Do At-Risk Students Benefit When Novanet is Used for Credit Recovery?

Rebecca Lynn Volkerding  
*University of Southern Mississippi*

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DO AT-RISK STUDENTS BENEFIT WHEN NOVANET IS USED FOR CREDIT RECOVERY?

by

Rebecca Lynn Volkerding

Abstract of a Dissertation
Submitted to the Graduate School
of the University of Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

May 2012
ABSTRACT

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by Rebecca Lynn Volkerding

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The purpose of this study was to determine if it is effective and appropriate to place all students needing credit recovery in computer-based classes regardless of age, risk ratio, and their previous failing grade. Driven by the NCLB mandate for schools to produce greater gains and graduate all students in 4.5 years, districts are now using online credit recovery programs to help at-risk students gain promotion and put students back on-track for graduation without placing these students back in the traditional classroom setting where they failed the class the first time. Although there is an adequate knowledge base about the impact of technology on student outcomes, there are still several areas where the decision-making process is hampered due to scant knowledge on how to effectively implement educational technology. Numerous school districts in the country have implemented NovaNET as the primary tool for online credit recovery and this study specifically looks at this program and its effectiveness for credit recovery with at-risk youth.
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by

Rebecca Lynn Volkerding

A Dissertation
Submitted to the Graduate School of The University of Southern Mississippi in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

Approved:
Rose McNeese
______________________________
Director
David E. Lee
______________________________
James T. Johnson
______________________________
Ronald Styron
______________________________
Susan A. Siltanen
______________________________
Dean of the Graduate School

May 2012
DEDICATION

My loving husband, Damon

If it were not for the amazing man that my husband is I would probably still be writing Chapter I! He has taken on every responsibility around the house while I spend endless hours in front of my computer. Without any complaints he has cooked, cleaned, done the laundry, and taken care of me in every aspect of my life. When I felt like life was spinning out of control, he brought balance and sanity. He never doubted my ability and put this work before everything else. This dissertation is much as his as it is mine. I love him more than words can express.

The Edgerton family

My family is my rock. When my world became my dissertation, my family was understanding and supportive. When I needed a mental break, Elizabeth and Stephanie were always there to show me a good time! My parents, Boyd and Suzy, are the number one reason I was able to reach this destination in the first place. When I saw how proud they were of my Dean’s List certificate my first year of college, making them proud became my source of motivation. I hope they are proud of me as I give our family the first PhD. This degree will have my name on it, but it belongs to them.

The Smitha Administration

Clint, Mark, and Travis deserve special recognition! As the all-male team I worked with while I was nearing the finish line, they more than anyone else witnessed and managed the wide range of emotions that I experienced as I worked full-time, finished this study, and experienced my first year of marriage with my husband working out of town. They kept me laughing so I would not cry. “There is no crying in administration!”

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The Georgia Department of Education

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CHAPTER I

INTRODUCTION

Fueled by the need to accommodate students not mastering the general high school curriculum in the classroom setting, school districts began to embrace computer-based instruction as a means of credit recovery in the mid-1990s (Akiba, 2002; Bennett, 2002). Chapter I in this study identifies the causes which have led school districts around the nation to move to computer-based credit recovery in the high school setting. An insight into one such program, NovaNET, is provided along with questions that have since arisen with the implementation of this program in the second largest school district in the state of Georgia, and why it is pertinent for school leaders to study these questions and analyze the results.

Background

The increasingly high number of students in danger of dropping out of school is a major concern in education today. Nationwide over 7,000 students drop out of school every day. Three out of every 10 members of the 2010 graduating class, 1.3 million students in all, failed to graduate with a diploma (Diplomas Count, 2010). Among the 76 million high school age children in 2000, 9.8% were high school dropouts (U. S. Department of Commerce, 2000). Without a high school diploma, these individuals are more likely than their graduate counterparts to spend their lives sporadically unemployed, requiring government assistance, and/or rotating in and out of the prison system (Belfield & Levin, 2007; Bridgeland, Dilulio, & Morison, 2006). The Bureau of Justice Statistics reported that each class of high school dropouts cost the United States economy more than $8 billion in incarceration expenses and lost wages per year (2002).
Strong indicators that students are considered at-risk of dropping out of school include poor academic achievement, chronic suspensions, truancy, substance abuse, teen pregnancy, students living in single-parent homes, students living in poverty, low educational attainment by parents, and students who have been retained in a grade (Anagnostopoulos, 2006; Fitzpatrick & Yoels, 1992; Hammond, Linton, Smink, & Drew, 2007; Lee & Burkam, 2003; Levin, 1989; Rodriguez, 1990). Students are now being considered at-risk even before starting a formal education because they are beginning school without many of the basic skills upon which school curriculum is based (Howse, Farren, & Boyles, 2003; Lubeck & Garrett 1990). As these students move through school without effective intervention strategies in place, they drop further behind, ultimately losing a sense of self-confidence resulting in academic failure and the likelihood of leaving high school without a diploma.

Effective July 1, 2008, all students in the state of Georgia must graduate with a regular high school diploma, including mastering specific course content before grade-level promotion (Georgia Department of Education, 2007). The new graduation rules required units of study is depicted in Table 1. This current requirement could have vast consequences for at-risk students. The new graduation rule in Georgia (Governor’s Office of Student Achievement, 2008) requires specific course completion before promotion to each grade level. Under this new rule, students will remain in the current grade until the credit is attained, possibly leaving students in the ninth grade until they drop out because they cannot pass a specific class. This rule has the potential to overcrowd classes with both repeat students who have already failed to master the content once along with on-level students who are taking the course for the first time. Administrators are now
challenged with the organizational and scheduling changes that are becoming necessary to move the entire student body through college preparatory courses and specific classes required for not only graduation, but also grade level promotion (Georgia Department of Education, 2007). With the pressure to respond quickly to the requirements of the federal No Child Left Behind Act of 2001 (No Child Left Behind [NCLB], 2002) and the vast educational needs of today’s students, educators are being forced to solve problems in new ways.

Table 1

*Required Credits for Graduation in Georgia as of July 2008*

<table>
<thead>
<tr>
<th>Area of Study</th>
<th>Units Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>English / Language Arts*</td>
<td>4</td>
</tr>
<tr>
<td>Math*</td>
<td>4</td>
</tr>
<tr>
<td>Science*</td>
<td>4</td>
</tr>
<tr>
<td>Social Studies*</td>
<td>3</td>
</tr>
<tr>
<td>Career Tech, Language and/or Fine Arts</td>
<td>3</td>
</tr>
<tr>
<td>Physical Education*</td>
<td>1</td>
</tr>
<tr>
<td>Electives</td>
<td>4</td>
</tr>
<tr>
<td>Minimum Total Units Required</td>
<td>23</td>
</tr>
</tbody>
</table>

(Georgia Department of Education, 2007)

Note: * Identifies that some, if not all, of the units required in the area of study include required courses for graduation

No Child Left Behind (NCLB, 2002) placed emphasis on scientifically-based research and required schools to choose research-based strategies and programs for
implementation within their school. Driven by the NCLB mandate to produce greater gains and graduate all students in 4.5 years, districts began adding online credit recovery programs to the master schedule to help at-risk students gain promotion and put students back on-track for graduation without placing these students back in the traditional classroom setting where they failed the class the first time.

NovaNET is an alternative route for meeting graduation requirements when students have not found success in the traditional classroom setting. This program offers online access to state-aligned curriculum for students who have failed a course resulting in the loss of required credits and are thus now in danger of grade-level retention or not graduating all together. NovaNET is a prescribed tool used by many schools to end the cycle of classroom failure and give students the opportunity to recover lost credits they need for promotion and graduation in an individualized, nontraditional format (Faircloth & O’Sullivan, 2001; Harlow & Baenen, 2003; Pearson Digital Learning, 2011). Schools are now offering NovaNET either after school or scheduling this program into the student’s daily schedule to provide needed individualized credit recovery with the flexibility of a self-paced environment needed for at-risk youth.

Although there is an adequate knowledge base about the impact of technology on student outcomes, there are still several areas where the decision-making process is hampered due to scant knowledge on how to effectively implement educational technology. This study will add to the much needed research of effective technology implementation so educators can begin making data-driven decisions on how to effectively implement NovaNET as a credit recovery tool to increase promotion rates and graduation rates.
Purpose of the Study

The purpose of this study was to find the most equitable, cost-effective, and beneficial way to incorporate computer-based credit recovery program in 9-12 schools by determining if it is effective to place all students needing credit recovery in computer-based classes regardless of age, risk ratio, and what their previous failing grade was in the traditional classroom setting. After personal correspondence with school counselors in the school district of study, the researcher found that individual schools have different criteria for admittance into a NovaNET course. For example, one school required that students received a failing grade of at least a 60 in the traditional classroom in order to participate in NovaNET online credit recovery. Another school in the district did not allow freshman to participate in NovaNET. These varying criteria led the researcher to ponder if students are blocked from a program that could potentially help them graduate on time because of where they live and what school they attend. Does previous academic failure in one environment reflect possible future failure in a different environment, and does age have any significance on the student’s success in the online curriculum?

Currently, most schools are working on a trial and error basis surrounding computer-based credit recovery and variables considered when placing a student in computer-based credit recovery is not backed with research.

Researchers have suggested that the success of dropout prevention efforts depends greatly upon the types of strategies implemented, making it essential that selected approaches have been proven effective for the identified risk factors of those being targeted (Black, 2002; Diplomas Count, 2010; Fitzpatrick & Yoels, 1992). From the results of this study, school districts will be able to create a policy, supported by research,
surrounding the implementation of computer-based credit recovery in the high school to ensure all schools are working on a cost-effective basis to provide successful interventions for all students.

Research Questions and Hypotheses

The research questions and hypothesis that guided this study are as follows:

1. Is there a relationship between risk ratio and a final grade in NovaNET?
   a. Null hypothesis: There is no relationship between risk ratio and the final course grade in NovaNET.

2. Is there a relationship between a previous failing grade in the traditional classroom and the final grade in NovaNET credit recovery?
   a. Null hypothesis: There is no relationship between the prior failing grade in the traditional classroom setting and the final grade in the computer-based credit recovery class.

3. Is age correlated with final NovaNET grade?
   a. Null hypothesis: There is no relationship between age and final course grade in NovaNET.

4. Are the predictors of risk ratio, previous failing grade, and age correlated with final NovaNET grade?
   a. Null hypothesis: There is no relationship between risk ratio, previous failing grade, and age on the final grade in NovaNET credit recovery.

Definitions and Terms

The following terms and definitions are provided to offer a more concise explanation of the language used in this study.
Academic Remediation: Support, tutoring, skills enhancement programs and interventions that employ research-based instructional methods to close the achievement gap, increase student engagement, academic performance, and connections to school and learning (Merrill, 2002; Rodriguez, 1990).

Adequate Yearly Progress (AYP): An indicator for each state required by the No Child Left Behind Act of 2001 to establish standards that measure student performance each year. AYP is a measure of year-to-year student achievement on statewide assessments that requires all subgroups to meet or exceed state-established annual objectives (Georgia Department of Education, 2008).

Annual Measureable Objective (AMO): The comparison of a school’s performance to a specific target which determines whether or not a school meets Adequate Yearly Progress (U. S. Department of Education, 2002).

At-Risk: Term used in association with students who, due to one or more factors, have a probability of not graduating from high school. For the purposes of this study, the researcher will define all students taking NovaNET during the school day as at-risk because they have failed a class needed for graduation and are thus at-risk for not completing high school in the mandated time from No Child Left Behind (NCLB, 2002).

Computer-Based Education (CBE): The use of technology to guide a student through prescribed curriculum, improve student learning, and/or remediate academic deficiencies (Valdez et al., 2000).

Credit Recovery: The process of retaking a previously failed class in order to earn credit toward high school graduation (Roblyer, 2006).
Dropout: A student who withdraws from school before receiving a diploma (Governor’s Office of Student Achievement, 2008).

Economically Disadvantaged: Term used in association with a student who is a member of a household that meets the income eligibility guidelines for free or reduced-priced meals (Georgia Department of Education, 2008).

General Equivalency Degree (GED): An alternative to a high school diploma. This degree shows that individuals have an understanding of academic subjects including language arts, mathematics, science, and social science (Warren, Jenkins, & Kulick, 2006).

High School Diploma: Document awarded to students certifying that they have satisfied attendance requirements, unit requirements, and the state assessment requirements as referenced in Rule 160-4-2-.48 (Georgia Department of Education, 2007).

Graduation Requirement: Compulsory course work, credits, and standardized testing needed to complete high school. Graduation requirements in the state of Georgia are developed on a local level with recommendations from the Georgia Department of Education (Georgia Department of Education, 2008).

Graduation Rate: In the state of Georgia, graduation rate refers to the rate at which students complete high school with a regular diploma. Georgia currently calculates student graduation rate via the National Center for Education Statistics’ leaver method. Often referred to as a departure-classification index, this calculation method does not recognize certificates of attendance, special education diplomas, or a Graduation Equivalency Degree (GED) (Governor’s Office of Student Achievement, 2008).
High School Dropout Rate: In the state of Georgia, the dropout rate is a calculation of the number of students exiting school with a dropout-associated withdrawal code divided by the number of students that attended school in a given academic year. Students may be assigned a dropout code if they exit school prior to graduation as a result of marriage, expulsion, financial hardship, incarceration, military enlistment, enrollment in adult educational services, pregnancy, long-term truancy, serious illness, or an unknown factor (Georgia Department of Education, 2008).

No Child Left Behind (NCLB): Signed into law by President George W. Bush in 2002. It was built on the following principles: greater flexibility and control, accountability for results, emphasis on using scientific research to do what works, and more parent choice (NCLB, 2002).

NovaNET: Online, state-aligned curriculum used by numerous school districts for credit recovery, test preparation, and/or academic remediation (Faircloth & O’Sullivan, 2001; Harlow & Baenen, 2003).

Risk Ratio: A consolidated measure of the degree to which a student may be academically at risk for high school non-completion. A student’s risk ratio is a metric number ranging from zero to one, with zero indicating a student who exhibits no academic risk for high school non-completion and one indicating a student who presents risk on all factors considered. All Georgia students with a risk ratio value greater than zero are classified as at-risk. Student risk ratio at the high school level is comprised of a student’s rate of attendance for the previous school year, credit deficiency status, retention status, and performance on each GHSGT and End Of Course Test (EOCT) assessment respectively (Georgia Department of Education, 2008).
Assumptions

Using archival data for this study, it was assumed that all data had been entered correctly into the school district student database and that the data accurately reflects the respective predictor. It was also assumed that the instructor assigned to the NovaNET course is practicing academic honesty when moving students through the assigned modules in NovaNET. Specifically, in each NovaNET module, there is a pre-test to measure the student’s present understanding of the content to be mastered in that module; if a student scores an 80 or above on the pre-test, he or she is exempt from taking the lessons in that module and may move on to the next module. NovaNET instructors have the ability to override the grades earned and it was assumed that teachers did not alter the earned grades in NovaNET.

The results of this study were based on the assumption that the specific predictor of risk-ratio is an accurate measure of the likelihood of high school non-completion. This assumption holds that identification numbers associated with a higher individual risk ratio are more at-risk to drop out of school than their peers. For the measures of this study, any student identification number associated with a risk ratio of greater than 0 is considered an at-risk student.

Finally, it was assumed that students scheduled into the NovaNET program have received counseling as to the nature of the course and have agreed to take the course in this setting. NovaNET is self-paced, online curriculum, and the student will potentially not have a teacher of content in the classroom. It was assumed that each NovaNET score reflects the first effort to complete the course in a credit recovery setting; the researcher assumed all students were exposed to the curriculum only once before.
Delimitations

This study confined itself to one school district and included only students taking NovaNET during the school day. Although there are more students who took courses through NovaNET throughout the school year, those scores reflect students who took the class before or after the school day and who paid for the class. These students were allowed to drop the course after a given time with no consequence, potentially giving the study an absence of data. Also, since these students pay for the class, and economic motivation exists, their scores were not included in the sample because these scores could have potentially skewed the results. With the decision to control for these scores, the researcher still gained an effective sample size by using one of the largest school districts in the state of Georgia.

