TECHNOLOGY-BASED LEARNING ON AT-RISK HIGH SCHOOL STUDENTS: AN EVALUATION OF THE MARTIN LUTHER KING JR. COMMUNITY TECHNOLOGY CENTER AFTER-SCHOOL PROGRAM

by

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ABSTRACT

TECHNOLOGY-BASED LEARNING ON AT-RISK HIGH SCHOOL STUDENTS: AN EVALUATION OF THE MARTIN LUTHER KING JR. COMMUNITY TECHNOLOGY CENTER AFTER-SCHOOL PROGRAM

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Objective. High school students across North Texas are failing to meet the academic standards of the federal No Child Left Behind Act. With each passing academic year, the number of schools added to the list of underperformers grows, implying that students are not getting the aid they need to succeed academically. To address the unique needs of these low-achieving students, after-school programs have been implemented to support the cognitive and communal development of at-risk youth. Technology can play a crucial role in after-school programs in supporting the academic success of at-risk youth by pushing the boundaries of education beyond the traditional

classroom. Technology puts the students in control of the material and helps them to develop dynamic problem-solving skills. Such skills can be used to tackle a variety of subject matter, enabling the students to improve their academic outlook. This study evaluates, in particular, the outcomes of the Martin Luther King Jr. Community Technology Center (MLK CTC) After-School Program between August 2006 and July 2007.

Methods. Drawing on MLK CTC program data, this study examines the outcomes based on the program's stated objectives. The evaluation also looks specifically at educational gains within the program as measured by Woodcock Reading Mastery pretest- and posttest scores, and employs a paired samples *t*-test. A second test of significance utilizes a one-way analysis of variance (ANOVA) to determine if there are differences between groups in relation to hours and educational gains within the MLK CTC program. Qualitative analysis involved interviews with program staff and administration, as well as observation of program activities.

Results. Findings indicate a positive significance between participation in the MLK CTC program and educational gains.

Discussion. Implications for future program directors involved: (1) participant recruitment and retention; (2) collaboration with parents, staff, and the community; and (3) necessary and adequate resources.

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CHAPTER 1

INTRODUCTION

1.1 Statement of the Problem

High school students across North Texas are failing to meet the academic standards of the federal No Child Left Behind Act (Stutz and Hacker 2007). According to the Texas Education Agency (2007), during the 2006/2007 school year, 9 percent of all campuses in Texas missed Adequate Yearly Progress standards; of those, 5 percent came from secondary campuses and 2.6 percent came from middle school campuses. For many of these campuses, this is at least the second time they have failed to meet state mandates (as cited in Stutz and Hacker 2007). In the Dallas Independent School District, approximately 46 schools missed federal testing mandates—up from 26 last school year—including six high schools that fell short for the fifth year in a row. Shortcomings were identified in mathematics, reading, and graduation rates (Stutz and Hacker 2007).

Nationally, according to the most recent U.S. Department of Education report on dropout rates dated October 2004, approximately 3.8 million 16- to 24-year-olds were reportedly not enrolled in high school and had not met the requirements for a high school diploma or a certificate of alternative completion (Laird, DeBell, and Chapman 2006). “The status dropout accounted for 10.3 percent of the 36.5 million 16- to 24-

year-olds in the United States in 2004" (Laird, DeBell, and Chapman 2006, 6). With each passing academic year, the number of schools added to the list of underperformers grows, implying that students are not getting the aid they need to succeed academically (Stutz and Hacker 2007).

To address the unique needs of these low-achieving students, after-school programs have been implemented to provide enriching opportunities for youth to situate in a safe environment, build effective study skills, improve their attitude toward school, avoid high-risk behaviors, develop relationships with peers and mentors, reduce dropout rates and improve college readiness, and explore a variety of activities associated with academic and personal development (Chaput, Little, and Weiss 2004; Clark 1988; de Kanter 2001; Gambone, Klem, and Connell 2002; Hall, Israel, and Shortt 2004; Hall et al. 2003; Huang et al. 2000; McElvain and Caplan 2001; Posner and Vandell 1999). These programs also serve to tighten the achievement gap—"the differences in school performance between rich and poor children, between children in affluent communities and those living in poor communities, and between white children and Asian on one hand, and African American and Latino children on the other" (Miller 2003, 12).

In regard to instructional activities, the use of technology in after-school programs, particularly those targeted toward at-risk youth, gives students the ability to maximize the effectiveness of their lessons by extending the walls of the classroom—it paces education and puts control in the hands of the student (Education Development Center 2001; Valdez et al. 2000). Computer-assisted after-school programs are reaching

a student population that is growing, and which traditional programs under NCLB are failing.

1.2 Description and Purpose of the Program Evaluation

The purpose of this study is to evaluate the outcomes of the Martin Luther King Jr. Community Technology Center (MLK CTC) After-School Program between August 2006 and July 2007.

The Martin Luther King Jr. Community Technology Center operates as part of the Martin Luther King Jr. Community Center and is funded by a grant from the U.S. Department of Education. The Community Center is located at 2922 Martin Luther King Jr. Boulevard, in Dallas, Texas 75215.

The after-school program was comprised of eight organizations and was developed to provide computer-assisted instruction to low-achieving ninth- through twelfth-grade students enrolled in or entering A. Maceo Smith, James Madison, Lincoln, Moises Molina, and North Dallas High Schools. The goal of the program was to support the No Child Left Behind (NCLB) Act of 2001 by helping all student participants attain, at a minimum, proficiency on Texas academic achievement standards and Texas academic assessments, particularly in the core academic subjects of reading/language arts, and mathematics.

Specific program goals, according to the MLK CTC Task Matrix, were as follows:

- Provide supplementary instruction in reading, mathematics, language, ESL, and career development to 250 unduplicated, disadvantaged, and low-achieving ninth-

- 95% of MLK CTC participants receiving supplementary instruction in reading and math will complete at least 0.5 credits on NovaNET[1] in the course of the program.
- 85% of MLK CTC students will meet or exceed state required expectations on each performance objective on the Texas Assessment of Knowledge and Skills[2] subtests.
- 75% of students tested using the Woodcock Reading Mastery[3] test will show academic gain on reading comprehension and vocabulary subtests.
- 90% of students will complete at least 96 hours.
- 100% of the MLK CTC teaching staff will receive professional development training.
- At least one parent or caregiver of each student will attend at least six family workshops provided at MLK CTC, and at least one parent or caregiver of each student will enter into a Parent/Student/Teacher Compact.

To achieve these goals, the MLK CTC program utilized three instructional strategies designed to address the learning needs of at-risk learners. The first focused on lessons involving the perceived interests, needs, and experiences of the student. The

[1] NovaNET is a computer-based system designed to provide students with self-paced instruction in English, mathematics, science, and/or social studies.

[2] Texas Assessment of Knowledge and Skills (TAKS) is an education standard test administered to Texas primary and secondary students to assess proficiency in the areas of math, English, science, reading, and social studies skills as required under Texas education standards.

[3] Woodcock Reading Mastery tests provide thorough coverage of reading readiness, basic skills, and comprehension.

second emphasized oral and written expression. Finally, the program provided study aids and understandable tools to alert the students of any important content areas or issues regarding their lessons. These tactics were designed to be reinforced by adaptive instructional techniques that linked educators with progressive technology and proven teaching methods. The concept was to pace instruction to the needs of the learner. Prescriptive lesson plans were designed using pretest information to identify individual weaknesses and assign appropriate content to each student's learning stage. Posttests embedded within the computerized standardized curricula system (NovaNET) served a mastery role that paced the instruction to the student's learning speed. Dynamic questioning (generating questions as the lesson progresses rather than preparing all questions in advance) was also utilized to educate the student and guide her toward mastery. Finally, feedback provided the student with explanations for why a particular answer was wrong and how it could be corrected. An English as a Second Language (ESL) and career development component were also offered to program participants at the MLK Center.

The second tier of this evaluation looks specifically at educational gains within the program as measured by Woodcock Reading Mastery pretest and posttest scores. This evaluation will also make determinations regarding how the program could be improved based on observations, interviews, and statistical data.

Information used to evaluate this program was collected from the following sources:

- *Review of Documents*. The researcher reviewed the grant proposal for the MLK CTC program, which was submitted to the U.S. Department of Education.
- *Data collection*. The researcher collected data as provided by the MLK CTC. Data includes the following information: gender, ethnicity, age, high school location, whether or not the student passed or failed the TAKS test for the 2006/2007 school year, Woodcock Reading Mastery pretest and posttest scores, hours of participation, and parental involvement records.
- *Semistructured interviews with four persons involved with the daily activities of the MLK CTC program—teachers, staff, directors, and persons involved with the schools*. These interviews took place at the schools or on the telephone, and were conducted by the researcher. Interviews were obtained from four staff members, representing 30% of staff involved in the program. The interviews lasted approximately one hour, covering program implementation and perceived results of program methods on student participants.
- *Observation of program activities*. The researcher made short, informal observations of student involvement in program activities. These observations were intended to strengthen the researcher's knowledge of program implementation in an informal manner.

1.3 Program Evaluations: Why They Are Important

The rationale for conducting this evaluation is that program evaluations are designed to be used as a tool. Much like in-school staff are held accountable for providing all students with the tools necessary to succeed academically, after-school program administrators should also be just as responsible for meeting the objectives of their program (Huang 2001). Through careful evaluation of an after-school program's objectives, program directors can make assessments about the "efficacy of their efforts" based on established goals and ultimately continue to improve their operations for the good of the participants (45). Finally, program evaluations are based on the expectation that assessment is vital to change. These reports provide administrators with objective, reliable and practical information that can be used to guide decision making and ultimately improve the quality of life of their clients (Royse et al. 2006).

1.4 Structure of this Report

This research begins with a review of the literature pertaining to the status of schools, the at-risk teen, and a look at the literature related to academic achievement. The second chapter examines the literature on technology-based learning as a means of achieving academic success, and the use of technology as a tool to support at-risk youth. The third chapter explores the literature on after-school programs, looking specifically at program content in supporting academic achievement, the use of technology, and the experiences of at-risk teens in these programs. The fourth chapter provides an in-depth description of the MLK CTC program, followed by a detailed description of the qualitative and quantitative methodology the researcher used in its evaluation. The fifth

chapter reveals the data analysis, followed by findings in the sixth chapter. The report concludes with a discussion of the results of the evaluation in the seventh and final chapter.

CHAPTER 2

THE CURRENT STATUS OF SCHOOLS, THE AT-RISK TEEN, AND ACADEMIC ACHIEVEMENT

One in every eight Americans is illiterate (McWhirter 2007, 37). Further, in October 2004, about 3.8 million 16- to 24-year-olds were "not enrolled in high school and had not earned a high school diploma or alternative credential such as a GED," according to the U.S. Department of Education (Laird, DeBell, and Chapman 2006, 6). "These status dropouts accounted for 10.3 percent of the 36.5 million 16- through 24-year-olds in the United States in 2004" (3).

Basic competence in mathematics, reading, and writing are critical in today's economy, even in the most basic of jobs, and low propensity in these skills is often correlated with poor educational advancement and meager earnings. Moreover, the cycle of poverty continues into future generations because of the children of unskilled laborers and the poor are more likely than children from wealthy families to be ill prepared to enter the workforce (McWhirter 2007).

2.1 Defining At-Risk

Disadvantaged, at-risk, high-risk, vulnerable, and disconnected: these identifiers have appeared recurrently in the literature on education, psychology, medicine, social work, and economics, as well as in state and federal legislative reports (McWhirter

2007; Public/Private Ventures 2002). Whatever the label, at-risk describes a set of presumed cause–effect dynamics that place an individual in danger of future outcomes. "At-risk designates a situation that is not necessarily current but that can be anticipated in the absence of intervention" (McWhirter 2007, 7).

At-risk students are often overcome by a complex set of environmental problems including poor socioeconomic status; limited access to transportation, health, and human services; accessibility to guns and drugs; high rates of unemployment, underemployment, and limited employment; few expectations from others to succeed economically or educationally; economic and social marginalization; racism in the community; public policy that fails to meet the community, economic, family, and educational needs; high occurrence of neighborhood vandalism, crime, gang activity, and violence; and low family income coupled with the high probability of economic hopelessness (Druian and Butler 1987; Finn 2006; Hall et al. 2003; McWhirter 2007; Public/Private Ventures 2002; Williams 1996).

According to research, the environment in which children live is a significant indicator of their overall well-being. Almost all available records support the concept that children's education, later employment, future earnings, and health greatly depend on their families' socioeconomic status (McWhirter 2007; Raffel et al. 1992). Entwisle and Alexander (1992) theorize that low socioeconomic status coupled with being a person of color is the strongest predictor of educational failure.

A study conducted by Public/Private Ventures (2002, 2) found that "more than five million youth between the ages of 14 and 24" meet the characteristics of at-risk. At-

risk learners are likely to have deficiencies in the areas of reading, writing, and mathematics, difficulty comprehending abstract ideas, and inadequate study skills (Borich and Stollenwerk 2004). Further, it is not uncommon for at-risk teens to "perform below grade level on norm-referenced standardized tests, fail a grade level, or score poorly on the state proficiency tests" (Office of Education Oversight 1997, 4).

Some argue that the reason low-income students fail in school is because certain experiences which serve to enable other children to succeed are absent from their lives at home and in the community (Tyack 1974). Further, throughout much of U.S. history, the separate and unequal education of poor children and children of color has been justified by social traditions, and, in many cases, legally enforced. Moreover, many of the schools attended by these low-income children lack an engaging school environment, adequate access to transportation and social services, and challenging instruction (Rossi and Montgomery 1994).

