in general in English Language Arts at the secondary level can be attributed to targeted instruction on deficit skills and setting goals based on MAP results with individual students.

Goal 2: Mathematics

In grades 2-5, 84.38% of military students at both CUSD elementary schools performed at proficient or above levels in mathematics on the California Standards Test (CST) in 2011. While this is above the CUSD target of 80% proficiency for all significant subgroups, military students' performance overall did not meet the 3% increase set as a target for the SATT 21 grant. At both elementary schools, military students outperformed the total population in this area, as well as making growth over last year's performance. One contributing factor may be that this was the second year of implementation of a new mathematics curriculum. Teachers continue to analyze the strengths and weaknesses of the new curriculum. California Elementary's high mobility rate is a factor in mathematics for this site.

Military identified students in grades 6-8 made significant gains in performance in SY 2010-11 over the previous year, increasing by 10.93% and exceeding the SATT 21 grant target by 1.93%. Military students at this level outperformed the total population. The addition of a supplemental mathematics course, required for below proficient students in grades 6-8 is a complement to their regular mathematics course, and provides students with a "double dose" of mathematics every day. The grant-purchased web-based program, *Assessment and Learning in Knowledge Spaces* (ALEKS), offers individualized assessment and tutorials in a variety of mathematics courses tailored to the needs of each student. As students work through the course on netbooks purchased by the SATT 21 grant, ALEKS periodically reassesses the student to ensure that topics learned are also retained. Student motivation to perform well is high in the supplemental math class, which takes the place of an elective course. At each semester, student performance is reevaluated to determine if placement in this additional course is still needed. Several students were able to exit the ALEKS course at the semester and participate in an elective course. Other grant-purchased software such as *Skills Tutor* and *Destination Math* are used as resources for this course and throughout California Middle School. All math students in this supplemental math course were assessed with MAP. MAP mathematics' data on strengths and areas of need were shared with each student, who in turn set goals for improvement. Timely feedback to students on their performance through programs like MAP and ALEKS is a growing practice at CMS and is positively impacting student achievement.

The SATT 21 grant target for grades 9-11 looks at the performance of military identified students who took Algebra I for a second time and if these students were able to maintain proficiency or make at least one CST performance level gain. In SY 2010-11, 65.8% of military students achieved this target, an increase 1.58% over last year, and did better

than the total population for students who repeated Algebra I. However, this improvement fell short of the SATT 21 target of 72%. Though California High School students outpace students in California County and statewide, current and historical CST data shows that mathematics is the most challenging core subject area for CUSD students. California High School continues to analyze student performance data, identify students for remediation, and offer individualized ALEKS courses for this purpose. A revised district mathematics vertical team will be working in SY 2011-12 to look critically at K-12 mathematics instruction, especially as CUSD transitions to Common Core State Standards and the inclusion of MAP as the district's formative assessment in mathematics, beginning in SY 2011-12 for all students in grades 4, 5, 6, and 9. Major goals of California High School's strategic plan are intervention services and more flexible offerings to meet students' varied needs such as online learning, credit recovery, unit recovery, and independent study.

Goal 3: Credit Recovery

Goal 3 of the SATT 21 grant is to increase of the number of course credits recovered by credit-deficient California High School students in grades 9-12. SY 2010-11 was the first year of data collection and CUSD set 50% as the initial benchmark for military students recovering credit. 41% of military identified students who were credit deficient did remediate credits during SY 2010-11, with 59% of the total population doing so as well. As shown in Attachment B, it is noteworthy that 100% of grade 12 military students recovered credits and 50% of grade 11 students. The percentage of students in grades 9 and 10 is significantly lower.

While three of the seven interim outcomes for Year 2 of the SATT 21 grant met expectation, in six out of seven outcomes, the military population performance exceeded that of the total population. Also of significance is that military identified students in the California Unified School District made growth over SATT 21 Year 1 (SY 2009-10) performance in five out of six outcomes (Goal 3 N/A).

Contributing Factors to Student Achievement

As reported in Year 1 and of equal importance to the Year 2 implementation data, is the impact of the grant on instruction, integration of technology, and serving the needs of military-connected students.

Instruction

All schools continue to identify students (military and non-military) for additional support, development of individual learning paths, integrated use of technology, ongoing progress monitoring, which has caused the instructional culture at all sites to shift to that of intervention and increased accountability in meeting the needs of all students via these resources. As noted in Attachment A, the success of Project SATT 21 and meeting individual student needs continue as primary foci for the CUSD Governing Board, which is in the third year of a five-year plan. Board Goals will remain constant through 2014.