Further, the course content and its comparability to learning in a traditional classroom environment was not analyzed in this study. While all courses in the NovaNET program are taken as a means for credit recovery and are aligned to Georgia Performance Standards, students taking the NovaNET class have already been exposed to the course content before versus students who are taking the class for the first time in the traditional classroom setting. It would be an inaccurate representation to compare the scores since the level of prior knowledge cannot be determined. Although research will be provided showing the benefits of computer-based education, especially for at-risk youth, this study provides little comparable information about whether taking Biology, for example, in a NovaNET class is comparable in any way to taking Biology in a traditional classroom setting.
Justification

The dual charge by No Child Left Behind of implementing more rigorous graduation and college readiness standards, while at the same time improving state and local graduation rates, has left many educational practitioners and policymakers searching for programs that effectively engage students in school and learning and ensure acquisition of academic skills essential for life and work. This study explored one such program, NovaNET, and the effectiveness of this computer-based credit recovery program for at-risk high school students, and whether a final course grade in NovaNET was in any way related to risk ratio, the age of the student, and/or the previous failing grade from the traditional classroom. The educational intervention of NovaNET, as a tool for credit recovery, is being implemented across the United States to help schools meet the demands of NCLB and to help students get back on track and to graduate on time after failing a required course for graduation. But is online credit recovery working for at-risk students? Is this program, with a computer-based, self-paced learning environment, suitable for all high school students regardless of risk, age or previous failing grade in the traditional classroom setting? This study specifically addressed NovaNET as it was the purchased program used for computer-based credit recovery in the school district of study.

This study contributes to the research on at-risk youth and the interventions designed to help these students stay in school and graduate. It explores the specific program of NovaNET as the credit recovery tool used to assist these students in recovering credits in a nontraditional classroom setting. Results of this study indicate the program effectiveness is beneficial for at-risk students and if the success or otherwise
failure of the credit recovery is in any way related to risk-ratio, age, or the previous failing grades in the traditional classroom setting. By collecting quantitative data in these areas, the research contributes to the literature on effective interventions for at-risk high school students and will assist school districts in implementing the most equitable and cost-efficient manner in which to implement NovaNET in the high school setting.

Educational practices may improve based on the results of this study as results indicate that students are successful with the computer-based credit recovery model and thus the number of repeat students in traditional classes can be lowered. Administrators may begin to make data-driven decisions regarding the number of classes scheduled into the academic day for computer-based credit recovery, how many NovaNET portals to purchase, and what students to select for these classes in order to ensure the success of at-risk students. Increasing the number of computer-based credit recovery classes will result in smaller traditional classroom sizes, a more homogeneous traditional class with respect to age and prior knowledge, and the ability for more students to recover classes in a shorter amount of time.

Summary

The purpose of this study was to determine if it is effective and appropriate to place all students needing credit recovery in computer-based classes regardless of age, risk ratio, and their previous failing grade. Driven by the NCLB mandate for schools to produce greater gains and graduate all students in 4.5 years, districts are now using online credit recovery programs to help at-risk students gain promotion and put students back on-track for graduation without placing these students back in the traditional classroom setting where they failed the class the first time. Although chapter II shows that there is
an adequate knowledge base about the impact of technology on student outcomes, there are still several areas where the decision-making process is hampered due to scant knowledge on how to effectively implement educational technology. Numerous school districts in the country have implemented NovaNET as the primary tool for online credit recovery and this study specifically looks at this program and its effectiveness for credit recovery with at-risk youth.

In the following chapter, the aforementioned questions of final course grade in NovaNET being influenced by age, risk ratio, and previous failing grade in the traditional classroom setting are analyzed through exploring the theoretical framework surrounding the implementation of such online credit recovery programs, and reviewing the literature surrounding the independent and dependent variables. Chapter III discusses the methodology used for this study including the description of population selection, data collection methods, and data analysis techniques. The summary of the findings of this study are located in chapter IV and the conclusions and recommendations are found in chapter V.
CHAPTER II
REVIEW OF RELATED LITERATURE

Overview

There may have been a time when school failure and lack of education did not foreclose a person’s options for community status or quality of life. That time is no longer here. In 1964, a high school dropout earned 64 cents for every dollar earned by an individual with at least a high school degree. In 2001, the high school dropout earned only 34 cents for each dollar earned by an individual with more education (U. S. Department of Labor, 2002). Education is an important investment in both human and social capital that possesses the potential to benefit both the community and the individual. When the societal cost of crime, health care, and government subsidies are taken into consideration, the public benefit of educational investment may be equal to or greater than the private benefit (Belfield & Levin, 2007; Diplomas Count, 2010).

Technological advances, inflation, international competition, and intense pressures of providing a better life for greater numbers of people now requires a citizenry educated through at least high school graduation and the high school diploma is getting harder and harder to acquire because of increased government intervention and requirements at both the federal and state level (Levin, 1989). Carnevale (2008) suggested that individuals who are not equipped with the knowledge and skill sets necessary to obtain and keep high wage, high demand jobs are often denied full social inclusion and are subject to being “drawn into cultures, political movements, and economic activities that are a threat to mainstream American life” (p. 29). As such, high school dropouts are eight times more likely than high school graduates to be incarcerated.
in their lifetimes; nationally, 30% of federal inmates, 40% of state prison inmates, and 50% of individuals on death row are high school dropouts. In Georgia, these figures are even higher, with 80% of state inmates neglecting to hold a high school diploma (Georgia Department of Corrections, 2007). It has been calculated that raising the high school completion rate by 1% would save the United States $1.4 billion annually in crime-related costs alone (U. S. Department of Justice, 2002).

Understanding at-risk youth and the strategies that are effective in keeping these students in school until graduation is important knowledge for school administrators when planning interventions for low-achieving students and implementing programs geared toward increasing the graduation rate. One challenge that teachers face when working with at-risk youth is the wide range of abilities (Merrill, 2002). Almost every at-risk student needs individualized attention and often their areas of weakness are scattered over a multitude of years of educational deficiency and failure. Having to divide their attention over many needy students in one class is a hard task for even a mastery-level teacher and computer-based education is one solution for the necessary differentiation. The NovaNET online credit recovery program is used by numerous school districts across the United States to allow students the opportunity to recover lost credits during the school day in a non-traditional setting that individualizes instruction to meet the specific needs of the individual student.

The prescriptive curriculum of NovaNET identifies students’ current level of performance by analyzing the results of a pre-test. The program then provides scaffolding toward standard mastery by creating lessons aligned with the weaknesses apparent from the pre-test, and allows students to move through the curriculum at their own pace.
Students are engaged in meaningful work because they directly associate the work they are doing as having a direct impact on meeting necessary graduation requirements and the students are empowered knowing that their academic success is dependent on no one but themselves.

Effective learners self-evaluate their learning by comparing the progress they are making against specific task criteria, and in this present study, specifically against the mastery level set within the NovaNET program. When students are able to mature into self-regulated learners, they are able to generate judgments about how they are doing and can work to correct deficiencies on their own (Zimmerman, 2002). At-risk students are typically a group of students who need to feel empowered and believe that they have a sense of control over their actions (McMillan & Reed, 1994). When choosing to participate in NovaNET, students are able to exercise control over their capabilities and increase their self-efficacy from the beginning. As they progress through the modules in the prescribed curriculum, they can experience self-mastery and their perceptions on their capabilities are able to mediate past failures. Students’ perceptions of self-efficacy can influence the goals they set, their commitment to reaching those goals, and the learning strategies employed in order to reach those goals (Bandura, 1993; Zimmermann, 1990).

Theoretical Framework

Social Cognitive Theory

The theoretical framework behind this study is based on Zimmerman’s social cognitive theory of self-regulation and academic motivation. Zimmerman has been the leading expert on an expanded model of academic self-regulation since the 1980s. In social cognitive theory, students must develop skills in regulating the motivational,
affective, and social determinants of their intellectual functioning as well as the cognitive aspects (Bandura, 1993). A social cognitive perspective on self-regulated learning perceives students to be active participants in their own personal learning processes. Zimmerman and Martinez-Pons (1990) showed that good self-regulators do better academically than poor self-regulators. Good self-regulators metacognitively understand their learning processes, sustain intrinsic self-motivation and commitment to task completion, exhibit high levels of self-efficacy, and are able to effectively self-evaluate their progress (Zimmerman, Bandura, & Martinez-Pons, 1992). Research has found that students who believe they can accomplish a task will continue to work through difficulties and challenges because perceived self-efficacy can influence human behavior through cognitive and motivational processes. This theory holds that the stronger the perceived self-efficacy, the higher the goals people set for themselves, and the firmer is their commitment in reaching these goals (Bandura, 1993).

Zimmerman et al. (1992) used path analysis procedures to study the causal role of students’ self-efficacy beliefs and their academic goals in relation to self-motivated academic attainment. Cronbach alpha reliability tests were performed for each of the scales used in the study. The two self-efficacy scales proved to be reliable; a coefficient of .87 was found for the self-regulated learning scale and a coefficient of .70 was found for the self-efficacy for academic achievement scale. As hypothesized, a significant correlation was found between students’ perceived efficacy for self-regulated learning and their efficacy for academic achievement, $P = .51$. Students’ perceived self-efficacy for academic achievement predicted both their final grade in the course, $P = .21$, and their personal goals, $P = .36$. Students’ grade goals were significantly predictive of their final
grades, \( P = .43 \). Interestingly, the direct path of influence between students’ prior grades and final grades was not significant. This study suggests that self-regulatory factors mediate the influence of prior academic achievement.

Bandura (1993) illustrated the self-efficacy contribution to skill utilization by presenting a study by Collins (1982) where she selected children at three levels of mathematical ability (low, middle, and high) and within each ability group she found children who were assured in their perceived mathematical self-efficacy and others who had self-doubts. After working on difficult math problems, she found that at each level of ability, children who believed strongly in their capabilities performed better and thus proved her hypothesis that positive attitudes toward mathematics were better predicted by perceived self-efficacy than by actual ability. This finding supports Bandura’s claim that ability is not a fixed attribute, rather a capability in which cognitive, social, motivational, and behavioral skills are organized and effectively used in the academic setting.

The ten-year period of the late 1970s to the late 1980s brought a new perspective on the individual differences of students when the research of metacognition emerged. Metacognition is the awareness of and the knowledge of one’s thinking and learning processes. Upon this new research, student deficiencies in learning began to be attributed to their lack of metacognitive processes and the resulting inability to compensate for their personal limitations in academic learning (Zimmerman, 2002). The metacognitive theory implies that students’ metacognitive awareness of particular aspects of their functioning could enhance their self-control and in turn produce a readiness that is essential for learning.
Social learning psychologists view the structure of metacognitive processes in terms of three cyclical phases: Forethought, Performance, and Self-reflection (Zimmerman, 2002). The forethought phrase refers to processes and beliefs that occur before the learning process. People motivate themselves and guide their actions by exercising forethought (Bandura, 1993). The two major classes of the forethought phase are task analysis and self-motivation. Task analysis involves goal setting and strategic planning. Self-motivation involves the beliefs students hold about their personal capabilities to learn and the level of intrinsic interest involved in the learning process.

The second phase, the performance phase, refers to the processes that occur during academic interventions. These processes fall into two classes: self-control and self-observation. The third and final phase, the self-reflection phase, refers to the processes that occur after the learning effort. The two major classes of the self-reflection phase are self-judgment and self-reaction. One form of self-judgment is self-evaluation in terms of comparing self-observed performances against a set standard, either prior performance, another person’s performance, or an absolute measure of mastery (Zimmerman, 2002).

Zimmerman’s social cognitive theory is based on 14 self-regulated learning strategies: self-evaluation, organization, transformation, goal setting, planning, information seeking, record keeping, self-monitoring, environmental structuring, giving self-consequences, rehearsing, memorizing, seeking social assistance, and reviewing (Zimmerman & Martinez-Pons, 1990). There is substantial evidence that a positive correlation exists between student academic achievement and the use of these self-regulated learning strategies (Bandura, 1993; Howse et al., 2003; Stevens, Olivarez, Lan, & Tallent-Runnels, 2004; Zimmerman et al., 1992). Self-efficacy appears to mediate the
effects that ability has on academic performance and has been shown to significantly influence academic achievement (Bandura, 1993; Stevens et al., 2004; Zimmerman & Martinez-Pons, 1990; Zimmerman et al., 1992). Self-efficacy is not a personal trait; it can be taught and matured by the practice of specific processes that enable a learner to become an effective self-regulated learner.

**At-Risk Youth**

Every year, the educational system in the United States is failing a substantial proportion of students who do not master age-appropriate subject matter. The education of at-risk youth has become one of the major challenges of our time and there is no end to this epidemic in sight. There is widespread agreement that leaving school before graduating is a major detriment to achieving high status in American society and the dropout rate disproportionally affects those students who come from low socio-economic levels, single parents, inner cities, and/or minorities (Bridgeland et al., 2006; Diplomas Count, 2010; Lee & Burkam, 2003; Levin, 1989). Although schools have been viewed as vehicles for social mobility, it is typically held that this status attainment is there for the taking and this opportunity falls on the individuals to decide whether or not they take advantage of this offering.

Although it is well documented in research that children from economically disadvantaged homes often begin school with significantly poorer scholastic skills than do their more affluent peers and are thus at a much greater risk for school failure, the most common explanations for dropping out of school focus on personal characteristics of individual students (Anagnostopoulos, 2006; Fitzpatrick & Yoels, 1992; Lee & Burkam, 2003; Levin, 1989; Rodriguez, 1990).
found that the dropouts left school for five major reasons: boredom with school, inability to catch up on missed assignments after absenteeism, their friends were disinterested in school, lack of rules and too much freedom, and failing academically (Bridgeland, et al., 2006). Balfanz & Letgers concluded in their 2004 qualitative study that even though students had different reasons for becoming disengaged from school, two paths clearly arose: one dealing with misbehavior or dislike of school and one dealing with academic trouble and failure.

Lee and Burkam (2003) further distinguished between and analyzed the impact on graduation of these two forms of risk. The social risk factors found to be associated with a higher likelihood of school difficulties include race/ethnicity, age, language, family income, parents’ education, and family structure. Members of racial and ethnic minority groups drop out at higher rates than White students, as do those from low-income families, from single-parent households, and from families in which one or more parents also left school without a diploma (Fitzpatrick & Yoels, 1992; Lee & Burkam, 2003; Levin, 1989; Rodriguez, 1990). Specifically, nearly half of all the nation’s minority students, whose populations are expected to increase by 10% by the year 2020, fail to graduate (Diplomas Count, 2010). In addition to demographic characteristics, personal experiences unrelated to school can impact a student’s decision regarding whether to persist to graduation. When an adolescent is required to take on early adult responsibilities, for example, becoming a teen parent, gaining employment to assist with family expenses, or serving as a primary caregiver for younger siblings, the likelihood of becoming a high school graduate is significantly diminished (Balfanz & Legters, 2004; Gleason & Dynarski, 2002; Lee & Burkam, 2003; Rodriguez, 1990).
Although students and schools have little control over the factors that constitute social risks, educational stakeholders can increase a student’s chances of remaining in school and on track to graduate when providing interventions for academic risk factors. Academic risk grows as students proceed through the early and middle grades and manifests in the high school years when students make the final decision to quit school. Over time, growing self-doubts in cognitive competencies foreclose many occupational life courses, if not the entire advantageous life path (Bandura, 1993) These students accumulate a history of absenteeism, general disengagement from school activities, discipline problems, academic failure, and resulting grade retention (Bali, Anagnostopoulos, & Roberts, 2005; Lee & Burkam, 2003). For many of these students, without the appropriate support structures and interventions in place, and due in some part to transiency, lack of individualized attention from school personnel, or lack of personal commitment to the developed interventions, dropping out of school is viewed as the only way to end the problems that they only see as escalating and becoming increasingly burdensome in their lives.

The task of creating environments conducive to learning and increasing academic achievement rests heavily on the talents and the self-efficacy of the classroom teacher. Teacher’s beliefs in their collective instructional-efficacy contribute significantly to their student’s level of academic achievement (Bandura, 1993). Lee & Burkam (2003) conducted a study on the various school interventions that aim to reduce academic risk factors and found that the probability of at-risk students dropping out of school was reduced when students had positive relationships with teachers in the school. Their review of qualitative studies suggests that students who leave high school before
graduating often cite a lack of social support as a reason for doing so. Students who are disengaged from school often report being unconnected with their teachers. This could be one reason why Lee & Burkam also found that large schools exhibited higher dropout rates than in small and medium-sized schools. The authors found that smaller schools, with enrollments under 1,500 students, had organizational structures that allowed teachers to take more personal responsibility for their students’ learning. The authors concluded that school size has a direct effect on academic learning, citing teachers’ attitudes and their influence on students’ learning as the main effect.