According to researchers there is a significant difference between students attending urban and nonurban schools as well as between those in high- and low-poverty schools with relation to school experiences and academic outcomes (Land and Legters 2002; Lippman et al. 1996). One concern is that teachers in low-income schools are less qualified than those in more affluent schools. An indicator of a teacher's substance is if they teach in a field related to what they majored or minored in while in college (Young and Smith 1997). Its been found that students in schools with a high concentration of poverty are less likely than students in low-poverty secondary schools to be taught mathematics, biology, chemistry, or physics by an instructor who majored

or minored in that subject (Young and Smith 1997). According to one business leader, "Today's global language for economic competitiveness is math and science; if we're illiterate in [these areas], we're not going to be able to compete globally." Within that same report, a science expert was quoted saying, "We are creating a class scoeity based on the gaps between those who are scientifically and mathematically literatre and those who aren't" (Kadelec and Friedman 2007, 6). Research also indicates that teachers earn less in low-income schools; districts spend less per student in low-income districts; and the average class size in low-income schools tends to be larger which is critical because small class sizes give students an opportunity to receive individualized attention and minimize the burden of teachers to manage large classes and their own work (Young and Smith 1997).

Research conducted on Tennessee's Project Student/Teacher Achievement Ratio (STAR) asked the question, do small classes result in improved academic achievement in elementary school (Finn and Achilles 1999)? In examining the answer, researchers studied class size; thousands of students and teachers were randomly assigned from kindergarten through third grade into small classes (13-17 students), regular classes (22-26 students), or regular classes with a full-time aide. The study found that, on average, students in small classes demonstrated higher levels of academic performance (Finn and Achilles 1999; Land and Legters 2002). Reasons were that small class size is beneficial to the academic achievement of at-risk learners because it "may provide more one-on-one contact with the teacher, more opportunities per student to participate in learning activities, fewer distractions, and fewer opportunities for students

to disengage unnoticed" (Land and Legters 2002, 14). Other risk factors include low expectations by teachers, as well as other aspects of a school's environment, such as peer interactions, which may also serve to influence student underachievement (Land and Legters 2002). According to researchers Edwards, Balfanz, and Legters, "approximately half of urban high school students do not graduate on time, and many central city high schools have very weak promoting power—less than 50 percent—as measured by the ratio of the number of twelfth-graders to the number of ninth-graders" (as cited in Land and Legters 2002, 15).

2.2 Impacts of Being At-Risk

The initial justifications for the creation of this nation's public school system were to support a literate society and an informed voting public. As the U.S. economy continues to grow in complexity, educators have become a major player in the job preparedness of today's youths (Raffel et al. 1992).

Still, even a high school diploma no longer ensures gainful employment (Berliner and Biddle 1995). According to a publication released by the U.S. Congress in 1988, the job market can "no longer accommodate" those young people who do not complete and master the educational experience. Further, today's educational standards require that all students possess adequate comprehension of cognitive skills (as cited in Raffel et al. 1992, 275). Additionally, dropouts face the potential for lifelong economic disadvantages such as unemployment or underemployment, loss of Social Security income, and a lack of qualified labor force (Finn 2006; Grubb 1999; McWhirter 2007).

According to a report from the U.S. Department of Education, "the median income of a high school dropout age 18 and over was $12,184 in 2003." The report indicated that "by comparison, the median income of those age 18 and over who completed their education with a high school credential (including a General Educational Development certificate, or GED) was $20,431" (Laird, DeBell, and Chapman 2006, 1). Dropouts also comprise a significant percent of the nation's incarceration rates (2006).

2.3 Changing Demographics and High-Stakes Testing

A rising population and a continuously changing demographic have placed tremendous burdens on our urban schools (Raffel et al. 1992). On October 17, 2006, the U.S. population reportedly reached 300 million, double the nation's population in 1950. And although the U.S. houses less than 5 percent of the world's population, it is the third most populous country in the world, after China (1.3 billion) and India (1.1 billion) (Lapkoff and Li 2007). Further, to date, immigrant children account for nearly one in five of all U.S. schoolchildren (McWhirter 2007). Many of these children come to school unprepared to learn, which in turn has resulted in "quantitatively and qualitatively more difficult" problems for school administrators as they attempt to get these students to graduation which includes passing state mandadated exams (Raffel et al. 1992, 264). Today, under the weighted challenge imposed by the No Child Left Behind (NCLB) legislation, all high school students are expected to successfully demonstrate their ability to read and understand unfamiliar text and to become fluent in the practice of scientific inquiry as well as problem solving. These rising expectations

have accelerated due to the sudden increase of knowledge presently available to the public and the increasing demands of the marketplace (Roschelle et al. 2000). To date, nearly every state has standardized measures of academic achievement. These tests not only measure a student's progress in achieving state academic mandates, but passing these high-stakes tests is a requirement for grade promotion, graduation, or both (Orfield and Wald 2000).

These high-stakes tests, however, have been linked to an increase high school dropout rates, particularly among minority students (Orfield and Wald 2000). In a study by Aaron Pallas and Gary Natriello the racial and ethnic disparities in performance on the Texas Assessment of Academic Skills (TAAS) were examined between the years 1996 and 1998. Researchers found that by the spring of their senior year, almost twice as many African American and Hispanic students, as compared to White students, had not passed the TAAS in order to graduate. The authors concluded that "these tests are, and will remain for some time, an impediment to the graduation prospects of African American and Hispanic youth" (as cited in Orfield and Wald 2000).

Finally, some argue that the NCLB Act has undermined support for public education. Other practitioners raise serious concerns about accountability and the ways that NCLB may weaken a focus on those students who operate above and below average students. Schools are required to show improvement and maintain this standard by focusing attention on those students who test just below the minimum pass rate. Those students who have very low test scores, on the other hand, are unlikely to raise scores high enough to increase the school's pass rate, and those students with good

scores are already part of the pass rate. Therefore, both the highest- and lowest-achieving students are less likely to receive support or services (McWhirter 2007).

2.4 Effective Schooling

While many view education as the key to solving the problems that plague today's society such as drugs, crime, and poverty, the opposite is usually the reality (Raffel et al. 1992). A growing body of evidence suggests that the decline in achievement test scores and the increase in school dropout rate indicate that we are not meeting the needs of all the students in our schools. The key to a successful education is to provide students the tools necessary to facilitate individualized learning (Norris 1994). Researchers have identified a number of effective tactics. These include strong and collaborative leadership, an emphasis on academics through rigorous and focused curriculum, collaborative and collegial relationships between teachers and school staff, student involvement, clear and consistent but not oppressive or punitive disciplinary measures, and community and parental support and involvement (McWhirter 2007). In regard to instructional strategies, Waxman, Yolanda, and Arnold (2001, 142) describe five successful strategies: "cognitively-guided instruction, culturally-responsive instruction, technology-enriched instruction, cooperative learning, and instructional conversation." These types of strategies, along with individualized, self-directed learning, smaller class size, and an emphasis on thinking and coping skills, appear across the literature as successful teaching practices for at-risk youth (Hall, Israel, and Wellesley Centers for Women 2005; Norris 1994).

Similar strategies have been proposed by Norris, all of which incorporate the use of technology. The first is personalized instruction using computer-aided lessons, which is said to be the most effective strategy for helping at-risk students. The second is collaborative learning which makes it possible for at-risk students to demonstrate their strengths in various ways. This can be done through learning that employs computer-based simulations, computer conferencing, and database access. The third is peer tutoring, which can help students academically and socially. Finally, Norris emphasizes teaching across the curriculum through computer simulations that incorporate topics in math, language arts, and science in the same lesson (1994).

Means (1997, 2) found that successful technology-based strategies incorporate "real world applications that support research, design, analysis, and communication." In other research, Day (2002) evaluated at-risk middle school students who were given the opportunity to work in a computer lab and found that participants who worked in the lab were more inclined to learn, earned better grades, and took more responsibility for their duties in the lab.

In conclusion, urban education is affected by the nation's immigration, economic, social welfare, health, and housing policies. "Schools are part of a larger system; they are ecologically embedded institutions that confront on a daily basis the problems of their surrounding communities, as well as those of the national and multinational institutions—even though the school itself is localized in its point of delivery" (Williams 1996, 17). It is clear that improving urban education will require that educators change their approach in teaching at-risk youth. One approach is to offer

low-income children access to small classes taught by skilled and committed educators who administer assignments that are linked to appropriate and immediate responses (Orfield and Wald 2000).

CHAPTER 3

TECHNOLOGY-BASED LEARNING AS A SUPPORT TO ACADEMIC ACHIEVEMENT OF AT-RISK YOUTH

Education has always been susceptible to an assortment of criticism coupled with a number of proposals designed to "fix" the system. Unfortunately, no script can prescribe good or bad practice; so much remains a matter of personal and community judgment, which somewhat explains why there is no single, universally accepted outlook for the best use of technology in schools. Educators are advised to examine the purpose of the lesson—that is, the temperament of the students' immediate needs. What really matters is not the use of the technology, but how it can be used to benefit the student. Questions about technology should avoid focusing specifically on which hardware or software to use, but rather how the technology can enhance learning, support a specific curriculum, and impact the academic success of particular students (Goldenberg 2000).

Good decisions require educators to be conscious of the different roles that technology can play in the classroom; they must think clearly about the goals of the classroom, the students, their obstacles, and their potential successes, rather than simply incorporating technology into the classroom in ways that may be attractive but potentially costly to the public, to the goals set forth by educators, and ultimately to the

students (Goldenberg, 2000). In other words, according to Goldenberg (1) “not everything that can be done should be done.”

This section will examine how technology-based learning can support the academic success of at-risk learners. For the purpose of this study, the literature will focus on the digital divide in regard to race, gender, and income. The text will also examine specific case studies on how technology has supported academic success for students in U.S. schools and then specifically for at-risk youth.

3.1 The Digital Divide

Schools across the U.S are investing millions to wire their classrooms for computer technology. As educators begin to turn their focus toward the benefits of technology in the classroom, a dialogue has developed on the issues of gender, class, race, and access (Weinman and Cain 1999). The “digital divide,” or the gap between those who have access to computers and Internet and those who do not, has entered the forefront of this discussion (Kuttan and Peters 2003; Mark, Cornebise, and Wahl 1997).

According to research, having access to technology results in considerable economic benefits, therefore social and demographic differences in gaining access are critical to understanding the digital divide (Ono and Zavodny 2003). Those who have computer skills are more likely to gain better employment opportunities and earn, on average, approximately 15 percent more than workers with the same education and experience but lack sufficient computer skills (Krueger 1993).

The first dimension of inequality discussed relates to technology and gender. Implications of gender differences in regard to this medium are that groups with lower

usage risk exclusion from labor and educational opportunities, as well as potentially losing political influence as technology becomes increasingly more vital to the ways people participate in a growing economic and political environment (Norris 2001).

3.2 Technology and Gender: The Virtual Ceiling

Simply stated, males and females view technology differently (American Association of University Women 2003; Bain and Rice 2006; Hargittai and Shafer 2006; Rabasca 2000). A study from the Center for Children and Technology shows that females prefer to use technology to learn, create, or communicate with peers, while males are drawn to the instrument itself (American Association of University Women 2003; Bain and Rice 2006; Solomon 2002). “Women talk about technology as a tool used for the creation of ideas and processes, men talk about it as a kind of weapon,” said psychologist Cornelia Brunner, Ph.D., a researcher with the Education Development Center’s Center for Children and Technology in New York City (as cited in Rabasca 2000).

According to a study conducted by Young, females were more likely to consider themselves “not the type to do well with computers,” and less likely to say they “could handle a more difficult computer course.” Males, on the other hand, were more likely to claim that computers were a “male area” (Young 2000, 206). However, females reportedly admitted that computers were useful in school and in career development, and that success in both often hinged on knowing how to use technology (Young 2000). Today, more than one million technology positions are forecasted for the year 2014, according to the U.S. Department of Labor signifying the expressed need to amp up

computer training in the classroom (as cited in T H E Journal 2007). Moreover, according to researchers and practitioners alike there is a direct correlation between computer literacy and career success, especially for females (T H E Jorunal 2007). However, data from the National Center for Women and Information Technology reveal an 80 percent decline in female first-year college students majoring in computer science between 1996 and 2004 (as cited in T H E Journal 2007). Females' "limited involvement with computers…has more to do with disenchantment than with anxiety or intellectual deficiency." Girls say that they are "engaged with the world, while boys are engaged with computers" (American Association of University Women 2003, 8). Girls are not afraid of technology, but because computer use is seen as masculine, they choose not to get involved with the technology (7). Furthermore, when the American Association of University Women's focus group asked their female participants to identify someone who is really good with computers, most described a male (2003).

In a study conducted by Bain and Rice (2006, 128) the authors found no significant gender differences in "attitudes, perceptions, and use of computers." Nonetheless, there were differences in how men and women used the computer as well as the amount of time each spent on the computer (Bain and Rice 2006).

Beyond attitudes, the literature points to another important factor that influences technology use: self-efficacy (Hargittai and Shafer 2006, 436). According to self-efficacy theorists, low self-efficacy causes motivational problems. "If students believe they cannot succeed on specific tasks, they will superficially attempt them, give up quickly, or avoid or resist them" (Margolis and McCabe 2006, 219). Computer-related

self-efficacy has been an important extension of this concept. A study conducted by Hargittai and Shafer found that men believed themselves to be more skilled than women at computer usage. The report indicated that none of the female participants believed themselves to be proficient computer users, whereas none of the male participants thought themselves to be complete novices. It should be noted, however, that actual skill didn't directly relate to perceived ability (Hargittai and Shafer 2006). The implications of poor self-efficacy for school-aged children are important and include "poor academic grades, conflict with teachers, lower track placement, special-education placement, failure on high-stakes tests, and retention" (Margolis and McCabe 2006, 219).