Beginning in October of 2010, CUSD began piloting NWEA's MAP (Measures of Academic Performance) assessment with approximately 400 CUSD students. Most of these students participated in additional instructional support at elementary sites, CMS, CHS, and the Academy, the district's alternative high school. The pilot also included general education students in some elementary classrooms and approximately 90 ninth grade students. MAP served as a diagnostic tool and benchmarked individual student progress in reading, language, and mathematics for grades 2-9, in addition to providing small group and individual standards-correlated instructional paths for students. MAP teachers engaged in ongoing professional development during this pilot year of MAP implementation to understand the components of MAP in order to better diagnose students' learning needs and tailor instruction. Based on improved student achievement, especially in grades 6-8, and lessons learned from the pilot year of MAP, CUSD expanded the use of MAP to more than 1200 students district-wide for SY 2011-12: all students in grades 4, 5, 6, and 9 as well as three elementary classrooms in grades 2 and 3, and intervention period courses in ELA and math at California Middle and High Schools. The progress and impact of MAP on instruction will be reported in future DoDEA quarterly and annual reports.

Maintaining consistent staffing of Academic Support and Enrichment (ASE) teachers at the elementary level has been a challenge, the turn-over especially high at California Elementary 2. Each of the ASE teachers is a part-time employee; when full-time positions in the district or elsewhere are available, often ASE teachers will be hired in one of these positions, thus creating inconsistency of intervention instruction and frequent retraining on SATT 21 grant programs and assessments. However, both elementary sites work to ensure that ASE teachers are appropriately trained, feel a part of the faculty, and plan with their general and special education colleagues on a regular basis to ensure appropriate instructional for all intervention students.

Technology

Approximately 300 additional mini notebook computers (netbooks) were purchased during the 2011 summer, the total equaling nearly one thousand netbooks purchased with grant funding since 2009. Netbooks are being used with fidelity in intervention and other classrooms at all sites. During SY 2010-11 sites' administration funneled other community-based funding towards even more netbooks and other computing devices, such as iPod Touch devices and iPads, resulting in a growing culture of one-one computing on CUSD campuses.

Since its inception, the SATT 21 grant has significantly increased the demands and expectations for Instructional Technology (IT) services, given that the number of current IT staff at CUSD has not increased in several years. This resulted in delays in meeting the growing demands of instructional technology at all sites. As reported in previous DoDEA reports, CUSD's entire network infrastructure was overhauled during the summer of 2011. Approximately 1.2 million dollars was spent on replacing or renovating every component of the district's technology, including the addition of over 130 wireless access points district-wide, required for many grant-purchased resources such as netbooks and web-based software programs. District IT structure was reorganized as well with the

addition of a contract with a network technology consultant for SY 2011-12 and the hiring of a new District Technology Coordinator to replace the employee who resigned in this position earlier in 2011. The consultant and District Technology Coordinator work in concert with the Superintendent, the Director of Curriculum and Instruction, other administration, classified IT staff, site technology resources teachers, and the California County Office of Education to ensure appropriate services to sites. Most of the technology overhaul has been completed; new robust systems have significantly improved service to sites. The management and success of every technology-based program and service to district sites continues to be a priority for CUSD. Frequent professional development opportunities in the area of technology have been provided to all district teachers in many ways, including two full-day professional development days focused on a variety of technology topics, including grant-based initiatives, during March and August 2011.

Serving the needs of military-connected students

Naval Base California is one of the largest military installations in the world and many generations of military-connected families reside in California and surrounding communities. As stated earlier in this report, nearly 40% of all students in California Unified schools come from military families. Fundamental to the culture of CUSD is the understanding of the connection between the social and emotional health of children and their academic success, as evidenced by the district mission statement:

Through rigorous academic standards, high expectations, and a coordinated curriculum, the California Unified School District, in partnership with our small, involved community, will graduate students with the knowledge and skills necessary to excel in higher education, careers, society, and life, with the confidence not only to dream, but to determine their futures.