Adolescents’ decisions to leave school without a high school diploma are often made gradually and draw on a complex web of personal experiences (Balfanz & Legters, 2004; Black, 2002; Bridgeland et al., 2006). Both a student’s social and academic backgrounds are associated with the likelihood of students dropping out of school before they graduate. The list of potential risk factors associated with dropping out of school is long and consistent across studies focusing on this epidemic. From various studies, it is found that at-risk students are over-age for their grade (having been previously retained), have a history of truancy and behavior problems, and are commonly concentrated among minority groups, immigrants, single-parent families, and the poor (Anagnostopoulos, 2006; Balfanz & Legters, 2004; Black, 2002; Bridgeland et al., 2006; Fitzpatrick & Yoels, 1992; Lee & Burkam, 2003; Levin, 1989; Rodriguez, 1990). In 1989 Levin estimated that approximately one-third of all children in elementary and secondary schools are considered at-risk for academic failure because of their social and economic origins. This same year, the Council of Chief State School Officers (CCSSO) released that all children are at risk to some degree and therefore will require prevention and
intervention services at one point of another. In 1999, the CCSSO released a subsequent policy statement that these issues have not changed but only grown more severe and the need to educate our children must start before kindergarten if they are to have a fair chance in life.

NCLB (NCLB, 2002) has focused attention on the responsibility of schools and districts to help all children achieve at high levels, no matter their known deficiencies. Even when NCLB is no longer a mandate in the public school setting, the issues it brought attention to will still remain. McMillan & Reed (1994) claim that at-risk students often lack the ability to use learning strategies to increase their ability to learn compared to their more affluent peers. Also in comparison to their peers, they found that at-risk students have fewer interactions with adult role models, have less educational materials in the home, and are involved in less extracurricular activities at school. Experimental studies have shown that teaching low-achieving students to set proximal goals for themselves will enhance their sense of cognitive efficacy, their academic achievement, and their intrinsic interest in the subject matter (Zimmerman et al., 1992). Educators will always be faced with the pressure to ensure that low-performing students achieve adequate standards. The need for research on effective practices and strategies for at-risk youth is paramount now and forever.

The work of Bloom (1964) on comparative studies of twins raised together and apart found that poor children are not genetically inferior but rather environmentally deprived. Bloom’s work illustrated how the family environment plays an important role in their children’s success in school. Parents contribute to their children’s intellectual growth in a variety of ways. People are partly a product of their environment and thus
beliefs of personal self-efficacy can shape a course of life taken by influencing choices, activities, and environments (Bandura, 1993). At-risk students typically lack the home and community resources to benefit from traditional schooling and instead experience repetitive instances of failure. Because of a multitude of environmental characteristics like poverty, cultural differences, and broken families, they tend to have low academic achievement and experience high secondary school dropout rates (Levin, 1989). Bloom’s research spurred the War on Poverty programs of the Kennedy-Johnson era aimed at assisting poor and minority mothers adequately raise their children and increase youth school readiness. By the time these children enter kindergarten, they are reportedly already educationally disadvantaged and thus the government stepped in and passed laws trying to level the playing field (Lubeck & Garrett, 1990).

Also supporting Bloom’s theory on environmental deprivation, Coleman (1966) demonstrates in his study, *Equality in Educational Opportunity*, that individual educational successes are almost entirely dependent on social background, as particular features of schools were shown to have almost no influence on individual outcomes. This finding symbolizes the American notion of individualism and innately places students at-risk. War on Poverty programs such as Head Start and Follow Through were created to compensate for the deficiencies children experienced at home by providing greater resources to at-risk children before they started school. From this era came the term at-risk and thus the trend to blame academic failures on home life rather than school inadequacies emerged. Research indicates that young, economically at-risk children have lower levels of family and community support for school success, experience more scholastic failures than their more advantaged peers, have lower-self-efficacy, more
negative attitudes toward school related activities, and have less intrinsic motivation for education (Bloom, 1964; Fitzpatrick & Yoels, 1992; Howse et al., 2003; Rodriguez, 1990).

Although most young children show evidence of being motivated in their early childhood classrooms, some fail to self-regulate their behaviors needed to complete and master the curriculum successfully and after repeated failure the intrinsic motivation dwindles and in time can become nonexistent (Bloom, 1964; Howse et al., 2003). Self-regulation failures are particularly evident in underachievers who are not as skilled at using self-regulating strategies (Zimmerman, 1990). These children are more easily distracted from learning tasks, resulting in a failure of standard mastery at a young age. Children’s inability to avoid distractions and maintain attention to a central task is a lack of action control that many at-risk youth exhibit in the classroom (Kuhl & Kraska, 1993).

It has been argued that children’s abilities to self-control depends in large part on the availability of responsive and consistent parenting and on opportunities for the child to practice self-regulating behaviors in response to parental expectations, conditions that may be absent in many economically impoverished environments (Bloom, 1964). In a quantitative study, Eisenberg et al. (2003) found that teacher ratings of children’s self-regulation were directly related to socioeconomic status. Most students terminate negative experiences by dropping out of school before receiving a high school diploma, thus ending their education at a very young age and resulting in repercussions they will experience for the rest of their lives. The original intent of the Elementary and Secondary Education Act (ESEA) of 1965 was to promote educational equity for poor and disadvantaged children. This act set precedence for federal intervention and aid to
education and was seen as an effective means to break the cycle of poverty affecting school readiness. As at-risk youth become disengaged, they become unmotivated to try their best in school and are thus not able to achieve their full potential because of this lack of motivation that has resulted in years of academic failure in the school system (Lee & Burkam, 2003; Levin, 1989; Fitzpatrick & Yoels, 1992; Rodriguez, 1990).

Fifty years after Brown vs. the Board of Education (1954), the image of public high schools providing all youth with equal opportunity to receive a high quality education still remains inspiring. Current reality, however, offers a much more troubled picture as thousands of students drop out of school every day. It is no coincidence that these individuals are gripped by high rates of unemployment, crime, ill health, and chronic despair. For many struggling youth, the only hope for a life out of poverty in modern America is a high school diploma followed by post-secondary schooling or training, which for many youth is cracked and broken before they are even of age to vote (Balfanz & Legters, 2004).

The list of potential risk factors associated with dropout behavior is long and quite consistent across a myriad of research (Anagnostopoulos, 2006; Bali et al., 2005; Lee & Berkam, 2003; Levin, 1989; Rodriguez, 1990). One of the strongest educational predictors of dropping out of school is poor academic achievement. Students who are having academic problems tend to be retained in a grade level, increasing their risk status of dropping out of school. Truancy is the earliest predictor of potential problems with school (Fitzpatrick & Yoels, 1992). Students who are continually absent from school are also considered a high risk for dropping out of school and this can be easily correlated to poor academic achievement. The individual risk factors, both social and academic, all
become interrelated and eventually become too much to handle for the individual youth without the needed support structure at home. Given the evidence of the relationship between instructional time and school performance, number of days absent from school becomes a significant predictor of low performance. Truancy prevention programs have been established throughout the country, as this risk factor is one seen by educators as a factor that can be influenced through the school and the court system. Another high risk factor that leads students to drop out of school is student behavior.

The manner in which schools address truant students can often increase class disruption, vandalism, and other serious behavior problems. Black (2002) contends, after a qualitative study, that students who are suspended or expelled become convinced that teachers and administrators no longer want them in school. The students who continually disrupt the educational environment eventually give up trying to pass the classes for which they miss during suspensions. He found that approximately one-third of dropouts in the ninth grade had been suspended from school for more than 10 days when they were in the eighth or ninth grade and that the likelihood of students graduating from school continued to decrease with the number of out-of-school suspensions they received. In support of Black’s findings, Balfanz & Legters (2004) found that methods specifically focused on attendance and behavior need to be included in an intervention model in order to keep students engaged in school and on track to graduate on time. Although many want to blame dropout rates on parents and on the community, Black points to research which indicates students might be pushed out of school by the size of the school, the curriculum, and the lack of positive student-teacher relationships. Black contends that while students who develop strong student-school relationships are more likely to be
academically successful in school and, thus, are more likely to earn a high school diploma, those students who lack positive student-school relationships often struggle academically and become frustrated with school, resulting in a devaluation of education and a subsequent adoption of oppositional, truant, and withdrawal behaviors.

Research suggests that the most readily apparent result of an individual’s decision to drop out of school is economic (Belfield & Levin, 2007; U. S. Department of Labor, 2007). The negative social impact of students dropping out before high school graduation and this great loss to our human capital is universally acknowledged as a growing problem. Levin (1989) contends that unless the nation responds to the dropout epidemic, a number of consequences are inevitable. This is even more of an issue today than it was in 1989. Levin states the consequences from dropping out of school include “the emergence of a dual society with a large and poorly educated underclass, massive disruption in higher education, reduced economic competitiveness of the nation… and higher costs of public services associated with poverty and crime” (p. 49).

The high school dropout problem is a crisis for the United States, not only because of the impact on individuals and their future, but also because of the economic and social costs to the county. From an economic perspective, as of the 1990s, the mean individual rate of return per year of schooling is greater than 10% and may be as high as 17 to 20%, regardless of one’s race, gender, or ability level. This equates to an estimated earnings difference between a dropout and a high school graduate of approximately $9,000 per year and more than $300,000 over the course of a lifetime (Belfield & Levin, 2007; Bridgeland et al., 2006; Levin, 1989). Income and taxable gains, however, represent only a subsection of the private and communal advantage that can be gleaned
from education. Communities composed of individuals with high educational attainment levels are more apt to benefit from lower crime figures, better health, and enhanced rates of economic growth, employment, and civic engagement (Belfield & Levin, 2007; Diplomas Count, 2008).

Because educational attainment correlates significantly with degree and regularity of involvement in civic-related leadership and activities, individuals with minimal educational experience are often disengaged from their communities while those with higher levels of educational attainment are traditionally more civically connected (Belfield & Levin, 2007; Diplomas Count, 2010). In 2004, approximately 3.8 million 16-24 year olds were not enrolled in high school and had not earned a high school diploma or alternative credential, such as the General Equivalency Diploma (GED) (Laird, DeBell, & Chapman, 2006). High school dropouts are 65% less likely than their peers to work full-time and the U.S. Department of Labor’s Bureau of Labor Statistics reported in 2002 that the average earnings ranged from $18,900 for high school dropouts to $25,900 for high school graduates. Lifetime earnings carry an even greater gap with high school dropouts earning $630,000 compared to high school graduates who will earn $994,080 in their lifetime. A single 18-year-old dropout earns over $300,000 less over a lifetime and contributes almost $70,000 less in federal and state income taxes (U. S Department of Labor, 2002). It is estimated that the government would gain $45 billion in extra tax revenues and reduced costs in public health, crime, and welfare payments if the number of high school dropouts were cut in half (Belfield & Levin, 2007; Bridgeland et al., 2006).
Government Involvement in Education

The federal government became engaged with public school education after the passage of *Brown vs. Board of Education* in 1954 in which the Supreme Court found that separate but equal facilities was a denial of the equal protection clause of the Fourteenth Amendment, and that segregation had no place in public education. The anti-poverty and civil rights laws of the 1960s and 1970s brought about a dramatic emergence of the Department of Education’s equal access mission that was started after Brown. The passage of laws such as Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, and Section 504 of the Rehabilitation Act of 1973 made civil rights enforcement a fundamental and long-lasting focus of the Department of Education.

In 1965, the Elementary and Secondary Education Act (ESEA) launched a six-part federal law to improve American public school education by direct federal intervention (Elementary and Secondary Education Act, 1965). Each of the six goals are referred to as “titles” and they are explained in Table 2. Title I is the most far-reaching; it provides funds to local educational agencies (LEAs), including schools, social service agencies and other organizations for programs such as remedial reading, compensatory mathematics and special programs aimed at assisting disadvantaged youth. Funds are apportioned according to the number of low-income children in the LEA’s area. Although this law was morphed into No Child Left Behind (2002), the primary purpose of ESEA has not changed since the time when it first became law- to ensure equal educational opportunity for all children and to close the achievement gap between poor
and affluent children by providing additional resources to disadvantaged students (U. S. Department of Education, 2001).

Table 2

*Original Sections of 1965 Elementary and Secondary Education Act*

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title I</td>
<td>Financial Assistance to Local Educational Agencies for the Education of Children from Low-income Families</td>
</tr>
<tr>
<td>Title II</td>
<td>School Library Resources, Textbooks, and other Instructional Materials</td>
</tr>
<tr>
<td>Title III</td>
<td>Supplementary Educational Centers and Services</td>
</tr>
<tr>
<td>Title IV</td>
<td>Educational Research And Training</td>
</tr>
<tr>
<td>Title V</td>
<td>Grants To Strengthen State Departments Of Education</td>
</tr>
<tr>
<td>Title VI</td>
<td>General Provisions</td>
</tr>
</tbody>
</table>

(Original Sections of 1965 Elementary and Secondary Education Act, 1965).

Note: Numerous amendments have been made to the original law, becoming known as No Child Left Behind in 2001. Congress has reauthorized the ESEA several times since its initial passage, most recently in 2002.

Title I monies differ from the previous block grants from the federal government in that these grants are categorical and thus benefit a specific category of students. Title I of the Elementary and Secondary Education Act was meant to overcome school districts’ perceived habit of neglecting the needs of low-income, low-performing, minority students (Hill, 2000). Title I programs were not designed to benefit schools as a whole like block grants that are diffused across all students. Title I is allocated categorically to provide extra services, hire extra personnel, and purchase new equipment for the benefit of only at-risk youth (Hill, 2000). Children who are not specifically identified are in no
way supposed to benefit from the goods and services provided through the block grant. More than 50,000 public schools across the country use Title I funds to provide additional academic support and learning opportunities to low-achieving children. Helping these children master an increasingly challenging curriculum and meet state standards in core academic subjects is at the heart of Title I. Title I funds and services reach more than 12.5 million students enrolled in both public and private schools (U. S. Department of Education, 2001). The investment in the educational needs of at-risk students on the basis of their rapidly growing numbers and the social consequences of improving educational outcomes for these students has become a priority for the distribution of federal money since the passage of ESEA in 1965 (Levin, 1989). Title I and subsequent federal programs that are controlled from outside the school is a new process that school administrators are learning to manage.

With the emergence of federal funds to perform specific functions in schools, school leaders are finding that their roles are changing as they become coordinators of the compliance process. Like other Great Society programs, Title I was funded on a political argument that state and local policies favored the white middle class and excluded the poor and minorities (Hill, 2000). To help these students and their families, the federal government saw the need to override state and local policies and have such created stringent program rules that require federal funds be tied to easily identified objects or services that benefit poverty-stricken students. According to Hill (2000) public school administrators have become government institutions responding to these political forces and are ultimately responsible for ensuring the appropriate allocation of federal Title I funds. Fifty-five years after Brown vs. Board of Education and 45 years after the
enactment of the Elementary and Secondary Education Act, virtually all federal programs still aim to identify inequalities and attempt to remedy them through equity initiatives (Hill, 2000).

The No Child Left Behind Act of 2001 (NCLB, 2002), reauthorizing the Elementary and Secondary Education Act of 1965, placed responsibility on states to ensure that their schools help all children achieve standards, no matter the known deficiencies and current functioning of the student. According to this mandate, adequate yearly progress (AYP) was used to measure the goal of 100% of a school’s students reaching academic standards by the 2013-2014 school year (NCLB, 2002). In order for a school to make AYP in the state of Georgia, it must meet criteria in the areas of academic performance, test participation, and a second indicator not related to academic performance. In the area of academic performance, the school must meet annual measurable objectives (AMO) in the areas of math and language arts on the Criterion Referenced Competency Test (CRCT) for middle schools or the Georgia High School Graduation Test (GHSGT) for high schools. In order to achieve test participation requirements, at least 95% of the school’s enrolled students must take the test. Finally, a school must also make progress on the second, non-academic indicator. The second indicator for grades 3-8 is the percentage of students missing 15 or more days or more. To meet this objective, the school must have less than 15% of its students with more than 15 absences. The second indicator for grades 9-12 is the graduation rate. This percentage must be above the present level of 60% or it must show significant improvement from the previous year (NCLB, 2002).
States are now using high-stakes achievement tests to hold students, schools, and districts accountable for meeting AYP (Goertz & Duffy, 2003). With this mandate, schools are under great pressure to raise student achievement to the levels set in the AMO and ultimately meet AYP as determined by standardized test scores (Warren & Edwards, 2005). The recent increase on the emphasis of standards and accountability have brought a spotlight on the specific students who are not meeting standards and causing schools to not make AYP. Schools and districts that fail to make AYP for two consecutive years are identified as Need of Improvement (NI). In response, districts and schools have intensified their efforts to align standards, instruction, and assessment to target and assist remedial learners. Schools and districts that have documented an effective change toward standards-based reform have found that redesigned curriculum and instruction have brought positive results on low-performing students (Williams et al., 2005).