Researchers have also found that teachers' attitudes are a primary source of the "male domain" stereotype in technology. Young found that positive and negative teacher attitudes toward technology directly affected student attitudes toward computers. It is assumed, therefore, that higher levels of confidence and the lack of pessimistic teacher attitudes toward computers are associated with increased technological skills (Young 2000).

Access and experience with computers can also play a role in developing self-efficacy. Boys typically have more familiarity with computers both inside and outside of school. Such practice leads to higher confidence and increased positive attitude toward computers (Weinman and Cain 1999; Young 2000). In a study conducted by Young, students were asked to estimate the number of hours they spend on the computer both at school and at home. Though nearly all participants reported having a

computer available to them at school, only 65 percent of the boys and 58 percent of the girls said they have computers at home. Although there was no significant difference in access in hours per week of at-school computer use, boys spent considerably more time using computers, primarily due to the difference in access to computers at home (Young 2000).

The good news is that the gender gap in computer use and online access that existed in much of the 1990s is disappearing (DeBell and Chapman 2006; Gunn et al. 2002; Kuttan and Peters 2003; Ono and Zavodny 2003). However, there continues to be a distinction in the rate and intensity of use (Ono and Zavodny 2003). If the United States is to maintain the "quality and integrity" of its public education system, there are few educational problems more important than closing the digital divide, especially between men and women. To ensure that all students meet high academic standards, educators must address the learning needs of diverse groups of students (Weinman and Cain 1999, 12).

3.3 Technology and Low-Income and Ethnic Minorities: Digital Segregation

In a truly equitable digital environment, every student would have access to technology (Solomon 2002). Yet in obscure, but nevertheless dangerous ways, there are those who still lack access to the ever-increasing resources as provided by the digital age (Goslee et al. 1998). Compounding this problem are the advances in telecommunications which are acting to speed the exodus of good jobs away from the urban labor force, leaving the inner cities more desolate than ever before and desperate for the kind of jobs, educational opportunities, and technological means necessary to be

a contributing member of the global economy (Goslee et al. 1998; Mark, Cornebise, and Wahl 1997). Further, those with limited access to computers are disadvantaged beyond simple unemployment opportunities. Unless there is intervention, “fewer and fewer Americans will be able to fully participate in our nation’s economic, social, civic, and government life” (Goslee et al. 1988, 5).

Futhermore, “the divide is more than digital; it is a sociological phenomenon reflecting broader contextual factors such as existing social, economic, cultural, and learning inequalities” (Ba et al. 2001, 1). Unfortunately, there is no singular cause for these differences: it is not solely based upon race, income, education, geographic location, or governmental policy (Ba et al. 2001). And while the more privileged households remain constantly connected, those in low-income areas without ready access to computers or the Internet are further cut off from the larger society and the opportunity to participate in community affairs (Ba et al. 2001; Goslee et al. 1998).

In a report by Goslee and others (1998, iv), Armando Valdez, chair of the California Telecommunications Policy Forum, was quoted as saying, “we are witnessing the fracturing of the democratic institutions that hold us together.” In that same report, Richard Krieg, executive director of the Institute for Metropolitan Affairs in Chicago, was quoted as saying, “the possibility of an information underclass is growing.” The distinction between wealthy and low-income communities may be distinctly sharp in areas such as Silicon Valley, but it exists almost everywhere.

The fact is that low-income areas entering the race to gain equal access to technology are far behind their wealthier counterparts. “While [middle-class

communities] are rapidly approaching the 'next cycle,' the technology of the previous cycle has already bypassed the inner city" (Goslee et al. 1998, 2). Milton J. Little Jr., executive vice president and chief operating officer of the National Urban League, states, "We are witnessing the wholesale disappearance of work accessible to the urban poor" (as cited in Goslee et al. 1998, 4).

However, according to Krieg, the "technology gap is not simply a reflection of the choices made by individual households" (as cited in Goslee et al. 1998, 2). According to Cooper (2000), the existence and persistence of the digital divide is not a result of a lack of appreciation for the technologies, rather it stems from a low level of skills and access to computer technologies by those who are disconnected. In assessing the status of educational technology in our schools, issues relating to equity reign supreme (Coley, Cradler, and Engel 1998). According to Cooper (2000), a report by the *Washington Post* states that students with limited or no access to computers are falling behind; these students have limited access to the same variety of information as their computer-savvy peers, which leaves them at a significant disadvantage when it comes to acquiring the skills necessary for college and beyond.

Some reformers, however, argue that technology can be 'the' change in education that makes a real, measurable difference for at-risk students by allowing them to "transcend the boundaries of their schools" (Coley, Cradler, and Engel 1998, 9). Nonetheless, regardless of the progress, schools in economically deprived communities have fewer computers than schools in suburban areas. According to C*omputers in Classrooms: the Status of Technology in U.S. Schools*, a study by the Educational

Testing Service (ETS), students in low-income and minority schools report considerably less classroom computer access than did wealthier children (Sivin-Kachala and Bialo 2000).

Finally, the importance of understanding the digital divide is that it has less to do with access alone, but with the timing of the access (Cooper 2000). Simply put, "having later may be almost as bad as having not because the good opportunities are gone and the patterns of activity are set, leaving latecomers excluded and switched off" (1).

The following section presents data related to specific technology applications and their relationship to the academic success of their participants.

3.4 Technology-Based Learning and Academic Achievement

If you imagine a classroom, chances are you will picture a teacher standing at the head of a room that contains 30 or so students sitting in rows of desks (Haymore Sandholtz, Ringstaff, and Dwyer 1997). This imagined classroom exists not only in our minds, but is, in fact, what most students encounter five days a week (Haymore Sandholtz, Ringstaff, and Dwyer 1997). There is evidence, however, that this traditional structure provides poor support for learning, especially for those considered at-risk of academic failure (Roschelle et al. 2000).

"When students are placed in the relatively passive role of receiving information from lectures and tests, they often fail to develop the skills necessary to fully comprehend and apply what they have learned to situations outside of their texts and classrooms" (as stated in Roschelle et al. 2000, 79). In addition, children have different

learning styles. “Research shows that students learn best by actively constructing knowledge from a mixture of experience, interpretation, and structured interactions” (79). This style of learning can be integrated into a classroom with or without the use of computers. The nature of computers, however enhances learning by utilizing methods beyond lectures and books, which can help reach children who learn best from a combination of teaching methods (Roschelle et al. 2000).

Researching the effectiveness of technology-based learning is difficult, in part because (1) technology changes so quickly, and (2) the range of applications made available by technology are broad and feature everything from simple drill-and-practice instruction to more complex project-based learning (Hall et al. 2005).

Most research that focuses on technology within the school system looks specifically at in-school use rather than out-of-school programs. However, many after-school programs closely mimic the classroom in terms of atmosphere and framework, suggesting that the results of these studies can provide valuable insights into the role that technology can play in supporting educational gains (Hall et al. 2005).

3.5 Computers in the Classroom

When computers were first introduced in schools, reformers focused on the innovation itself. Initially, computers simply added another layer of complexity to an already stressed institution. Reformers gave little thought to how technology would integrate into the instructor’s lesson plans and thus influence learning (Haymore Sandholtz, Ringstaff, and Dwyer 1997). Early studies sought to determine the impact of these technologies on student learning, focusing primarily on the individual

technologies used rather than the overall impact of these technologies on the students (Honey, Clup, and Carrigg 2000). However, as technology became more incorporated into the educational system, it allowed for two critical questions: “What have students learned?” and “What do they need to be taught?” (Taylor 2004, 46).

As a vehicle, technology moves teaching in a different way by aiding the transition from conventional teaching methods to a more creative way of teaching that includes different, more inventive learning strategies to promote academic achievement among different types of students. This evolution, however, does not imply simply forgoing traditional teaching methods, and it should be noted that technology is not a cure-all for educational woes. But technology can gradually replace traditional teaching roles with more relevant ones motivated by tools designed to provide students with alternative learning methods (Haymore Sandholtz, Ringstaff, and Dwyer 1997).

Research suggests that one potential benefit of the utilization of technology-based learning is that it can support different learning styles. Computer-based instruction can individualize instruction by pacing lessons at individual rates; it can provide immediate feedback, even explaining the correct answer. The computer is also “infinitely patient” and nonjudgmental (Coley, Cradler, and Engel 1998, 34; Roschelle et al. 2000; Waxman, Yolanda, and Arnold 2001). Technology has the potential for creating a feeling of accomplishment in students with different learning styles who may have been unsuccessful in the traditional classroom setting (Wang, Hinn, and Kanfer 2001). Again, however, technology as a single instrument will not change the status of education; what matters is how the technology is used and how appropriate it is for the

particular context or situation of its users (Goslee et al. 1998; Haymore Sandholtz, Ringstaff, and Dwyer 1997).

Critics of technology-based learning contend that it creates antisocial and addictive behaviors among users, which serve no foundation for the creation of a successful learning environment. However, according to others, computer-based applications such as tutorials and drill-and-practice activities, as well as more complex exercises for advanced students, do engage students in positive ways (Roschelle et al. 2000; Haymore Sandholtz, Ringstaff, and Dwyer 1997).

Will the use of computers in the schools fundamentally change the way students are taught? What empirical evidence is there that supports technology as a means of achieving academic success? Do technology-based learning techniques serve to improve educational gains among low-income and at-risk learners? The following provides a brief and select summary of the research on the effectiveness of technology-based learning in schools.

3.6 Evaluating the Impact of Educational Technology: What the Research Shows

Atkinson (1968) and Suppes and Morningstar (1968) were among the first researchers to study computer technology in education as an aid to educational success. There is numerous evidence available demonstrating the benefits of utilizing technology to engage students and promote academic success. Some research suggests that by combining exploration, creativity, and individualized learning experiences, technology-based tools can take the learner beyond the “memorization of facts” to an in-depth analysis of “how and why” (Burns, Heath, and Dimock 1988, 2). According to

Roschelle and others (2000, 79) cognitive research has shown that learning is most successful when the following characteristics are present: “(1) active engagement, (2) participation in groups, (3) frequent interaction and feedback, and (4) connections to real-world context;” all occur in typical technology-based learning environments.

Numerous case studies have demonstrated that technology has tremendous power to help students acquire, systematize, maneuver, and present information (Means 1997). Effective technology-based learning strategies can result in positive academic outcomes such as higher levels of motivation, mastery of advanced subject material such that the student can then act as the expert, and improved proficiency on state-mandated standardized testing measures (Coley, Cradler, and Engel 1998; Roschelle et al. 2000; Ross, McGraw, and Burdette 2001; Sivin-Kachala and Bialo 2000). In addition, schools that embody technology-based learning report better attendance rates and lower dropout rates among the student population. Students using technology within these environments are challenged, engaged, and more independent (Coley, Cradler, and Engel 1998). Finally, “the use of technology as a learning tool can make a measurable difference in student achievement, attitudes, and interactions with teachers and other students” (35).

A report conducted by Interactive Educational Systems Design summarizes educational technology research from the late 1980s through 2000. Of the more than 3,500 studies of technology-based learning tools, 311 studies were chosen for the investigation. Findings indicated that technology is shown to improve educational outcomes, but simply possessing the technology does not automatically result in

improved academic outcomes; as stated previously, technology is ever changing—and educational technology and the implementation of these technologies must continue to evolve as well. There is evidence that technology can effectively support problem solving skills within mathematics curricula; technology can serve to enhance student motivation in school and self; and it has also been shown to make learning more individualized and student-centered, encourage cooperative learning, and increase teacher-student interaction (Sivin-Kachala and Bialo 2000).

James Kulik spent more than a decade analyzing studies of the use of computers for instruction (Coley, Cradler, and Engel 1998). Kulik found that students who received computer-based instruction generally learned more; students who utilized computer-based learning tools learned their studies in shorter time frames; students who utilized computer-aided instruction showed a higher level of enjoyment of classes; and students who used computers at school showed stronger positive attitudes toward the technology in general (as cited in Coley, Cradler, and Engel 1998).

One of the largest efforts to determine the effects of technology-based instruction was conducted by Mann and Schaffer in 1997. The inclusivity of their data—quantitative, qualitative, longitudinal, and anecdotal—suggested that increased use of technology-based instruction does support academic achievement. After studying fifty-five state school districts in New York state, the authors concluded that schools with more computer-based learning tools and adequately trained teaching professionals resulted in an increase in the average percentage increase of high school students passing the math and English State Regents Exam. Moreover, data made available by

teachers and principals was used to analyze the amount of technology available and in use in the schools; the authors reported that the percentage difference in math and English scores could be linked to the addition of technology in the schools (Mann and Schaffer 1997).

In reviewing benefits collected from the Apple Classroom of Tomorrow (ACOT), a ten-year project in which students and teachers were each given two computers, one for school and one for home, Kosakowski (1998) found that students within the program became more self-reliant, independent learners; showed improvements in math skills and writing comprehension; worked well in groups; and improved their ability to communicate efficiently about complex subject material.

In another ACOT longitudinal study, Haymore Sandholtz, Ringstaff, and Dwyer (1997) found that high school students who participated in the program demonstrated considerable differences when compared to nonparticipants. The ACOT student absentee rate was 50 percent less, with no dropouts compared with the school's 30 percent rate. And although nearly half the students who participated in the ACOT program as freshmen had not initially planned to attend college, approximately 90 percent of them graduated and went on to college, compared to 15 percent of non-ACOT high school graduates with the same attitudes. According to the authors, the greatest difference in the ACOT and non-ACOT students was the methods they used to organize and finish their schoolwork. They continually relied on "inquiry, collaborative, technological, and problem solving skills uncommon to graduates of traditional high school programs" (47).

Another example is Dunbar Middle School in Charleston, West Virginia. The school is credited as being the only secondary school in Kanawha County to meet all of the requirements under NCLB during the 2002/2003 school year. Principal Linda Gilkeson credits technology-based learning programs such as Following the Leaders, a program that provides instructors with a reliable foundation to help them understand state proficiency standards and testing systems. This technology enabled teachers to link classroom instruction with state standards. It also offered teachers straightforward access to student progress reports so they could be compared to state standards. With this technology, educators could turn their focus to more important issues such as curriculum planning and teaching students (Taylor 2004).