Furthermore, is important to point out that there is much evidence to support that CUSD and the community understands that children of military families have *unique* needs. The SATT 21 grant has helped grow both an increased awareness of the needs of military-connected students and the services critical to supporting them. Below are examples of supports and services for children of military families in place during SY 2010-11:

- Assistant Superintendent for Student Services is CUSD point person for all military issues
- Local Planning Council compact with Naval Base California; meetings are held three times a year; Director of Curriculum and Instruction is a participant; periodic attendance by Naval Base California Commanding Officer and CUSD Superintendent
- CUSD has a designated Navy Region Southwest School Liaison Officer, Name of Personnel
- Assistant Superintendent for Student Services serves on the local Navy Exceptional Family Members Program
- Military Family Life Counselors serve at each CUSD site

- District and site websites for military families www.edline.net >Community Partners>U.S. Navy>Military Families
- Military identification a part of registration/enrollment
- With permission from military families, support services are established immediately at enrollment
- New student orientations held at each site annually
- Military Family Information nights are held annually
- Ambassador Clubs and Student to Student Clubs are at each CUSD site to assist all transitioning students
- Local California Student and Family Enrichment (SAFE) Organization alliance and coordination of services with School Liaison Officer
- California Connections Corner meeting room located at California High School for Skype conferencing with deployed military parents and their child's teachers, meetings, college resources, etc.
- Skype conferencing at California Elementary and California 2 Elementary Schools for parent-teacher conferences
- California High School Graduation webcast allow for deployed parents to view the ceremonies
- Military representation on site and district strategic planning and other district committees
- "Bring a Veteran to School Day" and "California Elementary Honors Military Heroes Day", Veterans Day observances
- Operation BIGS and Operation PALS at California Elementary which connect local service men and women with students
- Services from YMCA, FOCUS, Fleet and Family Services, and other support services, especially at California Elementary
- California 2 Elementary School Military Parent Group
- Excused absence for military family reunification
- SOAR at Home resource promoted for all CUSD families

Conclusions and Recommendations

CUSD set high growth targets for SY 2010-11 for all outcomes, which can be difficult to achieve at the already high levels of performance. Recent data analysis, with the assistance of the California County Office of Education, points out that CUSD students who are proficient in core subject areas perform much higher than minimally proficient students statewide, in many cases as much as 15-20% higher. However, historical CST data shows that CUSD students perform as much as 15-20% below minimally advanced students statewide. The Director of Curriculum and Instruction is working with site principals and new vertical teams in SY 2011-12 to address steps for each grade level and

department to ensure growth for all students. Recommendations for Year 3 of SATT 21 include:

- Continue professional development for all CUSD teachers on the integration of software and netbooks into all classrooms to individualize instruction for ELA and mathematics
- Continue professional development for all CUSD teachers on formative assessment Measures of Academic Progress (MAP) and individual goal-setting conferences for students
- Provide MAP information nights for parents
- Study *Compass Learning* web-based intervention software programs, which are completely aligned to MAP and can prescribe learning paths for students based on MAP performance as a possible replacement for *Destination Learning*
- Identify web-based program for grades 9-11 in English Language Arts that meets criteria for provide appropriate intervention for students reading and writing below grade level and earning English credit and how it integrates with District's adoption of new ELA curriculum for special education (*Read Well* and *Language!*)
- Establish a district-wide Response to Intervention committee
- Work with California High School administration, counseling staff, and military students in grades 9 -11 to increase credit recovery in these grades
- Include military student(s) on secondary strategic planning teams
- Work with School Liaison Officer to provide more training for CUSD staff on the needs of military students and their families
- Create an assessment battery for California 2 Elementary School's incoming new students similar to California Elementary School
- Continue to work with California's Elementary administration to examine the needs of ASE teachers in order to better ensure retention of staff

The military-identified student group is the largest subgroup in the California Unified School District over other demographic subgroups such as English Learners, socio-economic groups, or race. These students are in every grade and class in the district, and they are part of every other sub-group. The award from DoDEA for the SATT 21 grant has had a major affect on CUSD staff's awareness of the unique needs of military students, on the growing philosophy of intervention and personalized education for each student, on the overall instructional model at each school site, on 21st century skills, and ultimately on improving student achievement in many of the outcome areas.

Appendix B

Student Demographic Data Form

Research Question I:

What does the student data reveal about student participation in the grant?

1a) How many military dependent students are in the SATT-21 grant class, Math Plus, at the middle school?

1b) What is the ratio of male to female military dependent students in the Math Plus class and what are their grade levels?

1c) What is the ratio of military dependent students in the Math Plus class whose parents are officers and those students whose parents are not officers in the military?

1d) How long have the current military dependent students been in the Math Plus class?