With current research focusing on risk factors associated in and outside of classroom instruction, NCLB has also now required attention to be focused on at-risk children and their out-of-school activities (Corman, 2003; Hammond et al., 2007; Lubeck, & Garrett, 1990; NCLB, 2002). Children who attend schools that are identified as NI are eligible to receive Supplemental Educational Services (SES), a tutoring initiative funded through Title I of the Elementary and Secondary Education Act. Title I, the largest elementary and secondary education program, supplements state and local funding for low-achieving children, especially in high-poverty schools. SES is one such supplements that finances the additional academic support and learning opportunities that are often required outside of the classroom to help disadvantaged students progress along with their classmates. These tutoring services must be provided by an independent third
party and evidence that the services are effective in raising student achievement must be documented (NCLB, 2002). Families are given the opportunity to employ the vendor of their choice, from an approved vendor list, and students are allotted 25 hours per year of free tutoring for remediation and instruction on standards aligned with the state curriculum that are assessed by the state administered test tied to AYP.

Federal expenditures on education have always been relatively small in comparison to state and local funding (Hill, 2000). Under NCLB (NCLB, 2002), the federal government has mandated the appropriate progress of districts and schools, but state and local governments have assumed most of the financial responsibility for the success or failure of the educational system for which the interventions take place. Of the estimated $1.1 trillion spent nationwide on public education for the 2009-2010 school year, a substantial majority came from state, local, and private sources. This was especially true for the elementary and secondary level, where almost 90% of the funds come from non-federal sources; in 2009 the federal contribution to elementary and secondary education was 10.5% (U. S. Department of Education, 2010). Reform movements sprouted from NCLB, such as merit promotion policies, teacher certification and qualification requirements, and compulsory school attendance laws traditionally originate in state legislation. With the American public consistently supporting retaining low-performing students rather than promoting the students to the next grade level, legislators have increasingly enacted retention polices that garner political support from their constituents (Corman, 2003; Bali et al., 2005).

To enforce stricter academic standards and higher levels of accountability among American public schools, states have adopted merit promotion policies that require
students who perform poorly on standardized tests to be retained in the current grade level. Boosting public confidence in schools, such policies are intended to reassure the public that high school graduates have adequate literacy and skills required for employment and citizenship (Warren & Edwards, 2005). An unintended consequence of retaining students in the traditional classroom setting can create a situation in which children who are progressing normally through the public schools are placed in classrooms with older and possibly delinquent students (Foster, 1993). Advocates of retention policies cite an increase in the likelihood of future successes, thus increasing the expected earnings of the child (Corman, 2003). The end of social promotion has become a central component of the standards-based reform agendas enacted by school districts and state legislators nationwide. NCLB, with its emphasis on standardized testing to measure student achievement and school performance, and to identify and intervene in low-performing schools, is putting additional pressure on states and districts to retain low-performing students (Bali et al., 2005). The low-performing students who are retained in grade-level assume a higher risk of dropping out compared to their age-appropriate peers in the respective grade. When students are retained at any time between kindergarten through the ninth grade, they are less likely to reach graduation. Approximately 61% of ninth grade dropouts have been retained at some point in their school career. Even when achievement is controlled, retained students have a significantly higher chance of dropping out of school than their promoted peers (Anagnostopoulos, 2006; Foster, 1993; Peterson, DeGracie, & Ayabe, 1987; Pierson & Connell, 1992).
While grade retention appears to be pervasive in American schools since the 1990s, with one in every seven students being retained by the end of middle school and one in every two students being retained by the ninth grade, retention disproportionately affects the most disadvantaged students. Males, racial minorities, students living in poverty, students living with one parent, students with documented behavior problems, and students who score low on achievement test constitute the majority of those who are retained (Bali et al., 2005; Corman, 2003; Diplomas Count, 2010). Bali et al (2005) reported that the Texas figures from the 2003 school year illustrate what is happening nationwide. From the 2002-2003 school year, while representing 54.3% of students enrolled in a Texas public school, Hispanics and African Americans accounted for 72.5% of students retained in grade. Nationwide, although the total number dropouts decreased by 2% from 1990 to 2000, the number of dropouts in the Hispanic population increased by 52% (Bali et al., 2005). Although more than three-quarters of white and Asian students in the United States earn a diploma, the numbers are much more troubling for other demographic groups, only about half of whom graduate. Among Hispanics, 56% successfully finish high school, while just 54% of African Americans and 51% of Native Americans graduate (Diplomas Count, 2010).

High school exit exams were first introduced into the student accountability reform movement in the early 1970s and became relatively common in the mid-1980s, after the publication of A Nation at Risk: The Imperative for Educational Reform (National Commission on Excellence in Education, 1983) in which a poor review of the American educational system was reached after a published comparison of mathematics and science achievement between American students and students in other industrialized
nations. Coordinated by federal commissioner Terrel Bell, *A Nation at Risk* (1983) began with the assertions that “the educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a Nation” (p. 9) and that “more and more young people emerge from high school ready neither for college nor for work” (p. 13). The report concluded with a recommendation that standardized tests of achievement should be administered at major transition points from one level of schooling to another (National Commission on Excellence in Education, 1983). Increasing high school graduation requirements was the most widely implemented change in educational policy following this report but other reform measures quickly followed.

A political model of graduation requirements emerged in the early 1990s, when states become key players in setting promotion policies to address the lack of accountability in American schools (Anagnostopoulos, 2006). In 1979, only one state, New York, required an exit exam in order to graduate from high school. This number grew to 14 in 1990 and by 2010, 28 states required students to pass a state-mandated high school exit examination before receiving a diploma (Goertz & Duffy, 2003; Diplomas Count, 2010). Goertz & Duffy also found that while most of the graduation tests of the 1980s and 1990s focused on basic skills, many of the current states are revising their tests to measure the mastery of a more rigorous curriculum. A number of studies have found that high school graduation exams increase dropout rates, decrease high school graduation rates, and increase the rates by which students enroll in GED programs (Amrein & Berliner, 2003; Sipple, Killeen, & Monk, 2004; Warren et al., 2006; Warren & Edwards, 2005). Research has also revealed that graduation tests have no effect on the
probability of dropping out of school for the average student, but that these tests have
been found to increase the probability of dropping out among the lowest ability student
(Jacob, 2001; Sipple et al., 2004). Under NCLB (NCLB, 2002) standardized test scores
aligned to AMO and graduation rates, factors to decide AYP, are now publicized and
consequences for teachers, students, and school leaders are increasing, although students
face the greatest consequence since their scores are now attached to grade level
promotion and graduation.

Even though state legislation sets promotion policies, typically the school districts
are accountable and responsible for regulating and enacting promotion and graduation
policies. In most cases, it comes down to the philosophy and ideology of the individual
principal at the school. In some instances, it is not the academic readiness of the child that
makes the final decision; it can sometimes come down to space, needed resources,
availability of remediation programs, district leadership, political ideology, and financial
capabilities to support the retained student (Bali et al., 2005; Corman, 2003; Foster, 1993;
Levin, 1989). In a quantitative study performed by Bali et al. (2005), they found that
school districts that were large in size and had larger local revenues had higher rates of
retention. In 1993, Foster estimated that the cost of retaining a child for one year
increases the educational cost for that child by 8%. In 1999, the Chicago Public Schools
spent more than $17 million on after-school programs created for retained students
(Jacob, 2001). There is a high cost of retaining students and depending on the individual
child retained and the cost of current educational services, the figure is sure to be higher
today.
Education is currently in an era of standards-based reform where a great deal of attention is focused on meeting high school graduation requirements and achievement on comprehensive standardized tests in order to be promoted to the next grade level and to ultimately receive a high school diploma (Anagnostopoulos, 2006). Advocates of standards-based reform argue that accountability measures are ultimately at the heart of such reform efforts and will improve the educational opportunities of minority and poor students only when accountability takes precedence. Retention is either viewed as a negative sanction that will compel students to increase their work effort in order to be promoted to the next grade level or as a second chance for learning when the first opportunity was not enough. The major concern of this trend is the correlation between the increasing numbers of students dropping out of the educational system and the increasing high standards (Bali et al., 2005; Sipple et al., 2004). Graduating from high school is becoming increasingly contingent upon being able to pass a series of courses and examinations that historically have been reserved for college-bound students. While many states have taken steps to strengthen academic standards, only eight states remain that allow students the option of earning a diploma with less rigorous requirements (Diplomas Count, 2010). In general, these less rigorous options give students who cannot meet the state’s higher graduation standards the opportunity to earn an alternate high school diploma, a career technology diploma, or a certificate of attendance rather than drop out of school. However, a concern that offering multiple diploma options undermines efforts to raise student achievement and limit students’ aspirations later in life, has led most states to only offer a college preparatory diploma. More and more, all students, no matter the social or academic risk factors associated with dropping out of
school, or the intentions of post-high school careers, are being held to the same standards. Although differentiation plays a large part in curriculum and instruction, there is no room for it when it comes to achieving standardized outcomes necessary for high school graduation.

The Southern Regional Education Board (2005) reported that the graduation rate in the United States reached its highest point in 1982 at 75% and then started a slow decline. Between the years of 2002 and 2006, only one in three states was found to have made measurable progress in increasing the graduation rate. Declines in national graduation rate are thought to be attributed to the increase in graduation requirements, state demographic changes, decreased emphasis on technical and career studies, and the state accountability systems that have been implemented (Southern Regional Education Board, 2005). The national trend, to improve education through the establishment of state curriculum and assessment standards, will soon require all students in the United States to earn a college preparatory high school diploma; the only other option will be withdrawing from school to enroll in a General Equivalency Diploma (GED) program or essentially dropping out of school all together. State officials set the target toward which schools and students must strive, though leave unfunded and unspecified the strategies to achieve these results. School administrators are left on their own to decide what measures they will implement to reach the mandated requirements and this often results in financial allocations to programs based on trial and error, not on research. The greatest pressure is selecting the effective interventions that will help at-risk students achieve high standards (Bali et al., 2005; Corman, 2003).
An important accountability measure of new graduation standards is the rate at which school districts graduate students. Sipple et al. (2004) illustrate this concept in their study claiming that national trends of GED participation and completion reflect a steady increase in the number of people participating in GED programs. Furthermore, the proportion of all GED credentials issued to individuals under the age of 19 has risen from 35% in 1974 to 41% in 2001 signaling a greater intensity of GED participation among high school age children. A bulk of research is beginning to identify the disappearance of students from public schools who are not marked as dropping out because they are transferring to another school, i.e. a GED program. Sipple et al. (2004) found evidence of this practice in four out of the five districts researched. This practice resulted in reducing the dropout rate as reported on the school report card and removing these low performing students from the denominator of calculating AYP. Table 3 offers a description of the formulas for calculating graduation rate that were approved as of 2009 by the United States Department of Education (Governor’s Office of Student Achievement, 2008; U. S. Department of Education, 2002).

Table 3

*Federally Approved Methods for Calculating Graduation Rate in the United States*

<table>
<thead>
<tr>
<th>Formula</th>
<th>States using the formula</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaver Rate</td>
<td>32</td>
<td>A proportion of those documented leaving with a diploma or equivalent or as a dropout.</td>
</tr>
<tr>
<td>Cohort Rate</td>
<td>16</td>
<td>Percentage of students from an entering 9th grade cohort who graduate within four years.</td>
</tr>
</tbody>
</table>
Table 3 (continued).

<table>
<thead>
<tr>
<th>Formula</th>
<th>States using the formula</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composite Rate</td>
<td>1</td>
<td>Proportion of students estimated to remain in high school and receive a diploma. The rate is calculated by multiplying the rate of persistence between grades 9 and 12 and the % of completers who graduate.</td>
</tr>
<tr>
<td>Persistence Rate</td>
<td>1</td>
<td>Percentage of students who remain in school from grade 9 through grade 12. Rate is calculated using information on (1) the % of students not dropping out at specific grade levels or (2) the % of students estimated to be promoted to the next grade level. This method does not measure high school completion.</td>
</tr>
<tr>
<td>Completion Rate</td>
<td>1</td>
<td>Number of diploma recipients divided by an approximation of the starting 9th grade class. Method cannot fully account for entering cohort membership, net transfer, and grade retention.</td>
</tr>
</tbody>
</table>

(Governor’s Office of Student Achievement, 2008)

In light of the state and federal demand for both more rigorous graduation and college readiness standards and improved graduation rates, increased interest has emerged among national, state, and local leaders regarding the most effective ways to provide additional support to at-risk students. In Georgia, the graduation rate serves as a key criterion for high schools striving to meet NCLB mandates for AYP, a fact that has only reinforced the desire to explore and implement innovative strategies for assisting at-risk students with the increasing high expectations of graduation (Georgia Department of
Education, 2009; Governor’s Office of Student Achievement, 2008). Schools are becoming creative in their measures to comply with the NCLB goal that all students will meet state-defined proficient levels by the end of the 2014 school year. Schools and school districts are accountable for the performance and progress of their students on an identified standardized test. States have not been consistent in administering sanctions to schools who fail to meet AYP goals, mostly in part to a lack of funds to remediate the failure (Goertz & Duffy, 2003; Jacob, 2001), and thus the stakes end up being the highest for the students who are either retained in grade level or fail to graduate at all. The pressure to meet AYP is felt by all stakeholders and some students who cannot handle the pressure of increased expectations for graduation, or who cannot seem to meet the required standards, are being forced to leave public school education before receiving a diploma because the option for an alternate diploma no longer exists. The challenge for administrators is how to make NCLB work for the entire student body, ensuring the likelihood that all students, no matter their post-high school intentions, or risk factors, have the opportunity to receive a high school diploma.

*Computer-Based Education*

With the advancement of technology, the use of computers in schools has rapidly increased over the past two decades. The value and use of technology related programs in public education continues to be debated even though computer-based technology is being credited as one of the major reasons the United States has experienced an increase in work productivity and economic success in the global market (Valdez, et al., 2000). One reason provided for this continual debate is that the rapid technological changes and advances in software development have made previous findings obsolete. According to
the National Assessment of Educational Progress (NAEP) statistics, in 1996 more than 80% of the public school students in the United States reported using computers for learning purposes although this proportion was only just above 50% in 1984. According to the most recent report from the National Center for Educational Statistics, in the fall of 2000, almost all public schools in the United States had access to the internet. The evolution of internet use in public schools is having a profound impact on the evolution of computer use and the curricular integration of new learning technologies in the classroom (Valdez et al. 2000).

The use of technology to improve student learning has become one of the major emphases in the current education reform expressed in the No Child Left Behind Act of 2001. Technology offers opportunities for learner-control, increased motivation, opportunities for realistic connections to the real-world, and data-driven individualized assessments aligned to specific standards (Valdez et al., 2000). Researchers have argued that Computer-Assisted Instruction (CAI), when implemented systematically, has the potential to increase student achievement as measured by standardized tests, especially for at-risk youth, and to alter the nature of teaching from the traditional, teacher-centered model to a more student-centered instructional approach, especially for at-risk students (Akiba, 2002; Valdez et al., 2000). With the implementation of technology in the digital classroom, teachers can move away from being the sole disseminator of information in a course, and move into the role of a guide, mentor, and facilitator whose role is to motivate the students and engage the student in relative, thought-provoking discussions and reflections about the course content they are progressing through.
Kulik, Bangert, & Williams (1983) cited Hartley (1977) as the first to apply meta-analysis to findings on computer-based instruction. In her dissertation for the University of Colorado, she found that the average effect size raised student achievement by .41 standard deviations, or from the 50th percentile to the 66th. Akiba (2002) conducted a meta-analysis of 17 studies ranging from 1986 to 2002 that employed quantitative methods to examine the effects of CAI. The effect size for 26 independent samples was computed and the average students who received CAI scored 14 percentile points higher than the students who did not receive CAI. It was found that the effect size could vary from .30 to .44. Because the effect size is greater than zero, it is assumed to have a significantly positive effect; these results indicate that CAI is an effective strategy that significantly increases the achievement of at-risk students. Bayraktar (2002) also conducted a meta-analysis to investigate the effectiveness of CAI on science education. An overall effect size of .273 was calculated from 42 studies yielding 108 effect sizes, suggesting that a typical student moved from the 50th percentile to the 62nd percentile in science when CAI was used. Research suggests that there are specific characteristics of CAI that contribute to the learning of at-risk students. Cantrell (1993) outlines five of these characteristics: (1) CAI is non-judgmental and motivational, (2) CAI gives frequent and immediate feedback, (3) CAI can individualize learning to meet student needs, (4) CAI allows for student autonomy and choice, and (5) CAI provides a multi-sensory learning environment conducive to the learner in the 21st century.