3.7 Technology and At-Risk Youth

The large number of unprepared teachers, low teacher expectations, and inadequate classroom instruction constitute a critical issue for students at risk of academic failure (Waxman, Yolanda, and Arnold 2001). The problem is made even more severe by the massive inequalities in our education system—compounding this problem are language barriers, the cycle of poverty, and the sheer degree of those labeled at-risk (Scholastic 1988; Waxman, Yoland, and Arnold 2001).

As stated earlier in this literature review, the most common approach to teaching students labeled at-risk tends to be the traditional, whole class approach in which students sit passively while being delivered teacher-assigned instruction—which we have learned is ineffective as a means of learning for these students (Waxman,

Yolanda, and Arnold 2001). This approach has been labeled a “pedagogy of poverty” for these students (Haberman 1991).

Educators, according to Waxman, Yolanda, and Arnold (2001), should redirect their teaching to include more active student-centered learning, in which the teacher acts as a facilitator rather than the person who primarily delivers the information to the students. Technology is one tool that can aid teachers in this learning method and ultimately bring about measure toward bridging the educational gap in providing meaningful learning experiences to at-risk learners (Means 1997; Waxman, Yolanda, and Arnold 2001; Weinman and Cain 1999).

There is evidence demonstrating that some minority students are kinesthetic learners, meaning they learn better through hands-on activities, within small groups, and through individualized instruction. Technology-based learning tools can provide these students with such opportunities, lending to a more effective learning approach (Waxman, Yolanda, and Arnold 2001).

Several studies have examined the specific ways in which technology can impact students from low-income, low-performing schools. For example, in 1995, researcher Juli Dixon examined the benefits of Limited English Proficiency (LEP) students working together on a computer with students proficient in English during mathematics. The author found that both LEP and English-proficient students in this environment significantly outperformed students who worked in traditional classroom settings (1995).

In conclusion, four barriers to learning can be mitigated through increased access to technology, including geography, socioeconomic status, individual learning styles, and special needs (Rockman 1998). David Thornburgh, director of the Thornburgh Center and Senior Fellow of the Congressional Institute for the Future, was quoted as saying that "increased access to information transforms things we already know and requires lifelong learning. One of the great promises of educational technology is that it makes available to all what was once only available to a few" (as cited in Ross et al. 2001, 43). The following chapter discusses how technology can be used in after-school programs to support the academic success of at-risk youth.

CHAPTER 4

THE USE OF TECHNOLOGY IN AFTER-SCHOOL PROGRAMS AS A SUPPORT TO ACADEMIC ACHIEVEMENT AND THE EXPERIENCES OF YOUTH PARTICIPANTS

High school, within the primary and secondary education system, is the final chance educators have to connect students to their own education and get them on the track toward becoming productive members of society. Getting students ready for a post-secondary education and/or the workforce should be the number one priority for any high school administrator. Unfortunately, the system is failing (Afterschool Alliance 2005). And with more than 28 million working parents, according to the U.S. Department of Education (2000), there just aren't enough hours in the day. Hours that could be used for adolescent development, which is particularly important for at-risk youth who continually struggle with the fundamentals during the school day; while their working parents struggle to find safe, quality, educational activities to occupy their children after school (Pew Partnership for Civic Change 2001; Miller, Snow, and Lauer 2004).

Add to that the fact that young people must prove that they are sufficient in a multitude of subjects including "the ability to read at high levels, do at least elementary algebra, use computers for word processing and other straightforward tasks, solve semistructured problems where hypotheses must be formed and tested, communicate

effectively orally and in writing, and work in diverse groups" and you get a population of students who are more likely than ever to fail because they have only limited time and opportunity to develop these critical skills (Afterschool Alliance 2005; Cohen 2001, 4). In response, many communities have created programs, namely after-school or out of school time (OST) programs, designed to keep youth intellectually and physically stimulated during after-school hours (Pew Partnership for Civic Change 2001; U.S. Department of Education 2000; Girod, Martineau, and Yong 2004).

Conventional wisdom has been that it it more efficient to focus on younger children, with the idea that the problems involving high school students will eventually sort themselves out, or, in the case of after-school, that high school students won't be as interested in attending organized after-school activities as compared to younger students (Afterschool Alliance 2005; Hall, Israel, and Shortt 2004). However, if high school students fail to get the support of caring adults or see their future prospective as grim, they are likely to fall victim to negative peer pressures.

Research confirms that the hours following the school day, between three and six o'clock, represent the peak hours of juvenile crime; in fact, violent juvenile crime rates jump in the first hour following the school day. This time period also embodies the peak hours that kids tend to get addicted to cigarettes, get seriously or fatally injured in a household incident, experiment with illegal drugs, or engage in sexual activity. In addition, these critical hours are said to be the prime time for 16- and 17-year-olds to be in or cause an automobile accident, the leading cause of death for youth (Girod, Martineau, and Yong 2004; Newman et al. 2000).

On the other hand, teens who are engaged in academic activities do well in school and are less likely to be involved in potentially harmful activities. Therefore, the inclusion of an after-school program within an educational system is vital to the success of older youth as they transition from the guardianship of their parents to productive members of society. It should be noted that as young people get older, their wants and needs change dramatically, so any program that has been successful with primary school students must be repurposed to be appropriate for high school students. Additionally, after-school programs geared specifically toward high school students must involve staff who are willing to work much harder at keeping attendance rates up among participants who vote with their feet (Afterschool Alliance 2005).

The good news is in a YMCA sponsored poll of five hundred American teens between the ages of 14 and 17 years of age: of those studied, 67 percent said they would participate in after-school programs if they knew it might help them to improve academically, improve leadership abilities, and extend their reach within the community (McElvain and Caplan 2001).

The following section will discuss the evolution of OST programs, the benefits of these programs to high school youth, primarily those considered at-risk, and the challenges and opportunities faced by program leaders.

4.1 A Brief History of OST Programs

The origin of OST programs can be traced back to the early 1900s in response both to the decline in child labor and increase in the importance of education. Initially,

programs acted as safe havens for children, protecting them against the physical and moral dangers of urban immigrant neighborhoods (Halpern 2002).

Federal funding for OST programs began during World War II, when the U.S. government began its involvement in these programs as a means of providing child care for women entering the workforce. Government funding of these programs ceased following the end of the war when many women were forced out of the workplace and back into the home (Miller, Snow, and Lauer 2004).

The movement regained momentum in the 1960s during Lyndon Johnson's 1964 presidential campaign in which he spoke of an America "where no child will go unfed and no youngster will go unschooled." Thus, Title I of the original Elementary and Secondary Education Act was born (Halpern 2002; Miller, Snow, and Lauer 2004). As a result, OST programs were transformed from simply a refuge for unoccupied youth to productive learning environments (Pew Partnership for Civic Change 2001; Halpern 2002).

Today, OST programs are synonymous with protection, care, opportunity, and play. These programs offer youth opportunities for socialization, academic advancement, and conflict resolution (Halpern 2002). Additionally, OST programs serve multitudes of secondary students and families in communities across the nation by encouraging a better way of life both economically and socially (Kugler 2001).

Three primary societal concerns have contributed to the rise in OST programs: the increase in the number of working parents; the notion that low-income, at-risk

students can succeed academically when provided with more opportunities; and a high rate of teen crime following the school day (Kugler 2001).

The OST movement emerged at a time when renewed life was brought to the mission of identifying and constructing richer learning opportunities for students both inside and outside of the classroom (Hall et al. 2003). Government funding also flowed back into OST programs. In the past several years, the U.S. Department of Education has doled out more than $250 million toward the implementation of after-school programs in rural and urban schools (Lauer et al. 2006). According to Halpern (2002), the institution of these programs is more critical than ever for low- and moderate-income children.

The promise of funds, however, is often tied to lofty programming goals. Program directors are required to provide programs that not only meet the requirements under the No Child Left Behind Act, but also satisfy parents' demands for engaging environments that combine enriching academic activities with social, emotional, and physical development—a tall order for many program directors (Education Development Center 2001; Lauer et al. 2006)

4.2 After-School Programs

There is hope—and evidence—that change is possible. Both after-school and high school reform initiatives have proven that well-designed programs can have a positive effect on students when they take into account the interests, values, and norms of students from different cultures (Afterschool Alliance 2005; Baldwin Grossman, Walker, and Raley 2001; Hall, Israel, and Shortt 2004; Hall et al. 2003; Miller 2003).

Program directors are also realizing that these programs must be less formal than school in order to be successful. Further, to achieve positive outcomes, "programs must find ways to expose young people to the world beyond their immediate experience; to raise their expectations of themselves and their ability to make their lives better, as well as improve the communities they live in. When programs succeed, students have increased motivation to achieve academically and the skills they need to realize their goals" (Miller 2003, 5).

As a result, many after-school program leaders are throwing out the traditional model and designing programs that meet the needs of older, more independent students (Afterschool Alliance 2005). And while there is no single treatment for success—especially with programs designed for high school students—practitioners and researchers alike have discovered that successful initiatives join academic, cultural, and recreational activities to provide youth with enriching activities and engaging learning environments (U.S. Department of Education 2000; Hall et al. 2003).

A report from the Bill and Melinda Gates Foundation recommends high schools focus on a "new version of the Three Rs: rigorous academic coursework, meaningful relationships with instructors who can help students meet high standards, and relevant learning opportunities through internships and community partnerships" (2004). The challenges are consistent throughout the literature: "keeping youth engaged; creating supportive learning environments; maintaining quality staff; and building a system of quality programs throughout our schools, rather than having only isolated pockets of excellence" (Afterschool Alliance 2005, 4). And as noted in the literature, the best

programs create environments designed to meet the specific needs of the communities they serve (U.S. Department of Education 2000; McElvain and Caplan 2001).

The following section presents the evidence of the benefits of after-school programs for older youth. According to Miller (2003, 6), the following is true: "youth benefit from consistent participation in well-run, quality after-school programs; after-school programs can increase engagement in learning; and after-school programs can increase educational equity" which can lead to future success in today's economy.

4.3 After-School Matters: What the Literature Says

After-school matters. A well-designed after-school program can have strong positive effects on youth participants' academic, social, and emotional well-being (Chaput, Little, and Weiss 2004; de Kanter 2001; Education Development Center 2001; Baldwin Grossman, Walker, and Raley 2001; Hall, Israel, and Shortt 2004; Hall et al. 2003; McElvain and Caplan 2001; Miller 2003). Additionally, these programs can serve as complementary to educational institutions by providing vital "nutrients" that discourage failure and encourage success (Forum for Youth Investment 2003, 6). Education officials and parents also report that youth who participate in after-school activities develop better social skills and find more productive ways to deal with conflict (Chaput, Little, and Weiss 2004; U.S. Department of Education 2000). Moreover, OST participants tend to have higher future ambitions, both for their educations and future employment (U.S. Department of Education 2000).

This is especially true for students at risk of academic failure (National School Board Association 2005; Halpern 2002; Miller 2003; Posner and Vandell 1999).

According to Halpern (2002), after-school activities can fill gaps in the lives of at-risk students by tying together family and school, and creating opportunities and resources that the formal educational system might otherwise be unable to provide.

In fact, educational researcher Reginald Clark found that youth from low-income families who participate in productive after-school learning activities for twenty to thirty-five hours per week demonstrated improvements in educational gains in comparison to their nonparticipating peers (1988). In other research, Clark confirmed that reading, writing, enrichment activities, hobbies, and sports result in higher literacy skills when they occur in "high yield" settings—settings such as Boys and Girls Clubs, in which students are enthusiastic, become leaders within the community, and become accountable for their academic and personal success (as cited in Forum for Youth Investment 2004b).

For example, the Boys and Girls Club's Project Learn, established in 1996, focuses its efforts on providing youth participants with "high-yield learning activities," including regular open communication with adults within a particular field of knowledge, free reading, writing activities, assistance with homework, volunteer activities, and mind-building games (Afterschool Alliance 2006, 6). Steven P. Schinke, Ph.D., of New York's Columbia School of Social Work, led an evaluation of the program using a quasi-experimental design. Three groups of students were selected from five separate cities (Afterschool Alliance 2006). Schinke's findings stated that "as program involvement increased, engagement in reading, use of verbal skills, writing, tutoring, and the study of geography all significantly increased as well….There was also

a direct and statistically significant relationship between program involvement and enjoyment of reading, use of verbal skills, writing, and geography" (as cited in Afterschool Alliance 2006, 7).

Drawing from this example, one could assume that how and where people spend their leisure time is associated with important developmental outcomes and that carefully planned after-school programs can play a vital role in shaping these development objectives (Forum for Youth Investment 2004b).

It's also confirmed that positive outcomes are linked to strong levels of program participation (Chaput, Little, and Weiss 2004; Forum for Youth Investment 2004a,b; Miller 2003; Miller, Snow, and Lauer 2004; Posner and Vandell 1999). Ideally, according to Miller, Snow, and Lauer (2004), the time needed to improve mathematics and reading scores appears to be between 45 and 100 hours. Other research suggests that participation rates of at least two days a week over 12 to 18 months are necessary to make sufficient academic progress in behavior and improve attitudes toward school (Grossman et al. 2002). A study of the LA BEST initiative linked strong participation rates (85 percent) to long-term academic gains (Huang et al. 2000).