1e) How many military dependent students in the Math Plus class increased their CST results in mathematics? ***What percent of military students in grades 6-8 at the target middle school were proficient or above on the CST for mathematics?** What is the ratio of those who did or did not (male, female, officer, non officer, time in class)?

1f) How many military dependent students in the Math Plus class increased their scores on their pre- and post- mastery assessment (MAP) averages? What is the ratio of those who did or did not (male, female, officer, non officer, time in class)?

1g) How many military dependent students in the Math Plus class increased their grade point averages? What is the ratio of those who did or did not (male, female, officer, non officer, time in class)?

1h) How many military dependent students in the Math Plus class reduced their number of absences in school? What is the ratio of those who did or did not (male, female, officer, non officer, time in class)?

1i) How many military dependent students in the Math Plus class reduced their number of discipline referrals in school? What is the ratio of those who did or did not (male, female, officer, non officer, time in class)?

1j) According to Project SATT-21 in mathematics, all students at the middle school will show increases in proficiency levels as measured by the Standardized Testing and Reporting (STAR) or California Standards Test (CST) in mathematics based on the criteria below. The eventual goal is to have 100% of all students achieve

proficiency by 2013-2014 as required by the federal mandate of No Child Left Behind (NCLB).

- By June 2010, an average of 71% of the 6th through 8th grade students in the target middle school will score proficient or above on the CST for math, an average increase of 3% over the school year 2007-2008 level. What is the data on this goal/was this goal met?

- By June 2011, an average of 74% of the 6th through 8th grade students in the target middle school will score proficient or above on the CST for math, an average increase of 6% over the school year 2007-2008 level. What is the data on this goal/was this goal met?

- By June 2012, an average of 78% of the 6th through 8th grade students in the target middle school will score proficient or above on the CST for math, an average increase of 10% over the school year 2007-2008 level. What is the data on this goal/was this goal met?

Appendix C

Student Survey Questionnaire

Research Question II:

What are the perceptions, concerns and suggestions of the participants relative to the resources provided in the program?

Student Questions:

2a) How were you informed by the school that you qualified for the Project SATT-21 *(Math Plus class)* opportunity?

2b) Can you tell me why you were selected for the Math Plus class? What is your understanding of the Math Plus class? Tell me about the purpose and what you understand the goal will be for you by being a part of this class?

2c) What was your reaction to being placed in the class? Describe your initial feelings about the Math Plus class when you were first notified you qualified to be in the class? Were you excited, disappointed? Why did you have those feelings? ***Do you feel you are appropriately placed in the class?**

2d) When you first started the program up until now, how long, if ever, did it take for you to feel comfortable in the class? What helped you get comfortable? What didn't help?

2e) Describe your experience using the hardware technology in the classroom? What it is like to have your own computer mini-netbook to use in the classroom on your assignments? How about using the mini-netbook at home? Do you find the technology to be helpful or not helpful in your learning? ***To what extent do your teachers use technology solutions to assess and target your specific learning needs?**

2f) Describe your experience using the following software programs in the classroom and at home: 1) MAP 2) Destination Math 3)ALEKS 4) Skills Tutor and 5) SOAR. (If you haven't used the following software programs, please note that). Of the software programs you are using, which do you enjoy and why, and which do you not enjoy and why? Do you find the software programs to be helpful or not helpful? ***As a result of the class, can you describe if you have increased access to web-based mathematics software applications as opposed to your previous experiences in school?**

2g) Describe the teacher's instruction using the technology tools and software in the classroom. ***Do you feel your teacher has the knowledge and skills of how to apply web-based applications in your class in order for you to learn and improve? If yes, or no, did you notice growth with the teacher as the year progressed?** Do you feel you understand what is being taught to you? Do you feel you understand the expectations of the class and what is expected of you?

2h) How do you feel the tools and instruction in the class are helping your learning? ***To what degree do teachers monitor your progress towards mastering your targeted learning needs? To what degree do you set goals and assess your own progress towards mastering your targeted learning needs?** Please describe how the class is helping or not helping you meet the class expectations and your educational goals? Do you feel it will raise your achievement, particularly on your CST scores in mathematics?

2i) What knowledge and skills have you learned in this class that you will be able to use in other math classes? Other classes besides math? Other schools?

2j) As we conclude, are there any concerns not discussed in the above questions that you would like to add regarding your experience in the Math Plus class? What are some of the challenging aspects of the class? What are some of the challenges of being a military dependent child when it comes to your education?