Although past research has revealed that Computer-Based Education (CBE) positively affects student achievement when compared to traditional classroom instruction, more recent studies are reporting an even stronger effect of CBE on student
achievement as computers are making learning more interactive and the processes and curriculum are more individualized to the learner (Kulik et al., 1983; Lowe, 2002). As computer technology has become more sophisticated, CBE has changed from an instructional orientation to a more cognitive orientation. The cognitive approach to instructional technology began to emphasize how students know rather than what they know, and analyzing how we plan and strategize our thinking, remembering processes, understanding, and comprehension (Valdez et al., 2000). These findings support the cognitive theory that students need to develop an understanding of the underlying concepts associated with a task before comprehension can take place and that this metacognition is developed by allowing the student to interact actively with the environment (Lowe, 2002). The cognitive approach theory for CBE has led multiple companies to create computer-based courseware that addresses the needs of individual students, creates learner autonomy, engages the learner in an active process that fosters use of prerequisite knowledge, and develops problem-solving skills that can be used in real-world situations.

One research finding that has been supported by multiple reviews of quantitative research indicates that the average student who received computer-based instruction scored at the 66th percentile of the control group distribution (Waxman, Connell, & Gray, 2002). CBE has been found to provide an alternate means of reaching goals by providing flexibility for the learner in controlling the pace of the learning experience and providing for independent and self-directed learning. The benefits expected for learners include better, more comfortable, and faster learning since students learn at their own pace and at their own convenience, opportunities to work with vastly richer materials and
sophisticated problems, personalized tutoring aligned to assessed deficiencies, and automated measurement of progress for immediate feedback (Kulik et al., 1983). When applied systematically, students’ become engaged in the learning process and their attitudes improve toward the subject and their interest in learning (Valdez et al., 2000; Zimmerman, 2002).

Several companies have developed computerized software that is geared toward achieving these instructional goals with the at-risk student population. Among these programs that are being used to increase academic mastery for at-risk youth are Plato Learning, Inc., Scientific Learning, and NovaNET. These programs tutor and drill students, diagnose learning difficulties, prescribe remedies for problems, keep records of student progress, and present material in print and diagram form. The students who usually take courses in these computerized classes are those considered at-risk of dropping out of school because of shortage in required graduation credits. In seeking to find new approaches to reach and teach the at-risk student population, many schools around the country have implemented CBE and have found good results (Bennett, 2002).

*Computer-Based Credit Recovery*

The push to increase graduation rates has districts looking for innovative ways to help at-risk students whose poor academic performance is driving them to drop out of school. Administrators are becoming aware that computerized instruction is a cost-effective way to provide engaging content in a flexible setting. Credit recovery refers to a student passing and receiving credit for a course that he or she previously attempted and was unsuccessful in earning academic credit toward graduation. Academic failure is directly linked to the probability of dropping out of high school before receiving a
diploma. Over 60% of students who eventually dropped out of school failed at least 25% of their credits in ninth grade, while only 8% of their peers who graduated had similar difficulty (Balfanz & Legters, 2004).

In recent years, an increasing number of computer-based programs have begun offering credit recovery to serve the at-risk population who before could not find success in the traditional classroom setting. CBE is one of the fastest-growing areas in K-12 education. In its 2005 report, the National Center for Education Statistics found that 36% of the school districts in the United States had students participating in virtual courses, accounting for over 3,000,000 students nationwide. Students venture down the path of an online learning program to better negotiate the increasingly complex and demanding real-world terrain of contemporary life which AYP does not take into account. Advocates of computer-based credit recovery argue that these programs meet the complex needs of students at-risk of not finishing high school by helping students meet graduation deadlines in a self-paced format, prepare students for standardized competency tests, meet budgetary concerns of remediation and retention efforts, address transiency issues of students who move regularly from one school to another, and retrieve students from the community who have dropped out and can now return to school and receive a diploma in a flexible environment (Roblyer, 2006).

There are numerous programs available and vast approaches for implementing computer-based credit recovery into the high school setting, and information about them is readily available online, but research is lacking in their impact, and/or characteristics that make them effective. The most common data found for computer-based credit recovery is from computer learning system companies, who market their credit recovery
programs to school districts seeking alternative approaches for credit recovery. Such data focuses on number of credits recovered, and to a much lesser extent on other variables that might be informative to credit recovery programs and policies, such as age, attendance rates, socio-economic status, dropout rates, and graduation rates.

NovaNET

One computer-based credit recovery program is leading the field. Serving more than three million students nationwide over the past 10 years, NovaNET provides comprehensive personalized online curriculum for middle school through adult learners to help meet the need for credit recovery, drop-out prevention and response to intervention needs (Pearson, 2011). NovaNET courseware is individualized for a specific student based on his or her individual progress toward standard mastery within an identified curriculum. This program offers online access to state-aligned curriculum for students who have failed a course resulting in the loss of required credits, grade-level retention, and not graduating on time. NovaNET is an alternative route sought to reach graduation requirements when students have not found success in the traditional classroom setting and are lacking required credits. NovaNET arose from the Computer-based Education Research Laboratory (CERL) at the University of Illinois at Urbana-Champaign. CERL was awarded a National Science Foundation Grant in the late 1960s to develop a computer-based learning system and thus NovaNET was born to Pearson Digital Learning (Pearson, 2011). NovaNET allows students to retake courses they have previously failed while at the same time staying active in their current classes, helping them stay on track toward graduation.
Although research findings strongly support the importance of self-regulatory processes, few classrooms give students the opportunity to learn on their own and master self-regulation learning strategies (Zimmerman, 2002). Students are seldom given choice in academic assignments, methods for completing these tasks, or the output for which to show standard mastery. Students are rarely given the chance to self-evaluate their work and make judgments on future endeavors. In light of new legislation requiring specific classes for promotion and the demand for research-based solutions, NovaNET is a viable option that fulfills these requirements and empowers the students to become self-regulated learners at the same time.

NovaNET is a self-paced model that promotes Zimmerman’s theory and includes a multitude of the characteristics of his social cognitive theory on academic self-motivation. When participating in NovaNET, students are accountable only to themselves for progress within the designed curriculum. Students work independently on self-chosen subject matter for which they need to recover a credit for. Students are advised by a school counselor about the characteristics of the NovaNET program before the class begins, and students are then scheduled for the class if they exhibit self-efficacy for learning in this environment. Zimmerman et al. (1992) conducted a study indicating that student self-beliefs of efficacy to regulate their own learning played an important role in academic self-motivation. In this study, students who perceived themselves as capable of regulating their own activities were more confident about mastering academic subjects and attaining higher academic performance. There was no correlation between past academic grades and academic achievement after using the self-regulated strategies proposed by Zimmerman et al. (1992). Students who are scheduled for NovaNET have
previously failed the class in a traditional classroom setting and are now receiving a second chance of learning the content on their own, via a computer-based program. Diagnostic testing for each standard allows students to demonstrate mastery of elements previously learned in the traditional classroom and are allowed to move along to parts of the course they have not mastered, keeping students engaged and involved in the learning process.

Students will likely perceive the investment into NovaNET as an intrinsically motivated force for which they need little encouragement to proceed through the curriculum. Merrill (2002) states that the primary reward for the student in computer-based education is education itself; when the student is able to see evidence that learning has taken place, the student becomes motivated to continue learning and perform at a higher rate. Intrinsic motivation is marked by positive feelings associated with experiences of mastery, autonomy, and self-determination. Students who attribute their involvement in an academic task to choice and enjoyment are described as intrinsically motivated, another characteristic of Zimmerman’s social cognitive theory of academic self-motivation (Stevens et al., 2004). Students feel a sense of control over their learning while taking classes in NovaNET because the opportunity to recover lost credit(s) and graduate on time is now in no one else’s hands but their own. Research has shown that student potential for perseverance to graduation from high school increases in environments similar to the self-regulated NovaNET system; where expectations are high and are both clearly and frequently expressed, students are regularly offered opportunities for academic, social, and personal support, student performance is frequently monitored
and shared with students, and learning is perceived as important and related to a desired outcomes (Black, 2002; Bridgeland et al., 2006; Williams et al., 2005).

Another key feature of the NovaNET program and why it is monumental for at-risk youth is the fact that students are not affected by attendance in these classes; the instruction always begins where the student left off in the curriculum. Students work at their own pace and control the length of the class in which they participate. NovaNET is based on mastery learning and research has shown that mastery experiences lead to increased self-efficacy (Bandura, 1993; Zimmerman & Martinez-Ponz, 1990). Each course in the curriculum consists of modules that include a pre-test, lessons geared to addressing deficiencies found in the pre-test, and a post-test assessing standard mastery. Students receive immediate feedback in all lessons and opportunities to practice on deficiencies until their post-test score improves by retaking lessons designed to remediate their individual weaknesses. Once mastery is reached on the post-test the student moves on to the next module. Once all the modules for the class have been completed, the student receives credit for the course, and a grade is assigned based on the average of post-test scores. Resulting from these characteristics, that are included in Zimmerman’s social cognitive theory, students should have higher achievement regardless of their past academic history due to the self-regulated nature of the program (Zimmerman, 2002).

One study on the effectiveness of NovaNET as a tool for credit recovery and drop-out prevention was conducted in the Wake County Public School System in North Carolina. Faircloth & O’Sullivan (2001) reported that 73.8% of attempted course credits were completed successfully and 843 students recovered needed credits to graduate over the three year grant. Another study was completed that found the percent of NovaNET
courses completed varied from 49% in one school to 94% in another (Harlow & Baenen, 2003). Most studies that found great success with NovaNET found these results to be school specific. Although research has been conducted on the effectiveness of this program in terms of credit recovery, the contrasting findings provide evidence that there is a specific need for research that correlates the success of course completion to program implementation. Identifying what factors lead to successful completion of a NovaNET course needs to be discovered to increase the overall impact of the program and help administrators and district level policy makers make data-driven decisions on how best to implement the program consistently across a school district to ensure student success.

Summary

We know that annual progress toward graduation through required course completion and acceptable scores on standardized tests are essential for students to graduate high school with a diploma in the era of accountability. NCLB, reauthorizing the Elementary and Secondary Education Act of 1965, places responsibility on states to ensure that schools help all children achieve high standards. We know that leaving school before graduating is a major detriment to achieving high status in American society and that the dropout rate disproportionally affects those students who come from low socio-economic levels, single parents, inner cities, and/or minorities (Bridgeland et al., 2006; Lee & Burkam, 2003; Levin, 1989). School districts around the nation have turned to computer-based instruction for credit recovery to address the concerns of students who are not meeting the achievement requirements set forth by the state and federal government. One such program, NovaNET, was developed to meet the needs of these students in a nontraditional setting, applying nontraditional methods. The justification for
the increase of self-paced credit recovery programs like NovaNET is found in
Zimmerman’s social cognitive theory, stating that students who believe they can
accomplish a task will continue to work through difficulties and challenges because
perceived self-efficacy can influence human behavior through cognitive and motivational
processes (Bandura, 1993).
CHAPTER III

METHODOLOGY

This chapter describes the methodology that was used to conduct this study on the predictors for success with computer-based credit recovery for at-risk youth. An overview of the design is followed by a description of the population, sample, and site used for the study. The chapter concludes with a detailed description of the procedures that were followed in this study and the techniques that were used for data analysis. A non-experimental descriptive design was used to analyze the research questions that guided the study.

Introduction

The dual charge by No Child Left Behind, of implementing more rigorous graduation and college readiness standards while at the same time increasing state and local graduation rates, has left many educational practitioners and policymakers searching for innovative programs to meet the needs of at-risk students. Researchers have suggested that the success of dropout prevention efforts depends greatly upon the types of strategies implemented, making it essential that selected approaches have been proven effective for the identified risk factors of those being targeted (Black, 2002; Diplomas Count, 2010; Fitzpatrick & Yoels, 1992). This study explored one such academic intervention, NovaNET, a computer-based credit recovery system, and the effectiveness of this intervention for at-risk high school students. The study explored whether a final course grade in NovaNET was in any way related to the Georgia Department of Education’s calculated risk ratio, the age of the student, and/or the previous failing grade from the traditional classroom. From the results of this study, district administrators will
be able to create an effective policy, in terms of cost and student success, supported by research, surrounding the implementation of NovaNET as a credit recovery tool in the high school setting. School administrators may begin to make data-driven decisions regarding the number of classes scheduled into the academic day for computer-based credit recovery, how many NovaNET portals to purchase, and what teacher allotments are needed to schedule for student success. This research could lead traditional classes to become smaller and more homogeneous with respect to age and prior knowledge. Graduation rates could increase and dropout rates could decrease as students recover lost credits faster and remain on track to graduate by attempting to recover lost credits in a flexible environment.

**Design**

This study explored the effectiveness of computer-based credit recovery for at-risk youth by exploring the relationship between the predictors of risk ratio, age, and the previous failing grade in the traditional classroom setting to the final course grade in NovaNET, the chosen computer-based credit recovery program in the school district of study. Permission from the Internal Review Board at the University of Southern Mississippi was also obtained before any research was conducted (Appendix A). The Pearson Correlation Coefficient was run using SPSS to find if a relationship exists between the predictors and the criteria in isolation. A multiple regression was also run to see if a relationship exists simultaneously with the predictors in combination. The research questions that guided this study are as follows:

1. Is there a relationship between risk ratio and a final grade in NovaNET?
a. Null hypothesis: There is no relationship between risk ratio and the final course grade in NovaNET.

2. Is there a relationship between a previous failing grade in the traditional classroom and the final grade in NovaNET credit recovery?
   a. Null hypothesis: There is no relationship between the prior failing grade in the traditional classroom setting and the final grade in the computer-based credit recovery class.

3. Is age correlated with final NovaNET grade?
   a. Null hypothesis: There is no relationship between age and final course grade in NovaNET.

4. Are the predictors of risk ratio, previous failing grade, and age correlated with final NovaNET grade?
   a. Null hypothesis: There is no relationship between risk ratio, free-and-reduced lunch status, previous failing grade, and age on the final grade in NovaNET credit recovery.

Participants
To explore whether or not the final score of courses taken through the NovaNET curriculum are related to the independent variables, scores were collected from the NovaNET database for every student scheduled in NovaNET during the 2009-2010 school year from a large suburban school district in the Southeastern United States. District approval was granted and access to the school district student database, OnTrack, was granted to collect and analyze the scores. Student confidentiality was maintained as the NovaNET scores and the predictor variables were associated with a
district identification number, not a student name. A data sharing agreement was created and signed by the Georgia Department of Education to collect the risk ratio variable (Appendix B). The Department of Education created a secure portal whereby the researcher shared Georgia Test Identification numbers and the Department of Education then released the corresponding risk ratio for each student.

As the second largest school district in the respective state, this district was chosen as an appropriate sample for the purpose of this study. There are a total of 599 students who took NovaNET as a course during the identified school year, and thus formed the population for this study. The participants came from all high school grade levels, 9th through 12th, and from both traditional high schools and alternative settings.

Procedures

Archival data of all predictors were obtained from the district academic portal, OnTrack. The risk ratio aligned with each student identification number was obtained from the Georgia Department of Education. Developed by researchers at the Georgia Department of Education using the National Dropout Prevention Center’s profile of significant academic risk factors for school dropout (Hammond et. al, 2007), the student risk ratio is a metric number ranging from zero to one, with zero indicating a student who exhibits no academic risk for high school non-completion and one indicating the highest risk possible; a student who presents risk on all factors considered. All Georgia students with a risk ratio value greater than zero are classified as at-risk. The student risk ratio represents a consolidated measure of the degree to which a student may be academically at risk for high school non-completion by considering the total number of factors for which a student has been identified as at risk in light of the total number of factors for
which he was evaluated. The components of the risk ratio profile of potential dropouts was developed by the National Dropout Prevention Network (NDPN) to identify middle and high school students who are at risk of dropping out of high school (Georgia Department of Education, 2009). A student’s risk ratio at the high school level is comprised of a student’s rate of attendance for the previous school year, credit deficiency status, retention status, and performance on each GHSGT and End Of Course Test (EOCT) assessment respectively (Diplomas Count, 2010; Georgia Department of Education, 2009).