An evaluation of New York-based The After-School Corporation (TASC) concluded that at-risk students who participated regularly in TASC programs made the highest gains in mathematics scores when compared to other students. The findings were based on data collected in the school years 1998/1999 and 1999/2000 from one hundred TASC projects operating in New York City in grades four through twelve (White et al. 2001). Improvements in mathematics scores were most clearly apparent for

participants who scored in the lowest of four aptitude levels during the year prior to participating in the TASC program. The study also concluded that youth participants from low-income families showed increasing gains in mathematics after two or more years of regular participation (Afterschool Alliance 2006; White et al. 2001).

Strong participation in after-school is also positively correlated with better attendance during the regular school day (Afterschool Alliance 2006). “Approximately half of youth who participated in three quarters or more of the available Texas 21st Century Community Learning Center (CCLC) activities missed five or fewer days of school during the fall semester, compared to 17 percent of youth who participated in less than one quarter of the available activities. The corresponding percentages for spring were 33 percent and 26 percent, respectively. Youth who participated in 50 percent or more of the available 21st CCLC activities were absent approximately two regular school days less in the spring term than youth who participated in less than 50 percent of the available 21st CCLC activities” (Harvard Family Research Project 2004, 10).

One critical examination of program participation is the distinction between participation by way of simple attendance and active program participation. “Attendance is a necessary but not sufficient indicator of participation; assessing youth participation and its links to outcomes requires the creation of multiple indicators that capture information about involvement and engagement, as well as attendance” (Chaput, Little, and Weiss 2004, 2). These indicators include intensity, duration, and breadth.

Intensity, also referred to as dosage, is “the amount of time youth attend a program during a given period. Intensity has been measured in terms of hours per day, days per week, and weeks per year; it varies across programs and participants. Some youth attend one day per week, while others go to the program every day after school” (Chaput, Little, and Weiss 2004, 2). Intensity is positively correlated with academic and nonacademic outcomes including higher grades in school, fewer behavioral problems, more positive future education and occupation goals, and better self perception (Chaput, Little, and Weiss 2004).

Program duration measures the history of attendance (Chaput, Little, and Weiss 2004; Forum for Youth Investment 2004a, b). Duration has been positively linked to predicting youth outcomes (Chaput, Little, and Weiss 2004). One interesting example is LA’s BEST programs which reported a number of benefits after only two years of participation. In the case of The After-School Corporation (TASC), the program did not appear to have an impact on the achievement after one year, but did after two and three years of participation (Forum for Youth Investment 2004a,b). Here a consistent message emerges from research on duration: “Duration of at least two years is positively related to youth outcomes. Larger differences emerge in outcomes as duration increases. However, it is unclear at this point how longer durations, such as five years, are associated with indicators of youth development” (Chaput, Little, and Weiss 2004, 5). With regard to intensity, it is unclear “if there truly is a threshold or if these findings represent the beginning of a linear relationship (6).

Finally, breadth, or variety, is also important; however, it often receives the least amount of attention. In an attempt to look at breadth of participation, researchers Baker and Witt concluded that the number and variety of activities that youth participated in during out of school time programs mattered—those who experienced three or more activities had better outcomes than those who only participated in one or two (as cited in Forum for Youth Investment 2004b).

The purpose of these indicators is to aid researchers in drawing a more comprehensive assessment about participation rates in after-school programs and youth outcomes. "Combining indicators may answer questions about the differences in outcomes of youth who have low intensity over long durations versus youth who have high intensity over short durations" (Chaput, Little, and Weiss 2004, 5).

For example, in a study involving the San Francisco Beacons Initiative, program evaluators studied participation patterns using duration and breadth. Duration was defined by the number of sessions attended by individual participants; breadth was measured using participation rates in program activities. Findings indicated that participants who attended three sessions at the Beacon Centers and participated in "education and other activities were more likely to experience increases in leadership and nonfamily support, report that they put effort into school, and feel a greater sense of self-efficacy." Evaluators also found, however, that youth participants did not report increased levels of confidence toward social situations or improved grades in school. In contrast, "youth who participated in the Centers for three or more sessions but *only* in

education activities only reported increases in school effort as a result of participation" (as cited in Chaput, Little, and Weiss 2004, 5).

4.4 Bridging the Achievement Gap

Over the past decade, "a political consensus has developed in the United States regarding the need for all students to gain academic skills considered necessary for success in a global economy" (Miller 2003, 10). In assessing these skills, high-stakes tests have emerged which require that a specified level of performance be met in exchange for graduation, grade promotion, or both, which often create obstacles for many learners, especially those at-risk of educational failure (D'Amico 2001; Hall, Isreal, and Wellesley Centers for Women 2005). And despite nearly a half century of education reform designed to provide at-risk learners with knowledge necessary to succeed academically, the achievement gap—"the differences in school performance between rich and poor children, between children in affluent communities and those living in poor communities, and between white children and Asian children on one hand, and African American and Latino children on the other—persists" (Alexander, Entwistle and Bedinger 1994; Miller 2003, 12; Traub 2000).

Unfortunately no single, identifiable factor causes this gap. According to a report commissioned by the Nellie Mae Education Foundation, "it is a result of complex individual, familial, neighborhood, and societal circumstances. Many of which are linked to poor achievement—low expectations by teachers, students' alienation from the school environment, lack of enrichment activities, weak social networks, and poor

quality education—may be ameliorated, at least in part, through participation in after-school programs" (Miller 2003, 12).

In fact, for many low-income children, after-school programs have been one of the only solutions to tightening the gap by improving reading and math scores. This is largely due to an atmosphere in the after-school program that allows children to relax and focus on difficult content areas (Afterschool Alliance 2006; U.S. Department of Education 2000; Lauer et al. 2006; Miller, Snow, and Lauer 2004).

For example, North Carolina's Support Our Students participants who were the furthest behind and had the most risk factors (e.g., free/reduced lunch status, single-parent households, and the like) made the greatest gains on their End of Grade (EOG) achievement test (Afterschool Alliance 2006).

4.5 How After-School Programs Benefit Youth: The Theory of Change

The theory of change describes a set of assumptions about how a program's activities can achieve the initiative's long-term goals (Miller 2003; Walker and Arbreton 2004). This theory promotes the understanding that connectivity between programs and outcomes (Miller 2003). Within this evaluation, the theory of change addresses the following question: How does participation in technology-based after-school programs promote academic achievement among at-risk high school youth?

Based on work by James Connell and other researchers, if after-school programs provide safe and welcoming settings with high-quality activities, then young people will participate. Further, how students spend their time can have important implications to their academic success in school. Therefore, in turn, youth who participate will have

positive developmental experiences such as meeting the social, emotional, cognitive, and physical needs of adolescence. These experiences would then contribute to their academic standing, social well-being, and productivity now and into the future (Miller 2003; Walker and Arbreton 2004).

4.6 Effective Program Characteristics and Strategies

An after school program designed specifically for high school youth cannot be the same as those created for early adolescents. Further, the characteristics and capabilities of the program administrator are vital to the success of the program, and programs for high school students are most successful when they offer engaging activities while at the same time providing participants with beneficial developmental opportunities, such as stable, long-term relationships (Hall, Israel, and Shortt 2004; Herrera and Arbreton 2003).

In general, according to Hall, Israel, and Shortt (2004), the most successful programs dedicated to the interests of high school-age youth employ active participation; incorporate the ideas and opinions of youth participants; offer job training and employable skill building; offer youth the opportunity to get involved within their community; and collaborate with schools and community leaders.

Incorporating each of these features into an out of school time program is no small undertaking. “In addition to each one imposing its own implementation challenges, these elements reflect an integrated set of practices that hang together in important and complex ways” (Hall et al. 2003, 24). The integration of these variables

differs across programs based on program goals, accessible resources, and the particular phase of development of the program and its participants (Hall et al. 2003).

Three critical elements have been proven critical to the success of after-school technology centers. These include program planning and implementation, program staff and management, and appropriate learning-based strategies.

4.7 Program Planning and Implementation

The initial key to any successful after-school program is to define a program's vision and goals. Some programs focus on academic achievement, others spotlight safety or dropout prevention; some even attempt to balance recreation and academic activities. Program planning is critical to the success of any technology-based program and should include everyone with a role in the program, including staff, teachers, and the school district (Education Development Center 2001; U.S. Department of Education 2000; Harvey and Shortt 2001; McElvain and Caplan 2001). And although not all things can be anticipated through the planning process, the goal of planning should be to create realistic, workable goals toward the creation and operation of an after-school program that meets a set of established goals (Education Development Center 2001).

Programs, however, "that try to fulfill too many goals are likely to achieve none" (Raley, Baldwin Grossman, and Walker 2005, 3). Program practitioners need to consider one vital question: "What can the program successfully accomplish?" In answering this question, program leaders should assess what their program can reasonably achieve given their existing resources. This could require difficult but central choices in program design (Raley, Baldwin Grossman, and Walker 2005).

One way to keep a realistic perspective is to conduct a needs assessment—a review of everything needed in order for the technology program to function effectively, including a list of the necessary resources (Education Development Center 2001).

For example, while a program may want to improve educational performance and promote community involvement amongst participants, it may only have the resources to effectively accomplish one of those goals. Rather than trying to succeed in both goals, it may be in the best interest of the program and its participants to focus the energies on the outcome that has the greatest likelihood for success (Raley, Baldwin Grossman, and Walker 2005).

Similarly, if a small program has the resources to provide a safe haven, basic homework help, and a few recreational activities, it should choose a specific, achievable goal, such as improving social skills and teaching conflict management, rather than claim to increase academic performance (Education Development Center 2001; Raley, Baldwin Grossman, and Walker 2005).

The second question program leaders need to ask is, “Are our strategies in line with our goals?” Too often program staff ask themselves the first question but neglect to think comprehensively about the second. What would students like to learn or do in a technology-based program? Do the offered activities all work intentionally toward the goal? To achieve a goal, a program must serve the “right youth” with the “right stuff” for the “right period of time” (Raley, Baldwin Grossman, and Walker 2005, 3).

Establishing clearly articulated goals and benchmarks and revising them periodically is a particularly crucial step in the planning process. Clearly defined goals serve a number of purposes. They help to keep staff and leaders focused on the aims of the program; remind the youth, parents, and other stakeholders why certain decisions are being made in the design and implementation of the program; and serve as the basis for evaluating the progress of the program. Benchmarks establish milestones and should also be evaluated and measured throughout the duration of the program. Like goals, benchmarks should have specific time frames (Education Development Center 2001).

4.8 Program Management

Following the design of a program's core, the next step is to launch and maintain the program.

Despite the fact that many youth practitioners have become extremely inventive when it comes to creating engaging out of school time programs, they agree that it is difficult to maintain programs designed to promote positive, long-term academic and personal outcomes for high school youth (Hall, Israel, and Shortt 2004; Herrera and Arbreton 2003; Raley, Baldwin Grossman, and Walker 2005). The question is: How can out of school time programs attract new participants while retaining current members (Raley, Baldwin Grossman, and Walker 2005)?

There are several reasons why high school students are more difficult to attract and retain in after-school programs: high school students typically have no desire to hang around after school; high school students have busier schedules, such as work, family, siblings, or home responsibilities; high school students are not as inclined as

primary students to frequently attend a program that occurs multiple days per week; and high school students, generally, cannot be forced to participate in after-school programs (Hall, Israel, and Shortt 2004; Herrera and Arbreton 2003).

4.8.1 Outreach and Communications

The first vital component of successful program management is collaboration. The goal is to bring stakeholders from a variety of levels together in an effort to build bridges within the community that sustain strong after-school programming (U.S. Department of Education 2000; Harvey and Shortt 2001; McElvain and Caplan 2001). Further, effective communication is a critical component of any successful after-school program. It helps the program operate more smoothly internally, and it helps build recognition and support internally and externally (Harvey and Shortt 2001; McElvain and Caplan 2001).

Even the best-planned program will not succeed without proper outreach into the community it serves. Call it outreach, communications, or marketing, but in establishing a program focused on technology and youth, as in running any kind of business, you will need to get the word out locally (Education Development Center 2001).

"Good coalition builders and collaborators look for ways to expand networks and connections among groups for both practical and philosophical reasons, although the more diversity wanted or needed, the more difficult it will be to agree upon goals and strategies" (Mizrahi 1999, 12). A unified approach means working through

differences and finding a common ground from which to work (Harvey and Shortt 2001).

Building coalitions should begin early, before the program opens its doors to participants. If done properly, outreach and communications will help to establish good ties with the school and the community, bringing the kids whom the program has been designed to help (Education Development Center 2001).

Program implementers should strive to form partnerships with leaders from diverse sectors of the community, such as local government, law enforcement, other after-school programs, school districts, and foundations, as well as leaders from the ethnic, racial, and religious groups that make up the community. Each will contribute a unique perspective on serving children and youth and a particular means for locating funds. Ultimately, the more voices on board, the broader the impact a program can make (Harvey and Shortt 2001).

4.8.2 Youth Recruitment

"Every program needs to attract ready recruits—youngsters who are eager to participate voluntarily or those with parents who actively support their involvement. These young people give programs a well-rounded culture, making all youth feel welcome" (Raley, Baldwin Grossman, and Walker 2005, 3).

However, finding youth to fill the roster is not a given: program coordinators must build a positive relationship with a larger community so that parents, educators, and others in the community will feel comfortable supporting the initiative (Education Development Center 2001).

Further, “whether programs are in their first year or their tenth, the task of recruitment is ongoing. Seasonal shifts in programming—and youth’s changing interests and annual grade promotions—means programs must continually seek to reengage old participants and attract new ones” (Raley, Baldwin Grossman, and Walker 2005).

Strategies for successful outreach initiatives include newsletters and brochures, local print and broadcast media, community bulletin boards, promotional items, and conversations at local gathering places such as schools or community centers (Education Development Center 2001).