2k) Are there any suggestions that were not discussed in the above questions that you would like to add regarding your experience in the Math Plus class? What are some of the things you would like to see added to the class?

Appendix D

Parent Interview Guide

Research Question II:

What are the perceptions, concerns and suggestions of the participants relative to the resources provided in the program?

Parent Questions:

2l) How were you informed by the school that your child qualified for the Project SATT-21 *(Math Plus class)* opportunity? What was your reaction to your child being placed in the class? Were you excited, disappointed? Why did you have those feelings? ***Do you feel your child is appropriately placed in the class?**

2m) Can you tell me why your child was selected for the Math Plus class? What is your understanding of the Math Plus class? Tell me about the purpose and what you understand the goal will be for your child by being a part of this class?

2n) Describe your child's experience using the hardware technology in the classroom and at home? Does he/she describe what it is like to have his/her own computer mini-netbook to use in the classroom on their assignments? How about using the mini-netbook at home? Do you find the technology to be helpful or not helpful in his/her learning? ***To what extent do you feel his/her teachers use technology solutions to assess and target his/her specific learning needs? *As a result of the class, can you describe if your child has increased access to web-based mathematics software applications as opposed to your previous experiences in school?**

2o) Does your child describe the teacher's instruction using the technology tools and software in the classroom. ***Do you feel your teacher has the knowledge and skills of how to apply web-based applications in your child's class in order for him/her to learn and improve? If yes, or no, did you notice growth with the teacher as the year progressed?** Do you feel you understand what is being taught to your child? Do you feel he/she understands the expectations of the class and what is expected of you?

2p) How do you feel the tools and instruction in the class are helping his/her learning? ***To what degree do teachers monitor your child's progress towards mastering his/her targeted learning needs? To what degree do your child set goals and assess his/her own progress towards mastering his/her targeted learning needs?** Please describe how the class is helping or not helping your child meet the class expectations and his/her educational goals? Do you feel it will raise your child's achievement, particularly on his/her CST scores in mathematics?

2q) What knowledge and skills has your child learned in this class that he/she will be able to use in other math classes? Other classes besides math? Other schools?

Appendix E

Faculty Interview Guide

Research Question II:

What are the perceptions, concerns and suggestions of the participants relative to the resources provided in the program?

Faculty Questions:

3a) How were you informed that your district / school was going to participate in Project SATT-21? Can you tell me why your district / school was selected to participate in Project SATT-21? What was your reaction to being notified that you specifically were going to participate in Project SATT-21 at your district / school site?

3b) What is your understanding of Project SATT-21? Tell me about the purpose and what you understand the goal will be for your district / school for participating in Project SATT-21? What is your understanding of the goal specifically for students participating in the mathematics supports of Project SATT-21? ***Do you feel the students are appropriately placed in the class?**

3c) How would you describe your participation in implementing Project SATT-21 in your district / at your school? What is your role? What is your role specifically with Project SATT-21 when it comes to supports in mathematics?

3d) How is Project SATT-21 in mathematics being implemented in your district / at your school? What evidence would I see if I walked around your school, or in your classrooms, that exemplifies the implementation of Project SATT-21 in mathematics? ***To what extent do military dependent students have increased access to web-based mathematics software applications?**

3e) How were decisions made regarding resources, course content, selection of materials to support Project SATT-21 in mathematics in your district / at your school including the selection of students? What was your role in the decision making process for all of the topics listed above?

3f) How would you describe your participation in the grants evaluation plan in your district / at your school? How do you respond to your supervisor, district officials, grant sponsors, parents and students if the goals are not met according to the criteria in the evaluation plan in your district / at your school?

3g) Describe your training / professional development in regards to Project SATT-21 in mathematics. Do you feel you have the necessary training and support from the district / school in order to ensure the students are being supported by you and to meet the goals as outlined by Project SATT-21 in mathematics? ***To what extent are your knowledge and skills of how to apply web-based software applications with your students improved due to participation in the SATT-21 program?**

3h) ***To what extent do you use technology solutions to assess students and target specific learning needs in mathematics?** Describe your experience using the technology in Project SATT-21 for mathematics? Have you had training in the technology: hardware (mini-netbooks, computers) and the software programs 1) MAP 2) Destination Math 3)ALEKS 4) Skills Tutor and 5) SOAR. Of the hardware technology and software programs you are implementing in Project SATT-21 for mathematics, which do you enjoy and why and which do you not enjoy and why? Do you find the technology hardware and software programs to be helpful or not helpful in the students learning?