Data for the criterion was obtained from the NovaNET system, as each student enrolled has a profile within the program. This portal-based program has been purchased by the school district for use of credit recovery and subject remediation. Each student’s profile keeps track of the progress toward credit completion through modules and once the semester is concluded or all modules are finished, the final score awarded for the class is entered into the school database. All data collected was entered in SPSS. The quantitative variables of age, risk ratio, and previous failing grade were entered respectively.

Data Analysis

In order to investigate the relationship between risk ratio and final course grade, a simple correlation was used. If the research shows that a certain risk ratio is highly correlated with failing scores in NovaNET, another credit recovery alternative needs to be found for at-risk students. Depending on the results, school administrators can begin making data driven decisions regarding the master schedule and necessary teacher allotments needed for credit recovery purposes.
In order to investigate the relationship between age and final NovaNET grade, a simple correlation was used. If the research shows that younger students are not successful in NovaNET, another means of credit recovery needs to be made available for these students. School districts can begin creating a NovaNET policy by implementing a minimum age requirement.

To determine whether a relationship exists between final course grade in NovaNET and the previous failing grade, a simple correlation was run. If research shows that only those students whose previous failing grade was higher than a specific score were successful in the program, an alternate means of credit recovery needs to be made available for these students. District administrators can include on their NovaNET policy a previous grade requirement before admitting a student into NovaNET.

Since it is assumed that the predictor variables may not exist in isolation, a multiple regression was conducted with a combination of all predictors simultaneously regressed upon the criterion. This analysis will allow the researcher to explore if a relationship exists between all predictors considered. If the research shows that a combination of predictors have a significant relationship to the criterion, school leaders can better schedule students for credit recovery and school districts can create and inclusive policy for computer-based credit recovery programs.

Summary

The methods that were employed in this study were chosen with the hopes that predictors can be made regarding student achievement in the NovaNET computer-based credit recovery program in order to better manage resources at the high school level. If school administrators are aware that certain students benefit and find success with the
online curriculum compared to other students, adjustments can be made to student
schedules and teacher allotments to ensure student success. If data were to find that
students with a low failing grade in the traditional classroom were not successful with the
online credit recovery program, a more tradition credit recovery program could be
warranted. Analyzing the results of a multiple regression with all variables considered
will allow school leaders to gain a profile of the student who is most likely to be
successful in computer-based credit recovery using NovaNET.
CHAPTER IV
ANALYSIS OF DATA

Introduction

It was the purpose of this study to find the most equitable, cost-effective and beneficial way to incorporate computer-based credit recovery program in grades 9-12. Included in this purpose was an investigation into what enrollment criteria can help predict successful credit recovery in NovaNET by determining if it is effective to place all students needing credit recovery in NovaNET regardless of age, risk ratio, and what their previous failing grade was in the traditional classroom setting. No formal research has been identified that specifically addresses credit recovery through NovaNET and the variables that relate to final NovaNET grade.

The study presented here was designed to examine a random selection of high school students regardless of social, economic, and ethnic backgrounds. Ultimately, the study involved all students taking NovaNET as a scheduled class in a diverse school district serving over 100,000 students. The study examined a student’s age when enrolled in NovaNET, their risk ratio as determined by the state of Georgia, and their previous failing grade in the traditional classroom setting. The goal of the study was to determine if these factors related to the success, or otherwise failure, of credit recovery in this computer-based program.

Descriptive Statistics

Participants in this study were students who were enrolled in a NovaNET computer-based credit recovery classes in a large suburban school district during the 2009-2010 school year (N=599). The participants comprised of students from 15
traditional high schools and one alternative school. Four data points were collected on each student: age, risk ratio, previous failing grade, and final NovaNET grade.

Students in this study ranged from 14 years of age to 21 years of age. Representative of the mean (16.99), median (17), and mode (17) being almost identical, the standard deviation was 1.062 with a normal distribution. Seventeen-year-old students represented the largest proportion of the sample (n=233; 38.9%).

![Age Frequency of Population](image)

*Figure 1. Age frequency of population.*

At-risk students also comprised the largest proportion of the sample (n= 549). A student’s risk ratio is a metric number ranging from zero to one, with zero indicating a student who exhibits no academic risk for high school non-completion and one indicating a student who presents risk on all factors considered. Table 4 contains the results of the descriptive analysis for the calculated risk ratio from the population. The mean risk ratio
was .4045 with a standard deviation of .27. The median risk ratio of .36 was higher than the mean, indicating a positive skew (sk = .45) and extreme scores located in the high end of the distribution. The results also show that only 25% of the population had a risk ratio of below .20 and 75% of the population had a risk ratio over .60. It is important to note that all Georgia students with a risk ratio greater than zero are classified as at-risk. From the population, only 50 students were associated with a risk ratio of zero, indicating that 91.7% of the population was at-risk.

Table 4

*Descriptive Statistics for Risk Ratio*

<table>
<thead>
<tr>
<th>Statistic</th>
<th>(N = 599)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.40</td>
</tr>
<tr>
<td>SD</td>
<td>0.27</td>
</tr>
<tr>
<td>Median</td>
<td>0.36</td>
</tr>
<tr>
<td>Minimum</td>
<td>0</td>
</tr>
<tr>
<td>Maximum</td>
<td>1</td>
</tr>
<tr>
<td>Skewness</td>
<td>.450</td>
</tr>
<tr>
<td>Percentiles</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>.2000</td>
</tr>
<tr>
<td>50</td>
<td>.3600</td>
</tr>
<tr>
<td>75</td>
<td>.6000</td>
</tr>
</tbody>
</table>

According to the school district policy, all students taking NovaNET must have failed the course in the traditional classroom setting before attempting NovaNET. Table 5 contains the results of the descriptive analysis for the previous failing grades of the
population. For the 599 students who took NovaNET as a means of credit recovery, the lowest previous failing grade in the traditional classroom setting was 0 and the highest previous failing grade was 69. The mean previous failing grade was 53.82 with a standard deviation of 13.44. The median grade was 58. A comparison of the mean and median suggests a negative distribution with extreme cores in the low end. This is supported by a negative skewness value (sk = -1.30). The results also show that 25% of the students failed the traditional class with a grade lower than a 48 while 75% of the students received a grade between 64-69. Representative of a high mean, the majority of the scores fell at the high end of the distribution.

Table 5

*Descriptive Statistics for Previous Failing Grades*

<table>
<thead>
<tr>
<th>Statistic</th>
<th>(N = 599)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>53.82</td>
</tr>
<tr>
<td>SD</td>
<td>13.44</td>
</tr>
<tr>
<td>Median</td>
<td>58</td>
</tr>
<tr>
<td>Minimum</td>
<td>0</td>
</tr>
<tr>
<td>Maximum</td>
<td>69</td>
</tr>
<tr>
<td>Skewness</td>
<td>-1.30</td>
</tr>
<tr>
<td>Percentiles</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>48</td>
</tr>
<tr>
<td>50</td>
<td>58</td>
</tr>
<tr>
<td>75</td>
<td>64</td>
</tr>
</tbody>
</table>
Table 6 contains the results of the descriptive analysis of the final grades scored in NovaNET. For the 599 students who took NovaNET as a means of credit recovery, the mean score was 68.28 with a standard deviation of 24.24. The median NovaNET grade was 80. A comparison of the mean and median suggests a negative distribution with extreme scores in the low end, thus bringing the mean grade much lower than the median grade. This is supported by a negative skewness value ($sk = -1.24$) and a large standard deviation ($SD = 24.24$) representing a wide spread of grades. The results also show that 75% of the students scored over an 85 in the NovaNET credit recovery class while 25% of the population scored below 54. While final NovaNET grades had the largest range of all four variables, from the lowest grade of 10 to the highest grade of 98, Figure 4 shows the left skew, as the majority of the grades were in the right side of the distribution.

Table 6

*Descriptive Statistics for Final NovaNET Grade*

<table>
<thead>
<tr>
<th>Statistic</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(N = 599)</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>68.28</td>
</tr>
<tr>
<td>SD</td>
<td>24.24</td>
</tr>
<tr>
<td>Median</td>
<td>80</td>
</tr>
<tr>
<td>Minimum</td>
<td>10</td>
</tr>
<tr>
<td>Maximum</td>
<td>98</td>
</tr>
<tr>
<td>Skewness</td>
<td>-1.240</td>
</tr>
<tr>
<td>Percentiles</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>54</td>
</tr>
<tr>
<td>50</td>
<td>80</td>
</tr>
<tr>
<td>75</td>
<td>85</td>
</tr>
</tbody>
</table>
Figure 2. NovaNET grade frequency of population.

Statistical

Each of the research questions were analyzed using SPSS 20.0 statistical software. All variables were quantitative data, entered respectively. With appropriate consent and data sharing agreements obtained, the data was collected from both the Georgia Department of Education and the unidentified school district in which the study took place. The researcher was able to gather all data points for the 599 participants with no missing data or problems arising during data collection. To answer the first three research questions, a bivariate correlational analysis was run independent of the other variables to see if an autonomous relationship existed with the dependent variable. To explore the fourth research question, a linear multiple regression was performed to see if each variables influence on the other affected the resulting relationships. This process
allowed the researcher to determine specific relationships between the variables. The specific research questions and null hypotheses that guided the study were as follows:

1. Is there a relationship between risk ratio and a final grade in NovaNET?
   a. Null hypothesis: There is no relationship between risk ratio and the final course grade in NovaNET.

2. Is there a relationship between a previous failing grade in the traditional classroom and the final grade in NovaNET credit recovery?
   a. Null hypothesis: There is no relationship between the prior failing grade in the traditional classroom setting and the final grade in the computer-based credit recovery class.

3. Is age correlated with final NovaNET grade?
   a. Null hypothesis: There is no relationship between age and final course grade in NovaNET.

4. Are the predictors of risk ratio, previous failing grade, and age correlated with final NovaNET grade?
   a. Null hypothesis: There is no relationship between risk ratio, free-and-reduced lunch status, previous failing grade, and age on the final grade in NovaNET credit recovery.

Findings

Table 7 contains the results of the bivariate correlational analysis respective to all variables considered in the study. The results of the analysis indicate that all independent variables were significantly correlated at the .01 level to the dependent variable, final NovaNET grade. According to the results, the strongest predictor of final grade in
NovaNET was risk ratio \( (r = -0.52) \), followed by previous failing grade \( (r = 0.32) \), and age \( (r = 0.15) \). These results suggest that a student’s final NovaNET grade is significantly related to these identified variables. Independent of the study focus, the results also showed a statistically significant relationship between the two independent variables of risk ratio and previous failing grade. Since risk ratio was also negatively correlated with final NovaNET grade, this finding indicates a significant relationship between risk ratio and academic achievement, regardless of the method of instruction (computer-based versus traditional classroom).

Table 7

*Pearson Correlations \((N=599)\)*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Final NovaNET Grade</th>
<th>Previous Failing Grade</th>
<th>Risk Ratio</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final NovaNET Grade</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous Failing Grade</td>
<td>0.32*</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk Ratio</td>
<td>-0.52*</td>
<td>-0.33*</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.15*</td>
<td>-0.08</td>
<td>-0.08</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*Note. Correlation is significant at the 0.01 level.*

Hypothesis 1 predicted that there would be no relationship between risk ratio and the final course grade in NovaNET. To test this hypothesis, a Pearson Correlation was run using SPSS. The results indicated a statistically significant relationship \( r (597) = -0.520, p<.001 \) between the risk ratio of each student and the final NovaNET grade. This test found that risk ratio is strongly correlated in a negative direction with final NovaNET
grade and thus the null hypothesis was rejected. With a correlation of -.520, they share 27% of the variance between themselves. The negative value of the correlation suggests that the higher the risk ratio, the lower the final NovaNET grade (Figure 3).

Figure 3. Pearson correlation of final NovaNET grade and risk ratio.

Hypothesis 2 predicted that there would be no relationship between the previous failing grade in the traditional classroom setting and the final grade in the computer-based credit recovery class. To test this hypothesis, a Pearson Correlation was run using SPSS. The results indicated a statistically significant relationship $r (597) = .315, p<.001$ between the previous failing grade and the final NovaNET grade, thereby requiring a rejection of the null hypothesis. The positive value of the correlation suggests that higher NovaNET final grades tend to be related to higher previous failing grades. Although
statistically significant, the relationship between previous failing grade and NovaNET final grade is weak. With a correlation of .315, they share only 9.9% of the variance between themselves (Figure 4).

Figure 4. Pearson correlation of final NovaNET grade and previous failing grade.

Hypothesis 3 predicted that there would be no relationship between the age of a student and their final grade in NovaNET computer-based credit recovery. To test this hypothesis, a Pearson Correlation was run using SPSS. The results indicate a statistically significant relationship \( r(597) = .152, p<.001 \) between the age of the students and the final NovaNET grade and thus the null hypothesis was rejected. The positive value of the correlation suggests that older students tend to get higher grades in NovaNET. Although the study found that age is related with final NovaNET grade, with a correlation of .152, the variables only share 2.3% of the variance and this proves to be a very weak relationship (Figure 5).
Hypothesis 4 stated that there would be no relationship between a student’s risk ratio, their previous failing grade in the traditional classroom setting, and his or her age on the grade he or she received in NovaNET computer-based credit recovery. To determine the degree to which these predictor variables (age, previous failing grade, and risk ratio) influenced the criterion (final NovaNET grade), a linear multiple regression was calculated. Results for the regression analysis are found in Table 8. According to the $\beta$ determination, the standardized prediction equation was calculated as follows:

$$Z (\text{Predicted NN grade}) = .17 Z (\text{Previous F Grade}) - .45 Z (\text{Risk Ratio}) + .13 Z (\text{Age}).$$

The analysis revealed that the regression equation was found to be significant in predicting NovaNET grade, $R^2 = .31$, adjusted $R^2 = .31$, $F (3,598) = 89.021, p<.001$. In terms of individual relationships between the independent variables and final NovaNET score, age ($t = 3.775, p<.001$), risk ratio ($t = -12.438, p<.001$), and previous failing grade
(t = 4.777, p<.001) each significantly combined to predict the final NovaNET grade. The regression results indicate that 31% of variability in final NovaNET grade is accounted for by the predictors with risk ratio accounting for the most variability.

Table 8

*Coefficients*

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
</tr>
<tr>
<td>(Constant)</td>
<td>17.25</td>
<td>14.49</td>
<td></td>
</tr>
<tr>
<td>Previous F</td>
<td>0.31</td>
<td>0.07</td>
<td>0.17</td>
</tr>
<tr>
<td>Grade</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk Ratio</td>
<td>-40.00</td>
<td>3.22</td>
<td>-0.45</td>
</tr>
<tr>
<td>Age</td>
<td>2.96</td>
<td>0.78</td>
<td>0.13</td>
</tr>
</tbody>
</table>

Note. Dependent Variable: Final NN Grade

Conclusion

With the completion of all statistical analyses, all research questions can be answered with a yes; there is a statistically significant relationship between age, risk ratio, and previous failing grade on final NovaNET score. The impact of these relationships on the dependent variable and what they mean for educational policymakers will be included in the next chapter.
CHAPTER V
SUMMARY

Introduction

Credit recovery refers to a student passing, and receiving credit for, a course that the student previously attempted but was unsuccessful in earning academic credit toward graduation. Credit recovery programs, in general, have a primary focus of helping students stay in school and graduate on time. Students that have failed a class required for graduation are at-risk of not graduating on time and are thus referred to as “at-risk”.

Programs providing credit recovery to address the needs of these identified at-risk students have been provided in almost every variation of time, location and instructional method imaginable. Schools develop credit recovery options before school, during the day, after school, and even on weekends. These programs may sometimes function in isolation, or are embedded in the student’s current academic day. The variety of options illustrates the challenging nature of the problem. It also suggests that educators have not yet found a single approach that comprehensively addresses the needs of all at-risk students.

In recent years, an increasing number of online programs have begun focusing on offering credit recovery to at-risk students. Advocates of computer-based credit recovery argue that these programs meet the complex needs of students at-risk of not finishing high school by helping students meet graduation deadlines in a self-paced format while at the same time preparing these students for standardized competency tests. They also argue that these programs mitigate budgetary concerns of remediation and retention efforts, address transiency issues of students who move regularly from one school to
another, and have the potential to help schools retrieve students from the community who have dropped out and can now return to school to receive a diploma in a flexible environment (Roblyer, 2006).