Because of the number of youth-based after-school programs offered in school districts nationwide, it is essential that programs treat in-school staff as partners. These persons cannot only refer students, but they can help program leaders to identify possible youth participants. And while most program leaders reach out to the school administration, it should be noted that principals possess a great deal of influence on the success of an after-school program, particularly those tailored to underprivileged youth. For example, directors for the Philadelphia Beacon initiative opened the lines of communication about their program with in-school personnel during scheduled staff meetings, through monthly bulletins, and through individual conversations with teachers and school counselors. The lesson here is that regular face-time with school staff is vital to program recruitment as well as keeping key players involved in program activities (Raley, Baldwin Grossman, and Walker 2005).

In marketing programs to underperforming youth, staff members need to offer straightforward information about the overall goals of the program while framing the activity as a fun opportunity for academic enrichment, not remedial education (Raley, Baldwin Grossman, and Walker 2005). For younger youth, advertising the fun side of programs is particularly important. For older youth, practical incentives such as academic credit, makeup credit for failed classes and GED support can often sell themselves (Raley, Baldwin Grossman, and Walker 2005).

Further, remaining sensitive to the potential stigma of a remedial program is critical. The director of the YET program for teens explains her approach: "When you're working with something as sensitive as low reading levels with high school students, you have to let them know they can trust you with something that could be so embarrassing for them" (as cited in Raley, Baldwin Grossman, and Walker 2005, 13).

4.8.3 The Right Staff

Another critical component of managing an effective after-school program, especially for older children, is selecting and retaining quality personnel. All of the computers, plans, and supplies in the world are meaningless without dedicated, well-trained, fulfilled, and caring staff members (Education Development Center 2001). Further, youth are more likely to attend and bring friends to after-school programs led by people—whether teachers, college students, or other community members—who they like and respect (McElvain and Caplan 2001).

One of the most essential ingredients to sustaining successful after-school programs is hiring reliable, stable staff members that can relate to the students and share

a common vision about the program's objectives (Education Development Center 2001; Hall, Israel, and Shortt 2004; Raley, Baldwin Grossman, and Walker 2005).

For example, the most consistent association with participant satisfaction within the TASC New York program was staff satisfaction. "Projects where staff satisfaction was high, students tended to report stronger connections to the TASC Project, more new experiences through the project, and higher levels of trust in the TASC staff" (White et al. 2001, 6). Other strong associations with positive student reactions to the program included site coordinators' reports that (1) TASC was the project's primary source of training and technical assistance, (2) the student was working in the Project for the second consecutive year, and (3) the student had previously worked in a school setting (White et al. 2001).

4.8.4 The Right Mix of Activities

Ultimately, after-school programs hinge on what they provide (de Kanter 2001). Individual activities should operate according to a few basic principles: "They must be interesting to participants and doable at participants' current level of skill or knowledge, but intentionally and incrementally challenging to help them grow." This means that by offering a variety of activities, programs can help to expand youth experiences beyond what's comfortable, into the exploration of new environments. Additionally, according to researchers, participation in a range of activities is related to more optimistic outcomes—and aids in program retention as student interests evolve (Raley, Baldwin Grossman, and Walker 2005, 4).

4.8.5 Strategies for Maintaining Participation

As previously stated, engaging activities and conscientious staff are critical to keeping youth interested and participating in after-school programs. Another critical component is maintaining the right combination of staff and youth to ensure the continual development of strong, positive relationships (Raley, Baldwin Grossman, and Walker 2005).

As a rule of thumb, teens—like adults—will keep an eye on the bottom line: what can they acquire from a particular activity. Therefore, it it critical that after-school programs targeted at teenage youth focus on career and college, and offer participants opportunities to prepare for these future paths. It's also important that these programs remain flexible; high school students are generally not interested in heavily structured activities, therefore programs can begin with "drop-in" activities which can serve as a gateway to more structured activities. For example, the George Washington High School Beacon Center in Philadelphia offered participants the opportunity to spend time on the program's computers playing games and/or hanging out with their peers during lunchtime. This time gave the program's staff the opportunity to casually connect with students while encouraging them to become regular program participants (Raley, Baldwin Grossman, and Walker 2005).

Encouraging active participation in after-school programs from at-risk youth has the greatest potential for the greatest rewards. Therefore, it's important that program directors strive to entice youth to become involved in after-school programs through positive yet effective recruiting strategies. At-risk students are often the last to

voluntarily participate in an after-school program, especially one that focuses on academic activities. However, even when youth show up, keeping them engaged through effective learning techniques is yet another challenge (Raley, Baldwin Grossman, and Walker 2005).

4.9 Learning-Based Strategies: Working with Technology

Regardless of what the program is attempting to teach or the age of the youth who populate the program, certain effective teaching techniques should be routine in the program. These include promoting positive values and attitudes, providing step-by-step demonstration, and giving good directions (Education Development Center 2001). The statement suggests that learning, not technology, is the primary objective (Education Development Center 2001).

However, research and trends show that technology applications can be used to aid students and schools in maximizing the effectiveness of their investments (Valdez et al. 2000). Although technology is not a cure-all for education itself, it is a powerful and captivating learning tool designed to complement the key ingredients for learning (Education Development Center 2001).

According to researchers, the key to successful technology-based learning environments are that they function as an integrated component of a comprehensive youth program, serve as a respected and active part of the after-school program, and provide enough workstations and suitable software appropriate for learning (Education Development Center 2001). Further, youth tend to be more interested in technology-

based programs when they are presented with options, technical support, and opportunities to reflect and discuss subject material (Alexander and Wade 2000).

In general, teens are more attracted to programs that integrate technology into all aspects of the program rather than utilizing a single technology component (Girod, Martineau, and Yong 2004; Wellesley College 2006). It would seem, therefore, that technology in supporting educational gains would serve as an entry into after-school programs. Fortunately, according to Kugler (2001), the computer club is one of the most popular after-school programs.

One example of a successful technology-based after-school program is the Kids Learning In Computer Klubhouses! (KLICK!), a 21st-century technology-based after-school program created to promote youth development using computer technologies. Supported by funds from the U.S. Department of Education and the Kellogg Foundation, KLICK!, at the time of the study, served ten middle schools in both rural and urban communities throughout the state of Michigan (Girod, Martineau, and Yong 2004).

On any given day, KLICK! attendance reported approximately two hundred students, across ten schools, who spent time, voluntarily, at the computer clubhouse building Web pages, surfing the Internet, chatting online, filming and editing digital movies, and playing games. Additionally, many KLICK! teens contributed to the consortium newsletter, participated in video game and robotics competitions, were employed by teachers and community members to provide computer training and assistance, and maintained extensive local clubhouse and community Web sites. One

interesting reality of the program was that the primary participant was a struggling, at-risk teen (Girod, Martineau, and Yong 2004).

Program evaluation results found that KLICK! was most effective for students who initially valued school the least; in other words, KLICK! appeared to have important effects on at-risk participants. Further analysis indicated that teens reporting lower GPAs gained more in self-reported experience using computer technology than higher-reporting GPA teens. Again, according to the evaluators, KLICK! appeared to be most effective for teens in most need of intervention, in this case, low-GPA teens. As one adult coordinator was quoted as saying, and another concurred: "I find that it is consistently the low-achieving, disinterested, and apathetic student who most comes alive at KLICK!" (Girod, Martineau, and Yong 2004).

In other research, after-school programs that effectively incorporate technology must be "organic, drawing from and responding to the real lives, histories, and experiences of the youth and communities they serve" (Benton Foundation 2003, 24). Successful programs encompass the racial, ethnic, cultural, and religious elements of the targeted community. Examples of these types of programs are Community Technology Centers (CTCs).

CTCs were created in response to the concern of the digital divide. These centers make technologies available to socially or economically disadvantaged communities (Mark, Cornebise, and Wahl 1997).

Researchers are finding that low-income communities are benefiting from technologies such as the Internet and networking systems that work to rebuild their

communities. Evaluations of CTCs, such as community networks and other after-school programs such as the Boys and Girls Clubs, show that integration of technology into community building can, indeed, progress rapidly (Ba et al. 2001).

Using a qualitative approach, Mark, Cornebise, and Wahl studied five CTCs representing an array of participants (e.g., adults, children, minorities, low-income, varying levels of education attainment), a variety of services (e.g., health care, job training, child care, employment offices, and youth programs), and settings (e.g., a large public library, a cable access center, a standalone community center), as well as a diversity of geographic locations. Researchers identified and categorized the wide range of (primarily positive) individual and community impacts evident at the chosen CTC sites. The beneficial impact of the CTC on participants included an increased access to employment opportunities, increased job and literacy skills, an improved outlook on learning and educational goals, and greater comfort with technology as a tool for accomplishing goals. Additional benefits included increased civic participation, productivity, and feelings of pride, achievement, and competence (1997).

In other research, Breeden and others conducted five case studies of community centers that offered low-income residents the opportunity to use computers and online communications to develop skills such as English literacy, office computer applications, and using the Internet. All of the programs surveyed provided services such as tutoring, language training, economic development, and job skills training in addition to computer access and training. In fact, each program existed to serve some of these other purposes before computer use was incorporated into its activities. While the intensity of

the focus on technology varied, each was committed to including technology as a component of its programs (1998).

Success factors identified in the study for these programs include: strong leadership grounded in community strengths and needs, respect for people served, broad inclusiveness and diversity, and support for existing community institutions (Breeden et al. 1998).

4.9.1 Getting It Right

School-based after-school programs are a promising strategy for engaging children and youth in a variety of positive social, recreational, and academic activities. The programs hold the potential for providing young people with opportunities to develop the skills, roles, and relationships essential to their ultimate success while also sheltering them during a time of vulnerability (Baldwin Grossman, Walker, and Raley 2001, 15). An effective after-school program works much like a puzzle: every piece has its place, and if something is missing, its full potential remains a mystery. Success hinges on making the 'right' fiscal choices and fitting the 'right youth' to the 'right stuff' for the 'right period of time' (Raley, Baldwin Grossman, and Walker 2005, 3).

"To attract the right young people, programs need enthusiastic participants to spread the word. To excite participants and keep them coming back, programs need a variety of well-organized activities. To offer well-organized activities, programs need a stable staffing structure that minimizes turnover, and this, in turn, allows children and youth to develop trusted adult relationships—another factor that motivates young people to come back month after month. When program components work, they build

on one another to form a strong foundation. But a problem in one area can have a domino effect, hurting the program as a whole and weakening the benefits to children and youth" (Raley, Baldwin Grossman, and Walker 2005, 5).

4.10 Challenges Faced by After-School Programs: The Realities

To recap, in order to be successful, after-school initiatives should work to sustain youth development in supportive, engaging environments. However, the realities are that programs face consistent challenges. Some of the most common challenges include government mandates, resources, and lack of participation.

4.10.1 Government Mandates

With the No Child Left Behind Act pushing schools across the country to improve student performance, the number of academic remediation programs has multiplied, and many urban school districts now host their own extended day programs (Raley, Baldwin Grossman, and Walker 2005).

These programs more often than not involve an emphasis on high-stakes testing and raising student academic performance. Therefore, OST programs are under growing pressure to demonstrate their role in filling the gaps and supporting academic achievement, particularly for middle and high school-age youth (Hall, Israel, and Wellesley Centers for Women 2005; Halpern 2002). Achieving the desired academic outcomes of participants is often an uphill battle for many program leaders because the learned skills of mathematics and reading fundamentals is a long-term, collective process that requires constant effort. And even if the program does intensely serve its participants, it is unlikely that it will dramatically increase the school's overall test

scores at current levels of funding because the proportion of students in the school who attend these OST programs is usually limited. However, measurable academic outcomes are possible for those who regularly participate over a period of time (Miller, Snow, and Lauer 2004).

4.10.2 Resources

Keeping schools open longer and transforming their facilities into youth and community centers expands the benefit derived from investment in these public buildings (Baldwin Grossman, Walker, and Raley 2001, 3). Therefore, school-based after-school programs are becoming the go–to solution for policymakers as they try to determine solutions for failing grades, gang involvement, violent behaviors, and substance use of at-risk youth (Baldwin Grossman, Walker, and Raley 2001).

Further, locating an after-school program in a school building provides a program with several important obvious advantages. First, school buildings contain gyms, libraries, auditoriums, and computer labs which are all useful to after-school programs. Second, school counselors, teachers and principals all have access to potential youth participants. Third, after-school programs who align themselves with a particular school often times automatically gain the support of parents who might otherwise hesitate in allowing their children to participate in the programs activities. However, the use of schools by an after-school program also has its downside (Baldwin Grossman, Walker, and Raley 2001).

The primary downside is that most schools are open seven days a week, 365 days a year. This can have an impact on after-school program activities that take place

within a school, forcing programs to compete for space, particularly in the gym or computer labs (Baldwin Grossman, Walker, and Raley 2001). Crowded school buildings are only part of the logistical problems facing after-school programs. School administrators are held accountable for the maintenance of school property and are therefore cautious about letting after-school programs use the school grounds unless they feel secure that all materials will be respected. Limited in their resources to finance the maintenance and replacement of school facilities and equipment, they often feel the need to restrict and monitor use of such special rooms as computer labs, libraries, auditoriums, and gyms with newly coated floors (Baldwin Grossman, Walker, and Raley 2001).

And given the tight budgets that most principals operate under, it is not surprising that there is tension between schools and program coordinators regarding the use of the building, as well as student behavior in after-school activities. When materials break, it means that that both the schools and after-school programs have to either go without or accept potentially costly repairs which may, because of budgetary constraints, forgo the purchase of other necessary school-related tools such as computers or additional class aids. Therefore, more public funds are needed to maintain school facilities if they are to be open for longer hours and used more intensively (Baldwin Grossman, Walker, and Raley 2001).

It is important to keep in mind that these programs face very real challenges in finding adequate resources—especially the space to house them and the funding which

limits both the number of slots and parental voice (Halpern, Spielberger, and Sylvan 2001).