3i) ***To what degree do you monitor the students' progress towards mastering the targeted learning needs of students in mathematics?** Describe the instruction using the technology tools and software programs for Project SATT-21 in mathematics. Do you feel the students understand what is being taught to them? Do you feel they understand the expectations of the class including their goals and outcomes? ***To what degree do students set goals to assess their own progress towards mastering the targeted learning needs in mathematics?**

3j) How do you know the tools and instruction for Project SATT-21 in mathematics are helping the students learning and increasing their mathematics achievement including increasing their proficiency levels in mathematics on the CST exams?

3k) What knowledge and skills do you know the students have learned in Project SATT-21 for mathematics that they may apply in other math classes? Other classes besides math? Other schools?

3l) What aspects of your work facilitate/support Project SATT-21 in mathematics in your district / at your school? What are some of those aspects you really enjoy? What are some that you do not enjoy?

3m) What changes have been made with the evaluation over the course of Project SATT-21 in mathematics? Why have those changes been implemented?

3n) Overall, how does Project SATT-21 in mathematics meet the goals as described in the application in your district / at your school? How do you feel about Project SATT-21 in mathematics at this point? **(RQ4) *What recommendations would you make that will inform the district for the final year of the grant including the district's plan for continuing the grant with or without government support?**

3o) As we conclude, are there any concerns and suggestions not discussed in the above questions that you would like to add regarding your experience in Project SATT-21 for mathematics? What has been, or continues to be, challenges with implementing SATT-21 in mathematics? What are some of the challenges military dependent students encounter that may cause them to perform below proficiency

Appendix F

Student / Parent Letter of Invitation to Participate in Study

Date

Dear Parent/ Guardian,

I appreciate our phone conversation the other day on the topic of the SATT-21 grant and your child's current participation in the program at California Middle School.

As a current doctoral student at the University of San Diego, I am working on a dissertation titled, "A Value-Added Study of a Federal Grant Program in Mathematics for Military Dependent Students." My research seeks to provide additional, value-added information about the three-year federally funded SATT-21 grant, designed to close the mathematics achievement gap for military dependent students performing below grade level at a California middle school.

I would like to invite your child to participate in this research study by answering a survey questionnaire. I anticipate the survey will last approximately 30-45 minutes and will take place in the spring at your child's school using computer technology to record their anonymous responses. The survey questionnaire, as well as your decision for them to participate, will be confidential and their participation is completely voluntary. Their identity will remain anonymous.

Your child's knowledge and insight will serve to provide information on the SATT-21 grant's goals and objectives, particularly in the area of mathematics. In addition, the information your child provides will be very helpful and insightful to government officials and educators who are attempting to meet the needs of military dependent students performing below grade level in mathematics.

If you are interested in your child contributing by sharing their experiences and would be willing for them to participate in this much-needed effort, please call or e-mail me so that we may discuss and confirm the time for your child to take the survey questionnaire. Please feel free to contact me if you have any questions. I look forward to hearing from you.

Thank you for your consideration,

Jay Marquand
Phone number: 888-888-8888
E-Mail: jmarquand@email.com

Appendix G

Parent Invitation to Participate in Study

Date

Dear Parent/Guardian,

I appreciate our phone conversation the other day on the topic of the SATT-21 grant and your child's current participation in the program at California Unified School District.

As a current doctoral student at the University of San Diego, I am working on a dissertation titled, "A Value-Added Study of a Federal Grant Program in Mathematics for Military Dependent Students." My research seeks to provide additional, value-added information about the three-year federally funded SATT-21 grant, designed to close the mathematics achievement gap for military dependent students performing below grade level at a California middle school.

I would like to invite you to participate in this research study by speaking with me for an in-person interview. I anticipate the interview will last approximately 45 minutes and will be conducted at a time, date, and location convenient for you. It's possible I may need to have a second, brief follow-up interview in order to clarify any questions from the initial interview. If necessary, this can be accomplished through e-mail or telephonically. The interview, as well as your decision to participate, will be confidential and your participation is completely voluntary. Your identity will remain anonymous.

Your knowledge and insight will serve to provide information on you and your child's experience in the SATT-21 grant program. In addition, the information you provide will be very helpful and insightful to government officials and educators who are attempting to meet the needs of military dependent students performing below grade level in mathematics.

If you are interested in contributing by sharing your experiences and would be willing to participate in this much-needed effort, please email or call me so that we may make an appointment for your interview. Please feel free to contact me if you have any questions. I look forward to hearing from you.