Motivating students who have experienced failure in the traditional classroom setting is a key ingredient to any successful credit recovery program. At-risk students are typically a group of students who need to feel empowered and believe that they have a sense of control over their actions (McMillan & Reed, 1994). When choosing to participate in computer-based credit recovery, the student exercises control over their capabilities and increases their self-efficacy from the beginning. These students have already failed the class once and now have an option; the power to decide if they want to take the class online to recover the credit. The online component associated with computer-based credit recovery also provides needed 21st-century skills to a group of students who often have less than average exposure to computers and technology. The nature of computer-based credit recovery places the student in control of their learning, which in turn has the ability to motivate students by increasing their self-efficacy.

Research has proven that students who believe they can accomplish a task will continue to work through difficulties and challenges because perceived self-efficacy influences human behavior through cognitive and motivational processes (Bandura, 1993). The attributes of computer-based credit recovery can also remove the social stigma associated with credit recovery by removing these students from repeating a class, now filled with younger students, and placing these students in a more comfortable setting to remediate their deficiencies. Online learning is particularly well suited for students recovering credit because it allows for differentiation through the use of course management technology.
Unlike in the traditional classroom, diagnostic testing is used at the beginning of each unit to assess student knowledge and provides the student with only the instruction that is needed for standard mastery, keeping students engaged in their education and less likely to become disruptive. Every student’s path toward credit recovery is individualized for their specific needs.

This study explored the effectiveness of computer-based credit recovery for at-risk high school students. Specifically, the study investigated the effectiveness of one particular computer-based credit recovery program, NovaNET, by determining if it is effective to place all students needing credit recovery in this computer-based class regardless of age, risk ratio, and what their previous failing grade was in the traditional classroom setting. When taking NovaNET, students are not placed in a traditional classroom setting to recover a credit but are instead placed in an alternative location to recover the credit by assessing online curriculum. As individual schools within the district set their own criteria for enrollment in NovaNET, the researcher sought to find if these variables are indeed an indication of success in NovaNET and if this criteria is justified.

This chapter will summarize the purpose, results and findings of the study. In addition, Chapter V will draw conclusions and form justifications based upon the data and address the researcher’s recommendations for educational practitioners. Chapter V will also address the limitations found in this study and will discuss the researcher’s recommendations to expand upon this research for future studies.
The Problem

As of the 1990s, the mean individual rate of return per year of schooling was greater than 10% and now may be as high as 17 to 20%, regardless of one’s race, gender, or ability level. This disparity equates to an estimated earnings difference between a dropout and a high school graduate of approximately $9,000 per year and more than $300,000 over the course of a lifetime (Belfield & Levin, 2007; Bridgeland et al., 2006; Levin, 1989). In 2004, approximately 3.8 million 16-24 year olds were not enrolled in high school and had not earned a high school diploma or alternative credential, such as the General Equivalency Diploma (GED) (Laird, DeBell, & Chapman, 2006). The high school dropout problem is a crisis for the United States, not only because of the impact on individuals and their future, but also because of the economic and social costs to the country. Dropouts drain the economy of much needed revenue. In fact, each year’s class of dropouts will cost the country over $200 billion dollars during their lifetimes in lost earnings and unrealized tax revenue. It is estimated that the government would gain $45 billion in extra tax revenues and reduced costs in public health, crime, and welfare payments if the number of high school dropouts were just cut in half (Belfield & Levin, 2007; Bridgeland et al., 2006). Income and taxable gains, however, represent only a subsection of the private and communal advantage that can be gleaned from education. Communities composed of individuals with high educational attainment levels are more apt to benefit from lower crime figures, better health, and enhanced rates of economic growth, employment, and civic engagement (Befield & Levin, 2007; Diplomas Count, 2010). There is widespread agreement that leaving school before graduating is a major detriment to achieving high status in American society and the dropout rate.
disproportionally affects those students who come from low socio-economic levels, single parent families, inner cities, and/or minorities (Bridgeland et al., 2006; Diplomas Count, 2010; Lee & Burkam, 2003; Levin, 1989). Researchers have suggested that the success of dropout prevention efforts depends greatly upon the types of strategies implemented, making it essential that selected approaches have been proven effective (Black, 2002; Diplomas Count, 2010; Fitzpatrick & Yoels, 1992).

The dual charge by No Child Left Behind of implementing more rigorous graduation and college readiness standards, while at the same time improving state and local graduation rates, has left many educational practitioners and policymakers searching for programs that effectively engage students in school and learning while at the same time acquiring academic skills essential for life and work. Technology offers opportunities for learner-control, increased motivation, opportunities for realistic connections to the real-world, and data-driven individualized assessments aligned to specific standards (Valdez et al., 2000). Researchers have argued that computer-based instruction has the potential to increase student achievement, especially for at-risk youth (Akiba, 2002; Valdez, 2000). Online programs are increasingly being offered to schools as a cost-effective intervention and are increasingly focusing on at-risk students and credit recovery. While the two groups are not always entirely the same, this study found that the population of students needing credit recovery overlaps with the population of at-risk students; Out of the 599 students in the study, over 90% were considered at-risk by the Georgia Department of Education.
The Study

The educational intervention of NovaNET, a tool used by school districts to assist students in credit recovery, is being implemented not only in Georgia schools, but across the United States to help schools meet accountability demands and to help students get back on track and to graduate on time after failing a required course for graduation. Nationwide, NovaNET has served over three million students over the past 10 years (Pearson, 2011). The participants in this study were Georgia high school students who were scheduled NovaNET credit recovery as an academic class during the 2009-2010 school year in a large suburban school district. Taken from 15 traditional high schools and one alternative school, the study consisted of 599 participants ranging from the age of 14 to 21. The intent of this research was to present data on factors that influence student success in NovaNET so school districts would be able to create a data-driven, comprehensive policy surrounding the implementation of NovaNET. A district-wide policy for NovaNET enrollment, backed by research, would ensure that schools are equitably providing successful credit recovery interventions for at-risk students, regardless of where the student lives in the district.

Currently, most schools are working on a trial and error basis surrounding the implementation of NovaNET. The criteria used when placing a student in this setting varies from school to school, with the decisions not backed by research but instead with the best intentions. This study sought to answer the following questions regarding computer-based credit recovery:

1. *Is there a relationship between risk ratio and a final grade in NovaNET?*
2. *Is there a relationship between a previous failing grade in the traditional classroom and the final grade in NovaNET credit recovery?*

3. *Is age correlated with final NovaNET grade?*

4. *Are the predictors of risk ratio, previous failing grade, and age correlated with final NovaNET grade?*

To explore whether or not the final grade of courses taken through the NovaNET curriculum were related to the above-mentioned independent variables, two statistical analyses were conducted. First, the Pearson Correlation Coefficient was run using SPSS to find if a relationship exists between the predictors and the criteria in isolation. Next, a multiple regression was run to see if a relationship existed simultaneously with the predictors in combination.

**Findings**

These results of the study suggest that a student’s final NovaNET grade is significantly related to all three independent variables: risk ratio, previous failing grade, and age. The strongest correlation was between risk ratio and final NovaNET grade. The two variables have a strong, negative relationship; the more at-risk a student is considered, the lower the final NovaNET grade and conversely the students who scored the highest in NovaNET, had the lowest risk ratio. This study was able to relate the theoretical framework to at-risk students as over 90% of the students in the study were considered at-risk by the Georgia Department of Education. Although the final grades of the most at-risk students were in the lower quartile, it is important to note that the majority still received a passing grade, which is the ultimate indicator of credit recovery success. The analysis of these results led to most significant finding in the study; over
of all students who took NovaNET were successful in this form of credit recovery. These students, who failed this class in the traditional classroom setting, earned credit needed for graduation by passing the class when taking the course through NovaNET. These results support the research included in the theoretical framework that computer-based instruction is an effective strategy that significantly increases the achievement of at-risk students (Bayraktar, 2002).

Contrary to many current school policies that set a minimum previous failing grade as criteria for NovaNET enrollment, the findings presented in Chapter IV suggest that previous failing grade, although correlated with final NovaNET grade, does not indicate if a student will or will not be successful in recovering the credit. There was a statistically significant relationship between previous failing grade and final NovaNET grade, but the relationship was weak and overall, students performed better in NovaNET than they did in the traditional classroom setting. The average previous failing grade for the population was a 58. The average final NovaNET grade was a 68, showing an increase in academic achievement. So although there was a positive significant correlation; the higher the previous failing grade, the higher the NovaNET grade, there is no indication in the results that previous failing grade predicts success in terms of credit recovery. This is especially true when considering that regardless of any factor considered, 70% of the students were successful in recovering the credit by scoring a 70 or above in NovaNET. This data suggests that a student should not be kept from attempting NovaNET due to their previous failing grade. The results do not yield a specific grade that students must have received in the traditional classroom setting in order to be successful in NovaNET. In fact, the one student who received a zero in the
class, who did not even finish the course and was therefore not exposed to the entire curriculum, received an 80 in NovaNET. So although previous failing grade is related to final NovaNET grade, it is not an indication of success in NovaNET and should not be used as criteria for NovaNET enrollment. This data supports Zimmerman’s social cognitive theory, which laid the theoretical framework of this study, stating that self-regulatory factors mediate the influence of prior academic achievement (Bandura, 1993; Zimmerman, 1990; Zimmerman et al., 1992; Zimmerman & Martinez-Pons, 1990).

Limitations

This study is subject to a limitation brought forth by using the risk-ratio as the indicator of an at-risk student. The risk ratio formula considers only school-related factors that may place a student at risk for dropping out of high school including academic performance, retention, course failure, and attendance. Research indicates there is no single reason students drop out of school, but that a combination of factors acting together increases the probability (Anagnostopoulos, 2006; Bali et al., 2005; Lee & Berkam, 2003; Levin, 1989; Rodriguez, 1990). Personal characteristics such as disability, behavioral history, engagement in school and civic activities, socioeconomic status, at-risk peer group association, or other less quantifiable personal and social factors are not calculated as part of the student risk ratio. In essence, by using the risk ratio, the social risk factors found to be associated with a higher likelihood of dropping out of school were not considered when determining the degree of risk for a student and therefore does not provide an accurate measure of who is considered at-risk. Research has found that members of racial and ethnic minority groups drop out at higher rates than White students, as do those from low-income families, from single-parent households, and from
families in which one or more parents also left school without a diploma (Fitzpatrick &
Yoels, 1992; Lee & Burkam, 2003; Levin, 1989; Rodriguez, 1990). These important
predictors of risk were not considered as a part of this study.

Another limitation in this study was using NovaNET scores from an entire school
district, versus one school, where contrasting implementation occurs from school to
school. In correspondence with school counselors from various schools in the county,
the researcher was made aware that schools have different policies for allowing students
to participate in NovaNET. For example, one high school had the requirement that the
student must have a received at least a sixty in the previous failing grade to attempt
NovaNET. Another school had an age requirement to order to take NovaNET. One
school limiting students from NovaNET may alter the results when another school may
allow the same student to enroll in this class. Conversely, with these policies in place,
some students may have been omitted from the study all together by the policies set
forth by their school.

Another limitation of this study is the inability to generalize the results to other
school districts that do not use NovaNET for online credit recovery. As there are other
computer-based credit recovery programs on the market, the results of the study can
only relate to school districts that have purchased and use NovaNET as their online
credit recovery program. The researcher is not aware of the other leading computer-
based credit recovery programs and their comparability to NovaNET.

One important factor that was not taken into account during this study was if other
interventions were in place during the time the student was taking NovaNET and could
partially account for the student’s success with the credit recovery. Individual
advisement, after-school tutoring, and remediation efforts could impact a student’s academic achievement. Schools often provide multiple strategies to target and assist at-risk students so it would beckon further research to see what strategies are being used to support the student while he/she takes NovaNET. While it is often difficult to determine which methods of intervention are effective when there are usually several interventions going on at the same time, a multiple regression equation could assist educators in determining the effective recipe for success.

The fact that this study was done over the period of only one year yields less conclusive data than if the study had collected data over multiple years. By only analyzing data from one academic school year, there was no way to determine how many times the student failed the traditional class before moving on to attempt credit recovery in NovaNET or if the student had taken NovaNET in the past. An initial assumption of this study was that all students taking this course had only been exposed to the curriculum once before and had never attempted NovaNET. There is no way to confirm this assumption since data was only collected from one academic school year. This study assumption might have been proven false if data had been collected from multiple years. Seventy percent of the students in this study were successful at recovering a lost credit. Can we contribute this success rate to computer-based education or is this because this could have been a student’s second or even third exposure to the same curriculum? Could a student’s success or otherwise failure be a result of the amount of time that has elapsed since the previous exposure to the curriculum? If a senior is recovering a lost credit from freshman year, would the time spent away from have an impact on NovaNET grade compared to a student who is recovering a credit that
was lost just one semester before? Maybe the students who were successful had already taken NovaNET before or had been exposed to the same curriculum multiple times compared to a student who had never taken a class on NovaNET and had only failed the previous class once before. These questions identified the need for a longitudinal study.

Recommendations for Policy and Practice

Despite the limitations identified in this study, the findings suggest that policymakers would be well advised to reexamine the goals, structures, and policies surrounding the implementation of NovaNET. This study served to fill a gap in existing literature on computer-based credit recovery for at-risk youth by investigating variables that surround the implementation of NovaNET in a high school. Based on the results of the study, the researcher has developed the following recommendations in regards to the effective use of NovaNET in a high school setting:

1. *School districts should consider allowing at-risk students the opportunity to earn initial credit for classes via NovaNET.*

While NovaNET serves students beginning in their second year of high school, after attempting credits in a traditional classroom setting, approximately 85% of the students who decide to drop out of school show disengagement and educational difficulty before the 10th grade and often before they reach high school (Craig, 2007). With updated longitudinal technology, schools now have the ability to identify potential dropouts and begin interventions well into middle school. Why must students fail a class in high school before they are given the opportunity to take this class on a computer? With demands for higher standards and greater accountability in a financial tight era, it is critical to immediately offer services to students who have shown the need
for a different educational atmosphere in order to be successful. If school districts are identifying at-risk youth before the students get to high school, and research proves that computer-based education increases academic achievement for at-risk students, school districts should consider allowing these students the opportunity to earn initial credit for classes in an online setting.

2. **School districts should develop a district-wide policy for NovaNET enrollment.**

Continuation of current trial and error practices, differing from school to another within the same school district, regarding NovaNET implementation needs to be addressed as a district to ensure equal access to research-proven interventions. Allowing each school to create its own policy for NovaNET leaves students at a disadvantage depending on where they live. No matter their mailing address, students should have the same access to a program that has been research-proven as effective in credit recovery. With a district-wide policy, we can ensure equality among our students and ensure we are providing the best opportunities for students to graduate on time.

3. **NovaNET enrollment should not be based on previous failing grade or age.**

With the results of this study, decisions regarding what students to schedule for NovaNET should not be based around past assumptions but can now be based on sound research. Since the data shows that students scored higher in NovaNET than in the traditional classroom setting, students should be given the opportunity to recover in this setting versus having to repeat the traditional class. Moreover, this study also indicates that there is no reason age or previous failing grade should omit a student from this method of credit recovery. Schools using these indicators are not meeting the needs of
their student population. Although these variables are related to final NovaNET grade, the variables are not indicators of overall success in credit recovery because the data indicates that students were more successful in this setting than in the traditional classroom setting. How much time and how many resources are wasted having a student repeat a class in the same setting in which they already failed?

4. Students should receive advisement before being scheduled into NovaNET.

NovaNET is an alternative form of instruction that may not work for every student. This method of credit recovery is not meant for the student who does not believe in their abilities. This is a self-paced, self-directed program, requiring student motivation to be successful. Schools who schedule students into this form of credit recovery without the consent of the student are setting the students up for failure. Students need to be made aware that a certified teacher for the class they are attempting may not be in the room during NovaNET. In most cases, students in NovaNET are all taking different courses, without content-assistance from a teacher. When choosing to participate in NovaNET, the student exercises control over their capabilities and increases their self-efficacy from the beginning. These students have already failed the class once and now have an option; the power to decide if they want to take the class online to recover the credit. Students must be given choice and according to NovaNET policy, students are supposed to advised on the NovaNET model before they begin, and ultimately decide for themselves if they want to attempt this method of credit recovery.