4.10.3 Participation

One of the greatest challenges in youth programming is that hopes and expectations are typically not aligned with facts and realities (Noam 2005). As often happens with any good intervention, people have high hopes for after-school programs, especially those targeting at-risk youth. Some hope after-school programs will help students gain the skills necessary to succeed in school and beyond, including social skills, anger management, responsibility, leadership, study skills, and volunteerism. Still others want these programs for their positive influences on youth in keeping them away from criminal or other dangerous behaviors (Miller, Snow, and Lauer 2004). But youth often do not want to come daily or even regularly, thus it becomes impossible to have sufficient "dosage" to accomplish these ambitious effects (Noam 2005).

Participation is a key issue in youth development programming. Simply put, if youth do not attend, they will not experience the positive benefits these programs are known to provide (Anderson-Butcher, Newsome, and Ferrari 2003).

Many challenges to participation exist. For instance, youth's involvement in these programs is typically voluntary, and youths indicate their satisfaction or dissatisfaction with the activities by voting with their feet. The desired outcomes of these programs require long-term participation, so youths must attend with sufficient frequency and duration. Maintaining this involvement over time is especially challenging among adolescents, as participation tends to decline as youths age. Because

of these challenges, it is important for youth development organizations to understand the various factors associated with participation and the outcomes associated with the involvement in the various types of programs offered (Anderson-Butcher, Newsome, and Ferrari 2003).

One major problem that was greatly impacted by lack of participation is the 21st Century Community Learning Centers program created to provide academic, enrichment, and recreational activities in public schools during the after-school hours. First-year findings, in general, found no significant impact on academic achievement in reading or mathematics for youth participants. One of the key reasons may have been lack of participation, averaging less than two days per week, even though the programs were typically available four to five days per week; and many programs did not collaborate enough with community organizations and were slow to sustain themselves after the 21st Century grant had ended. However, on a more positive note, most programs were able to gain support from and create working relationships with school principals and teachers. Further investigations revealed that the technology component appeared to have been well implemented (Deke et al. 2003; Liu at all 2002).

Finally, even if youth enjoy the programs and make a strong commitment, it is not clear that the high expectations placed on programs can be met. Consider how many hours youth spend in school, yet the results are often mixed (Noam 2005).

One way schools are tackling the issue of participation is to implement school-based programs that encourage participation through direct contact and mandatory involvement. For example, Communities in Schools (CIS) is a nationwide organization

that works within schools to “meet youth where they are” (Hall, Israel, and Shortt 2004, 8). Within the Dallas/Fort Worth Metroplex, CIS has staff in three Fort Worth schools; their mission is to connect high school youth with local youth-centered community organizations. CIS also provides high school youth with career development training—services that came highly requested by students. Fort Worth leaders applaud the program’s ability to provide youth with stable, responsible, long-term relationships while connecting them with other community resources (Hall, Israel, and Shortt 2004).

Another school-based initiative is the Advancement Via Individual Determination (AVID) program. This initiative is an in-school academic support program for grades four through twelve, designed to aid academically minded students for college readiness and success. The program is designed as a class elective for academically average students in advanced classes and seeks to level the playing field for minority, rural, low-income, and other students who might be the first in their families to attend university. According to the organization, almost all AVID students who participate for at least three years are accepted to college, with roughly three-quarters getting into four-year universities.

In a recent study of AVID in ten Texas high schools, researchers found that participants outperformed their classmates in the areas of standardized testing and had better school attendance records during the 1999/2000 academic year. More impressive, according to the research, are the percentages of AVID students prepared to graduate on advanced graduation plans and the percentages of AVID students enrolled in advanced study courses (Watt, Poweell, and Mendiola 2004).

4.11 Discussion

Within the public education system, high school is the last time educators realistically have an opportunity to engage students and get them on track for a ripe future. Unfortunately, the system is failing. Coupled with the fact that parents are working longer hours, students, especially those considered at-risk, are failing to get the attention and resources they need to learn the new basics in order to pass state-mandated performance examinations. In response, out of school time or after-school programs have reemerged to keep youth engaged intellectually and developmentally during after-school hours (Pew Partnership for Civic Change 2001; U.S. Department of Education 2000; Girod, Martineau, and Yong 2004). These programs offer youth safe, structured environments and connections to mentors and basic services. In order to be successful for high school youth, these programs must expose youth to experiences beyond their everyday while focusing on academic skills and career development opportunities. The challenges are keeping youth engaged, maintaining active participation levels, ensuring adequate resources, hiring the right staff, and reaching expectations.

But with engaging activities, creative and inventive environments, and knowledgeable and qualified staff, after-school programs can prove successful in not only bridging the achievement gap, but also in building hopeful youth. To that combination add technology-based learning, which is self-pacing and puts the control in the hands of the student. The result is a dynamic opportunity to support the achievement of at-risk high school students.

CHAPTER 5

DATA, MEASURES, AND METHODS

The following chapter provides a detailed data analysis of the socioeconomic status of the community served by the Martin Luther King Jr. Community Technical Center (MLK CTC), as well as a description of the MLK CTC's technology-based after-school program, offered to five participating Dallas schools within the Dallas Independent School District (DISD). Following is the detailed methodology used to determine program effectiveness on its participants. Concluding remarks will then be made with regard to the limitations of this study.

5.1 Background: Serving Low-Income Families

For more than 30 years, the Martin Luther King Jr. Community Center has served the low-income and racially diverse communities surrounding its South Dallas location. The center offers a comprehensive number of services including health care, legal services, utility payment center, companionship and recreational outlets, job training, and economic development opportunities.

The population served by the MLK Community Center is generally concentrated within the 75210 and 75215 zip codes located in South Dallas, just south of Interstate 30. A large part of 75210 encompasses Fair Park, and much of the western/southern portion of 75215 contains Trinity River frontage and floodplain. The

land area within the 75215 zip code is the largest with 7.4 square miles; the land area within 75210 covers approximately 4.4 square miles.

The following socioeconomic analysis provides a detailed examination of the environment surrounding the MLK Community Center and its school-aged residents. It is important to examine this data as it describes, using objective statistical data, the social and economic conditions facing these at-risk students. Although not all of the high schools served by this program are located within these two zip codes, their proximity to the MLK Community Center suggests that they reside in similar economic and social conditions.

5.2 Demographic Composition

According to the 2000 U.S. Census, an estimated 28,021 people live in the area served by the MLK Center. The population is predominantly African American (83%) followed by Hispanic or Latino residents (13%). The percentage of the population under the age of 18 is 30%; the percentage of the population under the age of 18 in the city of Dallas is 26%. The area is generally described as economically depressed with a median household income of $15,551 compared to $38,276 for the city of Dallas; roughly 45% of families live in poverty. Of those participating in the labor force, 23% were unemployed during the 2000 U.S. Census. Approximately 50% of the total population had not completed high school with a diploma or equivalency certificate. Table 1 presents the current demographic composition of the MLK Center's population as compared to the city of Dallas.

Table 1: Population by Race

Location	Total Popula-tion	White Alone	Black or African American Alone	Total Population Hispanic or Latino	Other* Race Alone	Some Other* Race Alone	Two or More Races
Dallas	1,188,204	34.6%	25.6%	35.6%	2.7%	0.1%	1.1%
MLK CTC	28,012	2.2%	83.2%	13.4%	0.3%	0.0%	0.9%
75210	9,369	1.7%	81.3%	16.0%	0.4%	0.0%	0.6%
75215	18,643	2.5%	84.1%	12.1%	0.2%	0.0%	1.0%

*Other includes: Asian, American Indian, Alaska Native, Native Hawaiian, or Other Pacific Islander

Source: U.S. Census Bureau, 2000 Census, SF3

5.2.1 Age

The largest percent of residents served by the MLK Community Center are under the age of 18 (30%) as illustrated in Table 2. The working cohort makes up approximately 56% of the population; most being between the ages of 30 and 44. Thirteen percent of the population is 65 years old or older. In relation to the city of Dallas, the MLK community contains a larger percentage of school-aged residents where the city has a higher percentage of residents between the ages of 18 and 64.

Table 2: Population Distributions by Age Cohorts

	MLK Center		Dallas	
Total	*Number*	*Percentage*	*Number*	*Percentage*
Under 18	8,042	30.0%	314,420	26.5%
18 to 29	4,599	16.4%	265,668	22.4%
30 to 44	6,199	22.1%	296,754	25.0%
45 to 64	5,135	18.3%	209,104	17.6%
65 and over	3,677	13.1%	102,258	8.6%

Source: U.S. Census Bureau, 2000 Census, SF3

5.2.2 Family and Household Income

As described in Table 3, in 1999 there were an estimated 10,251 households in the MLK Center's service area. The median income for these households was $15,551, with more than 79% of households earning less than $35,000, and more than 48% earning less than $15,000. The median income for the area surrounding the MLK Center was only 41% of the city's estimated median income of $37,628.

Household income may also be impacted by the number of unrelated individuals living in, and presumably contributing to the household. The largest percentage of family households served by the MLK Community Center (36%), made less than $10,000 in 1999. The next largest group is $15,000 to $24,999 (19% of MLK Center's population). This indicates that 55% of MLK Center's population generally makes less than $25,000 per year and are living in poverty, placing additional stress on children. These families are substantially below the median household income for Dallas which

was $37,628 in 2000. In fact, the population living in the zip codes targeted for this project made less than half the median household income for Dallas residents.

5.2.3 Poverty and Employment

As the data in tables 3 and 4 indicate, MLK Community Center residents experience some of the most extreme rates of poverty in Dallas, Dallas County, and the state of Texas (Martin et al. 2006a,b). In 1999, more than 45% of the residents served by the MLK Center lived below the poverty level as compared to 18% in the city of Dallas. Further, the percentage of unemployed in zip codes 75210 and 75215 was estimated to be 23%, more than three times the 6.6% (or nearly four times) estimated for the city of Dallas.

Table 3: Comparison of Household Income of MLK CTC and Dallas, 1999

	Dallas	MLK Center	75210	75215
Total:	452,009	10,251	3,308	6,943
Less than $10,000	10.5%	36.4%	39.1%	35.1%
$10,000 to $14,999	6.0%	12.0%	10.7%	12.6%
$15,000 to $24,999	14.5%	19.0%	20.6%	18.2%
$25,000 to $34,999	15.0%	11.8%	10.7%	12.3%
$35,000 to $49,999	17.1%	10.2%	9.8%	10.4%
$50,000 to $74,999	16.4%	6.3%	5.6%	6.7%
$75,000 to $99,999	8.0%	2.2%	2.0%	2.3%
$100,000 to $149,999	6.5%	1.6%	0.8%	2.0%
$150,000 to $199,999	2.4%	0.3%	0.5%	0.2%
$200,000 or more	3.5%	0.3%	0.2%	0.3%
Median household income (dollars)	$37,628	$15,551	$15,058	$16,043

Source: U.S. Census Bureau, 2000 Census

Table 4: Comparison of Family Income of MLK CTC and Dallas, 1999

	Dallas	MLK Center	75210	75215
Families	269,602	6,260	2,084	4,176
Less than $10,000	8.9%	28.5%	30.3%	27.6%
$10,000 to $14,999	5.6%	13.1%	13.4%	13.0%
$15,000 to $24,999	14.5%	20.1%	22.3%	19.0%
$25,000 to $34,999	13.9%	14.5%	12.6%	15.4%
$35,000 to $49,999	11.5%	9.2%	9.1%	9.3%
$50,000 to $74,999	17.0%	7.3%	5.8%	8.1%
$75,000 to $99,999	8.6%	4.1%	3.0%	4.6%
$100,000 to $149,999	7.7%	1.2%	0.2%	1.7%
$150,000 to $199,999	3.1%	0.3%	0.4%	0.3%
$200,000 or more	4.6%	0.3%	0.0%	0.5%
Median family income (dollars)	$40,921	$18,246	$16,949	$19,543

Source: U.S. Census Bureau, 2000 Census

A criticism of unemployment data is that it excludes those individuals who are unemployed and not looking for work. Analyzing the percentage of jobless residents (which reflects all persons not employed, whether or not they are seeking employment) reveals the jobless rate for both 75210 and 75215 codes was considerably higher than that of the city of Dallas.

Table 5: Employment Level in MLK Center and Dallas

	Dallas	MLK Center	75210	75215
Total Population 16 years and over…….....	76.2%	72.9%	69.6%	74.6%
Population 16 years and over; In labor force…….....	65.1%	46.8%	46.3%	47.0%
Population 16 years and over; In labor force; Civilian; Employed…….....	60.7%	36.1%	36.1%	36.1%
Population 16 years and over; In labor force; Civilian; Unemployed……	4.3%	10.7%	10.1%	11.0%
Population 16 years and over; In labor force; In Armed Forces…….....	0.0%	0.0%	0.0%	0.0%
Population 16 years and over; Not in labor force…	34.9%	53.2%	53.7%	53.0%

Source: U.S. Census Bureau, 2000 Census

Table 6: Income and Poverty Level in MLK CTC and Dallas, 1999

	Dallas	MLK Center	75210	75215
Total	1,167,205	27,753	9,369	18,384
Income in 1999 below poverty level:	17.8%	45.5%	48.0%	44.2%
Under 5 years	12.4%	10.0%	11.9%	9.0%
5 years	2.4%	1.8%	2.6%	1.4%
6 to 11 years	12.6%	13.5%	13.0%	13.7%
12 to 17 years	10.6%	11.7%	13.5%	10.8%
18 to 64 years	55.8%	51.7%	48.0%	53.7%
65 to 74 years	3.4%	6.1%	6.4%	5.9%
75 years and over	2.7%	5.2%	4.6%	5.5%
Income in 1999 at or above poverty level:	82.2%	54.5%	52.0%	55.8%
Under 5 years	7.4%	5.5%	7.1%	4.7%
5 years	1.4%	1.2%	1.0%	1.3%
6 to 11 years	8.0%	8.8%	8.4%	9.1%
12 to 17 years	7.2%	8.6%	9.1%	8.3%
18 to 64 years	67.2%	61.9%	61.9%	62.0%
65 to 74 years	4.7%	6.9%	5.3%	7.6%
75 years and over	4.0%	7.0%	7.1%	7.0%

Source: U.S. Census Bureau, 2000 Census

5.2.4 Educational Attainment

The MLK Community Center lies within the Dallas Independent School District. As described in table 7, approximately 34% of residents served by the MLK Community Center failed to obtain a high school diploma. Residents aged 25 and older in that same area who reported finishing high school were 28%, compared with 20% for the city of Dallas. However, only 3.7% of MLK Community Center residents reported

finishing college, compared with 18% for the city of Dallas. Finally, of the residents in zip codes 75210 and 75215, 15% reported having attended some college at some point in time—which was lower than the city of Dallas's rate of 19%.