Thank you for your consideration,

Jay Marquand
Phone number: 888-888-8888
E-Mail: jmarquand@e-mail.com

Appendix H

Faculty Invitation to Participate in Study

Date

Dear CUSD Faculty Member,

I appreciate our phone conversation the other day on the topic of the SATT-21 grant and your current participation in the program at California Unified School District.

As a current doctoral student at the University of San Diego, I am working on a dissertation titled, "A Value-Added Study of a Federal Grant Program in Mathematics for Military Dependent Students." My research seeks to provide additional, value-added information about the three-year federally funded SATT-21 grant, designed to close the mathematics achievement gap for military dependent students performing below grade level at a California middle school.

I would like to invite you to participate in this research study by speaking with me for an in-person interview. I anticipate the interview will last approximately one hour and will be conducted at a time, date, and location convenient for you. It's possible I may need to have a second, brief follow-up interview in order to clarify any questions from the initial interview. If necessary, this can be accomplished through e-mail or telephonically. The interview, as well as your decision to participate, will be confidential and your participation is completely voluntary. Your identity will remain anonymous.

Your knowledge and insight will serve to provide information on the SATT-21 grant's goals and objectives, particularly in the area of mathematics. In addition, the information you provide will be very helpful and insightful to government officials and educators who are attempting to meet the needs of military dependent students performing below grade level in mathematics.

If you are interested in contributing by sharing your experiences and would be willing to participate in this much-needed effort, please email or call me so that we may make an appointment for your interview. Please feel free to contact me if you have any questions. I look forward to hearing from you.

Thank you for your consideration,

Jay Marquand
Phone number: 888-888-8888
jmarquand@email.com

Appendix I

Student: Research Participant Consent Form

Student: Research Participant Consent Form

For the research study entitled:

A Value-Added Study of a Federal Grant Program in Mathematics for Military Dependent Students

Jay Marquand is a doctoral student in the Department of Leadership Studies in the School of Leadership and Education Sciences at the University of San Diego. You are invited to participate in a research project he is conducting for the purpose of providing additional, value-added information about a three-year federally funded grant designed to close the mathematics achievement gap for military dependent students performing below grade level at a California middle school.

The project will involve a survey questionnaire that asks questions about your experience in the Students Achieving Through Technology (SATT-21) grant and Math Plus class designed to support your achievement in the area of mathematics. The survey questionnaire will last approximately 30 minutes and will take place in the spring at your school using computer technology to record your anonymous responses. You will not be compensated for your participation. Participation is entirely voluntary and you can refuse to answer any question and/or quit at any time. Should you choose to quit, no one will be upset with you and your information will be destroyed right away.

The information you give will be analyzed and studied in a manner that protects your identity. That means that a code number will be used and that your real name will not appear on any of the study materials. All information you provide will remain confidential and locked in a file and a password protected computer file in the researcher's office for a minimum of five years before being destroyed.

There may be a risk that participating in the survey questionnaire may make you emotional. Sometimes people feel anxious or sad when talking or reflecting on the things you will be asked about. If you would like to talk to someone about your feelings, you can call the San Diego Mental Health Hotline at 1-800-479-3339. Remember, you can stop the survey questionnaire at any time for any reason.

The benefit to participating will be in knowing that you helped educators learn how to better understand the extent to which the goals / objectives of the SATT-21 grant and Math Plus class are being met by providing value added information about this three-year federally funded grant designed to close the mathematics achievement gap for military dependent students.

If you have any questions about this research, please contact Jay Marquand (888-888-8888, jmarquand@email.com) or Dr. Ed DeRoche, Director of the Character Development Center, Department of Leadership Studies, School of Leadership and Education Sciences at the University of San Diego (619-260-2250, deroche@sandiego.edu).

I have read and understand this form, and consent to the research it describes to me. I have received a copy of this consent form for my records.

Signature of Participant	Date
Name of Participant (Printed)	Date
Signature of Parent / Guardian	Date
Signature of Principal Investigator	Date

Appendix J

Parent: Research Participant Consent Form

Parent: Research Participant Consent Form

For the research study entitled:

A Value-Added Study of a Federal Grant Program in Mathematics for Military Dependent Students

Jay Marquand is a doctoral student in the Department of Leadership Studies in the School of Leadership and Education Sciences at the University of San Diego. You are invited to participate in a research project he is conducting for the purpose of providing additional, value-added information about a three-year federally funded grant designed to close the mathematics achievement gap for military dependent students performing below grade level at a California middle school.