5. Students who fail a class should not have to repeat the entire course; these students should immediately be given the opportunity for NovaNET.
Administrators may begin to make data-driven decisions regarding the number of classes scheduled into the academic day for computer-based credit recovery by reducing the number of repeat students in a traditional class. We can efficiently use our resources by purchasing the adequate number of NovaNET portals needed to recover lost credits to meet the needs of all our students. Increasing the number of computer-based credit recovery classes will result in smaller traditional classroom sizes and a more homogeneous traditional class setting with respect to age and prior knowledge. There is also a possibility that by increasing NovaNET sections, behavior would improve in the traditional classrooms because all the students in the class would be engaged in curriculum that is new to them. Repeat students in a traditional class often become disengaged when learning standards that they may have already mastered and often become discipline issues and a distraction to other students. The researcher speculates that removing these students from the traditional class and scheduling these students in NovaNET would help alleviate behavior problems. By not scheduling students to repeat a traditional class, school districts could also save money since a NovaNET teacher does not need to be highly qualified in any one specific area. With the budgetary crisis looming over school districts, and the loss of teachers every year, the school district could save even more money by allowing these students to recover the class outside of the school day. It is the recommendation of the researcher that all students, regardless of risk, age, or previous failing grade be immediately given the opportunity to take NovaNET after they have failed a class in the traditional setting.
Recommendations for Future Research

This study focused on the relationship of three variables (risk, age, and previous failing grade) to the final grade received in NovaNET for high school students. Based upon the findings and conclusions of this study, questions have arisen and beckon future research in the area of computer-based credit recovery for at-risk youth.

1. Does attendance improve for a student when placed in computer-based instruction?

One of the main causes of growing achievement gaps is that students are not in school to keep up academically (Balfanz, Herzog, & MacIver, 2007). According to the authors, each absence should elicit a response. When participating in NovaNET, an absence does not elicit a response because the student does not miss any part of the curriculum but instead reenters the class exactly where he/she left off; an absence does not result in the loss of instruction. In a traditional classroom setting, an absence translates to the loss of instruction and students arrive back in the class to find they have missed instruction that is required for standard acquisition. This response is often negative and causes a student to lose confidence resulting in increased school disengagement. While many students fail a class because of lack of attendance, it would be interesting to see if attendance improved for students when taking online classes versus traditional classes since they would not feel the negative consequences of missing school.

2. Does the specific program model of NovaNET correlate to student success?

Balfanz and Legters discovered that one of the most effective strategies in reaching an unresponsive student was to assign this student an adult mentor who would
be responsible for shepherding the student by consistently providing feedback (2004). Not all online programs serving credit recovery to at-risk students have a face-to-face component. Schools vary in their degree of teacher-assistance in computer-based credit recovery programs. Some schools use NovaNET as the sole-source of instruction while others use a blended approach, where computer-based instruction is balanced with traditional instruction to increase student support and face-to-face contact. Since research indicates the relationship piece is vital for school success with at-risk youth, further research that investigates the various program structures of NovaNET, specifically the role of the teacher in the NovaNET class, would add to the body of research in determining effective implementation of NovaNET.

3. Are special education students successful in NovaNET?

Another variable to consider when determining placement in NovaNET would be if a student requires special education services. Even more specifically, what the specific learning disability is for a student and if in particular one disability is identified to have a significant relationship on NovaNET success. There is a lack of research on how computer-based credit recovery fits into the Individual Education Plan (IEP) for special education students. This variable was not chosen to be included in this study, and it would have been interesting to see if these were the students who comprised the 30% of students who were not successful in NovaNET. One reason could be that while in NovaNET, it is not plausible to deliver the accommodations and modifications listed in a student’s IEP in this setting. While the results of the current study yielded a high success rate of 70%, it is also possible that students qualifying for special education services do not need services while in NovaNET. If that is truly the case, why would these students
not need the support of their IEP to be successful? If this instructional environment eliminates the need for support, why would we not be offering this an approach for initial credit attainment for all special education students?

4. *Are students more successful in NovaNET in one subject area compared to another?*

One variable that the researcher predicts to have a significant relationship with success in NovaNET but was not explored in the current study is the specific course taken in NovaNET. One suggestion for further study would be to compare the success rate of NovaNET in each of the four academic core subjects. This study would be very important when determining NovaNET enrollment if it were to find that students who took Social Studies, for example, succeeded at a much higher rate than those who took Math. If the subject of the NovaNET course can predict success or failure, only certain classes should be offered through NovaNET. Currently, no school in the district of study took the actual subject into consideration when enrolling students in NovaNET, but yet age was taken into consideration. For example, the current study found that age has a very weak relationship with final NovaNET grade. There was very little difference in NovaNET grade of a student who was 14 when compared to a student who was 21. Our students are living in a digital era and most are computer literate. With this understanding, the specific subject in computer-based instruction would seem to more likely predict success than age, so if age is considered, then why not curriculum?

5. *Do students who have a history of discipline issues improve their behavior while engaged in computer-based instruction?*
Another topic for consideration would be the impact NovaNET has on discipline issues. It would be interesting to track behavior for a student when enrolled in the traditional class versus when they were enrolled in an online class. Too often students are sent to alternative schools for discipline issues before alternative settings within the traditional school have been attempted. Yes, alternative means of educating students who are continually truant, misbehave, and pose a threat to themselves or their classmates have to be considered, but are we considering if an environmental change in instruction at the current school could resolve these issues? Many students who are sent to alternative school for behavior concerns return to the home school after the suspension since no further discipline arose in the alternative setting. Why are students more successful at an alternative school? It is interesting to note that most classes in an alternative school are computer-based. In fact, the one alternative school used in this study is 100% computer-based. Does computer-based instruction decrease inappropriate school behavior? A comprehensive approach to dropout prevention should focus on keeping students in school and ensuring that time spent in the classroom is engaging and useful. Rather than looking for alternative placements, we need to focus on discovering what motivates students to learn and putting these interventions in place in the traditional school. In this digital era, computer-based instruction might be the answer.

6. Would students be successful on NovaNET if it was for initial credit attainment?

The current study showed a 70% success rate for students taking NovaNET. Although this was at least the second attempt at this class, and at least the second time exposed to the same curriculum, there is no way to distinguish if computer-based
instruction is the cause for such success since students in this school district are not allowed to take this course for initial credit. Research is needed to see if student success in NovaNET can be contributed to the program itself or student’s prior knowledge in the curriculum.

Conclusion

Statistics on the economic disparity between those who have completed high school and those who have dropped out, and the related social implications of this disparity, are troubling. Dropping out of school is not usually an impulsive decision that is made by students, but one that is a cumulative process that takes place over time. It occurs when students have unsuccessful school experiences that cause them to develop a feeling of alienation from school (Martin, Tobin, & Sugai, 2002). These experiences might include: retention, behavior problems, academic problems, discipline problems, and absenteeism. Understanding at-risk youth and the strategies that are effective in keeping these students in school until graduation are important for school administrators to consider when planning interventions for low-achieving students and implementing programs geared to increasing the graduation rate. Too much is at stake for too many of our students to base educational policy on assumptions and best intentions.

This study explored one computer-based credit recovery program, NovaNET, and the criteria used by some schools to select students for enrollment into this class. The study investigated the effectiveness of this intervention for at-risk high school students, and whether a final grade in NovaNET was in any way related to risk ratio, the age of the student, and/or the previous failing grade from the traditional classroom. The completed study resulted in research that has yet to be conducted and provides an interesting insight.
on computer-based credit recovery. Perhaps the most interesting result of the study was the finding that 70% of all students who took NovaNET were successful in recovering the lost credit, regardless of all factors considered. This data supports the researcher’s justification for the need to increase self-paced credit recovery programs in a traditional high school.

The goal set by the No Child Left Behind Act for graduation rates to reach 100% by the year 2014, caused states such as Georgia to take steps to increase their already low graduation rate. The results of this study support previous research that self-regulatory factors mediate the influence of prior academic achievement (Zimmerman et al., 1992). Two decades of research have clearly established the validity of self-efficacy as a predictor of students’ motivation and learning. This empirical evidence of its role as a potent mediator of students’ learning and motivation confirms the historic wisdom of educators that students’ self-beliefs about academic capabilities does play an essential role in their motivation to achieve. The results of this study support the research in the theoretical framework that ability is not a fixed attribute, rather a capability in which cognitive, social, motivational, and behavioral skills are organized and effectively used in the academic setting (Bandura, 1993; Collins, 1982). To effectively close the achievement gap for at-risk students, we cannot continue to make decisions about the educational opportunities for students based on their past performance. Instead, as educators, we must create and implement data-driven programs that have been supported with research that focus on keeping students in school and engaged in their education.
APPENDIX A

UNIVERSITY OF SOUTHERN MISSISSIPPI IRB

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRS Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months. Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 11091501
PROJECT TITLE: Computer-Based Credit Recovery for At-Risk Students
PROJECT TYPE: Dissertation
RESEARCHER/S: Rebecca Volkerding
COLLEGE/DIVISION: College of Education & Psychology
DEPARTMENT: Educational Leadership & School Counseling
FUNDING AGENCY: N/A
IRS COMMITTEE ACTION: Exempt Approval
PERIOD OF PROJECT APPROVAL: 09/26/2011 to 09/25/2012

Lawrence A. Hosman, Ph.D.
Institutional Review Board Chair

DATE
APPENDIX B

GEORGIA DOE DATA SHARING AGREEMENT

Agreement between Rebecca Volkerding, conducting research in association with the University of Southern Mississippi, and the Georgia Department of Education

WHEREAS, NovaNET is an online, self-paced computer program that serves as an intervention strategy for students by providing individualized learning and a narrow focus on the wide variety of needs NovaNET is capable of serving, including, but not limited to, credit recovery and dropout prevention:

WHEREAS, to better ensure the success of particular intervention strategies that are implemented for the purposes of dropout prevention, it is essential that such intervention strategies, such as NovaNET, be proven effective for identified student variables that may represent risk factors of the students whom the intervention strategies target:

WHEREAS, it is undetermined whether it is effective to place all students needing credit recovery in a computer-based class, such as NovaNET, regardless of student variables such as age, risk ratio, and the student's failing grade in the traditional classroom setting;

WHEREAS, a statistical analysis conducted through SPSS of a sample of 895 students (grades 9-12) who took Courses in NovaNET in the 2009-2010 school year from the School District may identify predictors regarding the relationship between final scores, student success, and the aforementioned student variables as they relate to NovaNET;

WHEREAS, such predictors could identify whether certain students would be more inclined to be successful at credit recovery in the traditional classroom setting or a computer-based credit recovery, and thus allow schools to improve educational practices by enabling them to make data-driven decisions regarding issues including but not limited to, the number of classes scheduled into the academic day for computer-based credit recovery, how many NovaNET portals to purchase, and what teacher allotments are needed;

WHEREAS, this agreement governs the sharing of data by Rebecca Volkerding, conducting research in association with the University of Southern Mississippi, and the Georgia Department of Education, (collectively referred to hereinafter as "the parties") and shall safeguard the confidentiality of the student data as required by the Federal Family Educational Rights and Privacy Act (FERPA) and other applicable laws and regulations. The sharing of information for the purposes of this agreement is pursuant to 20 U.S.C. § 1232g and 34 C.F.R. Part 99; and
NOW, THEREFORE, in consideration of the mutual promises exchanged herein the parties hereby agree as follows:

1. The parties will identify data elements contained in GaDOE's Student Record data collection to formulate a "data file" for a population of 599 students (grades 9-12) from the [redacted] School District who took courses in NovaNET in the 2009-2010 school year. The data elements will include statewide student data collected by GaDOE and may include any data elements GaDOE collected and currently maintains except for student names.

2. The data file will contain scores and predictor variables obtained through NovaNET and associated with student identification numbers, but not student names. The data elements included in the data file may allow recipients to identify students; therefore, the parties agree that the data file will be treated as confidential student personally identifiable information protected from unauthorized disclosure under FERPA.

3. Upon receipt of a party's request, GaDOE will provide the data file to the party in a timely manner.

4. Using the data file sent by GaDOE, Rebecca Volkerding, conducting research in association with the University of Southern Mississippi, will enter all data in SPSS and conduct a simple correlation and a multiple regression to investigate the relationship between a student's risk ratio, age, and previous failing grade and that student's final NovaNET course grade.

5. The parties will provide descriptions of the data needed.

6. The parties agree that the transmittal of all data files shall be done in a secure manner.

7. Rebecca Volkerding, conducting research in association with the University of Southern Mississippi, will use all data exchanged pursuant to this agreement (hereinafter referred to as the "GaDOE Data") in accordance with all applicable federal and state laws and regulations, and only for the purposes of investigating the relationship between a student’s risk ratio, age, and previous failing grade and that student's final NovaNET course grade.

8. Rebecca Volkerding, conducting research in association with the University of Southern Mississippi, will not utilize the GaDOE Data for any other purposes not outlined in this agreement without the express written consent of all parties.

9. The parties will limit access to the GaDOE Data to those employees or contractors that require the data to investigate the relationship between a student’s risk ratio, age, and previous failing grade and that student's final NovaNET course grade. The parties shall ensure that each such person is fully cognizant of the restrictions placed upon use of the data and the restrictions placed upon its disclosures. Any disclosures by Rebecca Volkerding, conducting research in association with the University of Southern Mississippi, to contractors or third-party researchers shall not include student names, Social Security numbers (SSN), or Georgia Testing Identifiers (GTID).
10. The GaDOE Data will be maintained in a secure environment and shall not be shared with third parties, except as authorized by federal and or state law and as provided in this agreement.

11. GaDOE Data exchanged by the parties may contain individually-identifiable, confidential information. Therefore, the following provisions shall apply:
   (a) If the purpose for which the GaDOE Data file was sent does not require personnel to print, display, or otherwise personally view the contents of the file, the personnel shall refrain from doing so.

   (b) If the purpose for which the GaDOE Data file was sent requires personnel to print, display, or otherwise personally view the contents of the file, to avoid or correct a malfunction of the matching process, the personnel shall do so in a manner that prevents the disclosure of the contents of the GaDOE Data file by persons not involved in the matching process.

   (c) When the individually-identifiable information that is exchanged between the parties is no longer needed to support the purposes of this agreement, all information which is personally identifiable as to recipient or student shall be destroyed and shall not he retained in any form. The parties shall notify one another of its destruction.

12. Each printed copy of information contained on a computer file exchanged by the parties containing personally identifiable information shall be stored in a secure location such as a locked desk or file cabinet, except when in use for the purposes for which it was provided. Electronic records containing personally identifiable information shall be stored in secured computer facilities with strict automated data protection controls, protecting access to individually-identifiable data to those with access authorization.

13. Each party will continue to manage its respective preexisting records in conformance with applicable statutes regarding nondisclosure, privacy, and confidentiality.

14. No release of data, reports, or information of any kind based on the GaDOE Data will include any information that could be linked to a specific person, unless required by federal or state law.

15. The parties agree to safeguard the confidentiality of the student data as required by the Federal Family Educational Rights and Privacy Act (FERPA) and other applicable state and federal laws and regulations.

16. In the event GaDOE Data is disclosed or otherwise released in an unauthorized manner, the party or its designee that disclosed the information shall immediately notify the other parties to this agreement.

17. Each party shall designate a single point-of-contact to provide and receive data under this agreement. Any issues or concerns a party may have with the data provided under this agreement shall be directed to the designated point-of-contact. Each party shall notify the other parties in writing within fifteen (15) days of any change of the point-of-contact.
This agreement may be terminated by either any party without reason or cause by providing all other parties with written notice not less than thirty (30) days in advance of the desired termination date. In the event of termination, Rebecca Volkerding, conducting research in association with the University of Southern Mississippi shall destroy all data and information exchanged under this agreement that is personally identifiable as to recipient or student and notify GaDOE of its destruction.

18. This agreement shall take effect upon completion of signatures and remain in effect until the scope of the study concludes.

19. This agreement may be amended at any time by written mutual agreement of the parties.

20. Legal notices under this agreement including, but not limited to, notices of termination, notices of non-compliance, notices of changes in the designated point-of-contact, shall be made delivered by certified mail return receipt requested, or in person with proof of delivery to the addresses set forth below or such other addresses as a party may designate by notice hereeto.

GaDOE:

Rebecca Volkerding:
Doctoral Candidate
University of Southern Mississippi
2025 Powder Springs Road
Marietta, GA 30064

Date: 8/23/2011
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