The project will involve you speaking with Mr. Marquand, the researcher of this study, for an in-person interview that asks questions about you and your child's experience in the Students Achieving Through Technology (SATT-21) grant and Math Plus class designed to support your child's achievement in the area of mathematics. The interview will last approximately 60 minutes with the possibility of a brief follow-up interview, either telephonically or through e-mail, should there be a need to clarify questions from the initial interview. The interview will take place in spring at the school. You will not be compensated for your participation. Participation is entirely voluntary and you can refuse to answer any question and/or quit at any time. Should you choose to quit, no one will be upset with you and your information will be destroyed right away.

The information you give will be analyzed and studied in a manner that protects your identity. That means that a code number will be used and that your real name will not appear on any of the study materials. All information you provide will remain

confidential and locked in a file and a password protected computer file in the researcher's office for a minimum of five years before being destroyed.

There may be a risk that participating in the interview may make you emotional. Sometimes people feel anxious or sad when talking or reflecting on the things you will be asked about. If you would like to talk to someone about your feelings, you can call the San Diego Mental Health Hotline at 1-800-479-3339. Remember, you can stop the interview at any time for any reason.

The benefit to participating will be in knowing that you helped educators learn how to better understand the extent to which the goals / objectives of the SATT-21 grant and Math Plus class are being met by providing value added information about this three-year federally funded grant designed to close the mathematics achievement gap for military dependent students.

If you have any questions about this research, please contact Jay Marquand (888-888-8888, jmarquand@email.com) or Dr. Ed DeRoche, Director of the Character Development Center, Department of Leadership Studies, School of Leadership and Education Sciences at the University of San Diego (619-260-2250, deroche@sandiego.edu).

I have read and understand this form, and consent to the research it describes to me. I have received a copy of this consent form for my records.

_____	_____
Signature of Participant	Date
_____	_____
Name of Participant (Printed)	Date
_____	_____
Signature of Principal Investigator	Date

Appendix K

Faculty: Research Participant Consent Form

Faculty: Research Participant Consent Form

For the research study entitled:

A Value-Added Study of a Federal Grant Program in Mathematics for Military Dependent Students

Jay Marquand is a doctoral student in the Department of Leadership Studies in the School of Leadership and Education Sciences at the University of San Diego. You are invited to participate in a research project he is conducting for the purpose of providing additional, value-added information about a three-year federally funded grant designed to close the mathematics achievement gap for military dependent students performing below grade level at a California middle school.

The project will involve you speaking with Mr. Marquand, the researcher of this study, for an in-person interview that asks questions about your experience in the Students Achieving Through Technology (SATT-21) grant and Math Plus class designed to support student achievement in the area of mathematics. The interview will last approximately 60 minutes with the possibility of a brief follow-up interview, either telephonically or through e-mail, should there be a need to clarify questions from the initial interview. The interview will take place at your school site in the winter. You will not be compensated for your participation. Participation is entirely voluntary and you can refuse to answer any question and/or quit at any time. Should you choose to quit, no one will be upset with you and your information will be destroyed right away.

The information you give will be analyzed and studied in a manner that protects your identity. That means that a code number will be used and that your real name will not appear on any of the study materials. All information you provide will remain

confidential and locked in a file and a password protected computer file in the researcher's office for a minimum of five years before being destroyed.

There may be a risk that participating in the interview may make you emotional. Sometimes people feel anxious or sad when talking or reflecting on the things you will be asked about. If you would like to talk to someone about your feelings, you can call the San Diego Mental Health Hotline at 1-800-479-3339. Remember, you can stop the interview at any time for any reason.

The benefit to participating will be in knowing that you helped educators learn how to better understand the extent to which the goals / objectives of the SATT-21 grant and Math Plus class are being met by providing value added information about this three-year federally funded grant designed to close the mathematics achievement gap for military dependent students.

If you have any questions about this research, please contact Jay Marquand (888-888-8888, jmarquand@email.com) or Dr. Ed DeRoche, Director of the Character Development Center, Department of Leadership Studies, School of Leadership and Education Sciences at the University of San Diego (619-260-2250, deroche@sandiego.edu).

I have read and understand this form, and consent to the research it describes to me. I have received a copy of this consent form for my records.

_____	_____
Signature of Participant	Date
_____	_____
Name of Participant (Printed)	Date
_____	_____
Signature of Principal Investigator	Date