Table 7: Educational Attainment in MLK CTC and Dallas, 2000

	Dallas	MLK Center	75210	75215
Total	734,162	16,856	5,306	11,550
Less than 9th grade…	15.0%	15.8%	16.1%	15.7%
9th to 12th grade, no diploma……...	14.6%	34.2%	41.9%	30.7%
High school graduate (includes equivalency)……...	19.7%	27.9%	26.7%	28.5%
Some college, no degree…….	18.9%	14.8%	11.1%	16.6%
Associate degree……	4.2%	1.8%	1.1%	2.1%
Bachelor's degree…..	18.1%	3.7%	2.0%	4.5%
Graduate or professional degree…..	9.6%	1.6%	1.1%	1.9%

Source: U.S. Census Bureau, 2000 Census

In summary, the residents served by the MLK Community Center face quality of life obstacles unlike most areas within the city of Dallas. Low rates of participation in the labor market and severe poverty have not given many of the residents an equitable chance to pursue the American Dream. Further, disappointing levels of educational attainment have required that the MLK Center, a proverbial beacon in the community, take action by offering a technology-based learning program to students within the area in an attempt to boost academic progression and graduation rates.

5.3 MLK Community Technology Center Program Overview

The Martin Luther King Jr. Community Technology Center (MLK CTC) operates as part of the MLK Community Center, and is funded by a grant from the Department of Education. The MLK CTC program was comprised of eight organizations: City of Dallas MLK Community Center, Academic Realities Inc., Friends of MLK, and five local Dallas Independent School District (DISD) public high schools (A. Maceo Smith, James Madison, Lincoln, Moises Molina, and North Dallas).

The MLK CTC program was developed to provide computer-assisted instruction to low-achieving ninth- through twelfth-grade students enrolled or entering secondary school. The program served students who lived in the same community as the MLK Community Center, as well as those from similar communities adjacent to the Center. It should be noted that low-achieving is defined as having academic skills that are significantly below grade level, having an inadequate number of grade-level credits, or failure to demonstrate proficiency on state academic assessments.

The goal of the program was to support the No Child Left Behind (NCLB) Act of 2001 by helping all student participants attain, at a minimum, proficiency on challenging Texas academic achievement standards and Texas academic assessments, particularly in the core academic subjects of reading/language arts and mathematics. These initiatives also supported the aim to close the achievement gap between more affluent white students and those from underserved communities.

Students enrolled in the MLK CTC program were involved in the following core activities:

- Supplementary instruction to enable them to meet state required expectations on each performance objective of the Texas Assessment of Knowledge and Skills (TAKS) test.
- Supplementary instruction using the Woodcock Reading Mastery test in order to achieve academic gain on reading comprehension and vocabulary subtests.
- Supplementary instruction for Limited English Proficiency (LEP) students to increase their English proficiency.

Specific program goals, according to the MLK CTC Task Matrix, were as follows:

- Provide supplementary instruction in reading, mathematics, language, ESL, and career development to 250 unduplicated, disadvantaged, and low-achieving ninth- through twelfth-grade students at A. Maceo Smith, James Madison, Lincoln, Moises Molina, and North Dallas High Schools.
- 95% of MLK CTC participants receiving supplementary instruction in reading and math will complete at least 0.5 credits on NovaNET in the course of the program.
- 85% of MLK CTC students will meet or exceed state required expectations on each performance objective on the Texas Assessment of Knowledge and Skills subtests.
- 75% of students tested using the Woodcock Reading Mastery test will show academic gain on reading comprehension and vocabulary subtests.

- 90% of students will complete at least 96 hours.
- 100% of the MLK CTC teaching staff will receive professional development training.
- At least one parent or caregiver of each student will attend at least six family workshops provided in MLK CTC, and at least one parent or caregiver of each student will enter into a Parent/Student/Teacher Compact.

In understanding the dynamics of the program, it is important to understand the purpose of each testing instrument:

1. NovaNET is a computer-based system designed to provide students with self-paced instruction in English, mathematics, science, and/or social studies.
2. The Texas Assessment of Knowledge and Skills (TAKS) is an education standard test administered to Texas primary and secondary students to assess proficiency in the areas of math, English, science, reading, and social studies skills as required under Texas education standards.
3. Woodcock Reading Mastery tests provide thorough coverage of reading readiness, basic skills, and comprehension.

The program provided supplementary instruction during the school year by way of facilitators/instructors and approximately 60 workstations stationed at each campus, with the exception of James Madison High School. Student participants at James Madison utilized technologies available at the nearby MLK Center. The program was

available to students during nonschool hours and on Saturdays at the Center. Facilitators/instructors were employed by Academic Realities, a Dallas-based program that provides supplemental education to students who need to improve their academic performance. An English as a Second Language (ESL) and Career Development component were also offered to program participants at the MLK Center.

During school months, each student was asked to complete a minimum of 96 hours of instruction in reading and/or mathematics: 12 hours per week after school for a minimum of 8 weeks. The number of hours per subject was contingent upon the student proficiency levels as demonstrated by the Texas Assessment of Knowledge and Skills (TAKS) test scores, as provided by the school's counselor, and/or other formal and informal assessments provided and analyzed by the director of education at the MLK CTC. The program's ESL instruction was offered to approximately 15 LEP students every Saturday at the MLK Community Center.

To bring a measure of success to low-achieving students, the MLK CTC utilized three instructional strategies designed to address the learning needs of at-risk learners. The first focused on lessons involving the perceived interests, needs, and experiences of the student. The second emphasized oral and written expression. Finally, the program provided study aids and understandable tools to alert the students of any important content areas or issues regarding their lessons. These tactics were designed to be reinforced by adaptive instructional techniques that linked educators with progressive technology and proven teaching methods. These methods considered individual differences in ability, knowledge, interests, goals, contexts, self-efficacy, and learning

styles of each student. The concept was to pace instruction to the needs of the learner. Prescriptive lesson plans were designed using Woodcock Reading Mastery pretest information to identify individual weaknesses and assign appropriate content to the student's learning stage. Woodcock Reading Mastery posttests embedded within the computerized standardized curricula system (NovaNET) served a mastery role that paced the instruction to the student's learning speed. Dynamic questioning (generating questions as a lesson progresses rather than preparing all questions in advance) was also utilized to educate the student and guide her toward mastery. Finally, feedback provided the student with explanations of why a particular answer was wrong and how it could be corrected.

According to the MLK CTC program director, student retention efforts were based on the recognition that strategies to improve student achievement are similar to the ones used to reduce the dropout rate. A retention and outreach specialist was hired to identify students at risk of early dropout of MLK CTC programs and/or school; provide academic and social interventions to help targeted students overcome barriers; work collaboratively with the schools' community liaisons to connect students with at least one teacher from their school, the school counselor, and at least one MLK CTC teacher; work collaboratively with the schools' community liaisons to assign a teacher to advise a group of MLK CTC students and work with them each year until they complete high school; work collaboratively with consortium partners to involve parents in school activities and in their child's Individual Educational Plans (IEPS); and coordinate the efforts of community agencies and organizations.

The MLK CTC's Career Exploration components employed self-directed software designed to assess a student's academic aptitude, develop a career portfolio and class schedule, and allow students to participate in other career-planning exercises. The software used by participants provided a multifunctional experience by utilizing job videos, pictures, sound, text, and graphics to compare skill levels to job requirements. The MLK CTC career specialist then linked the students' class schedules to the software's occupations such that students could immediately understand what they needed to accomplish in order to succeed in a particular career path.

To provide a better understanding of the students attending each of the participating high schools, table 8 presents an academic snapshot of each school, followed by an analysis of the demographic and academic status of the five schools according to public records provided by the Texas Education Agency.

Table 8: High School Snapshot

	White	African American	Hispanic	LEP	Low SES	At-Risk
Lincoln	0.1%	94.9%	4.7%	1.3%	76.9%	71.4%
North Dallas	1.7%	16.8%	78.1%	31.7%	77.9%	84.4%
James Madison	0.5%	85.5%	13.5%	4.7%	73.4%	69.4%
Moises Molina	1.7%	9.7%	87.3%	19.7%	73.6%	78.0%
Maceo Smith	1.0%	85.7%	13.2%	3.8%	80.9%	77.1%

LEP: Limited English Proficiency; Low SES: Low Socioeconomic Status

Source: TEA 2005/06 Campus Profile (Texas Education Agency 2007)

The predominant ethnic makeup of the five schools is African American followed by Hispanic students, which also closely follows the demographics of the MLK Center's community. There are a significant number of students identified as at-risk in each of these schools along with a high percentage of students of low socioeconomic status. The number of students labeled as Limited English Proficiency (LEP) is highest in North Dallas and Moises Molina High Schools.

According to the Texas Education Agency (2007), "under the accountability provisions in the NCLB Act, all public school campuses, school districts, and the state are evaluated for Adequate Yearly Progress (AYP). Districts, campuses, and the state are required to meet AYP criteria on three measures: Reading/Language Arts, Mathematics, and either Graduation Rate or Attendance Rate." Table 9 presents AYP data for each of the five partnering schools from years 2003, 2004, 2005, 2006, and preliminary data from 2007.

Table 9: State Ratings and Adequate Yearly Progress (AYP)

	2003	2004	2005	2006	2007 (preliminary)
Maceo Smith	NI – Reading/ Math	NI – Reading/Math	NI – Reading/Math	NI– Reading	NI – Reading/ Math
Moises Molina	Acceptable Missed AYP Reading/ Math	Acceptable Missed AYP Reading/Math	Acceptable Missed AYP Reading/ Math	Acceptable Missed AYP Math	Unacceptable Missed AYP Reading/ Math/ Graduation Rate
James Madison	Academically Unacceptable Missed AYP Math	Acceptable Missed AYP Reading/Math	Unacceptable Missed AYP Reading and Math	Unacceptable Missed AYP Math	Acceptable Meets AYP
North Dallas	Acceptable Meets AYP Appeal	Acceptable Meets AYP Appeal	Acceptable Meets AYP	Acceptable Missed AYP Reading/Math	Acceptable Missed AYP Math
Lincoln	Unacceptable Missed AYP Reading/ Math/ Graduation Rate	Unacceptable Missed AYP Reading/Math/ Graduation Rate	Acceptable Missed AYP Graduation Rate	Unacceptable Missed AYP Reading/Math/ Graduation Rate	Acceptable Missed AYP Math

NI-Needs Improvement

Source: Texas Education Agency 2007; State Rating and Adequate Yearly Progress

Table 9 indicates that most participating schools were given a state rating of acceptable for all years recorded. Lincoln High School was the only school to be given an acceptable state rating for all years. North Dallas High School was rated unacceptable for years 2005, 2006, and 2007. A. Maceo Smith followed with unacceptable state ratings for years 2005 and 2007. Texas Education Agency (TEA) data indicates that the lowest state ratings were given in years 2005 and 2007.

As far as Adequate Yearly Progress (AYP), most of the participating schools missed AYP due to poor mathematic performance or participation (18 indicators); poor performance or participation in reading accounted for 14 indicators. According to the Texas Education Agency, districts and campuses must meet test participation standards as well as performance standards for students tested. The data suggest that AYP results for the year 2007 may be among the worst scores for these schools, although it should be noted that the 2007 data is preliminary.

In addition to poor mathematics and reading performance or participation, dropout rates were also listed as a reason for poor AYP ratings in 2007. All participating schools, with the exception of Lincoln High School, missed AYP; this was due, in part, to poor graduation rates. Table 10 illustrates the dropout rate for the 2003/2004 and 2004/2005 school years, the most recent data available from the Texas Education Agency. According to the Agency, a dropout is identified as an individual who fails to return to school or transfer to another school by the fall of the next school year. One will also be labeled as a dropout if they complete the school year but do not reenroll the following school year (Texas Education Agency 1996). Note the particularly sharp increase in dropout rates among James Madison and Moises Molina High Schools.

Table 10: Dropout Rates

	2003/2004	2004/2005	Percent Change
Lincoln	0.9%	0.4%	-0.5%
North Dallas	1.6%	0.8%	0.8%
James Madison	1.4%	4.9%	3.5%
Moises Molina	1.7%	2.8%	1.1%
Maceo Smith	1.0%	1.4%	0.4%

Source: TEA Campus Profile 2005/2006 (Texas Education Agency 2007)

The propensities for low achievement in the five partnering schools are evident in the Texas Assessment of Knowledge and Skills (TAKS) test scores, which assess essential academic skills. This is illustrated in table 11, which shows the results of the most recent TAKS test. It should be noted, however, that the reading portion of the TAKS test resulted in a higher pass rate than that of the math section.

Table 11: Percent Pass Rate, TAKS Test

	Percentage Passing TAKS Reading	Percentage Passing TAKS Math
Lincoln	77%	42%
North Dallas	74%	43%
Madison	71%	48%
Moises Molina	79%	49%
Maceo Smith	80%	41%

Source: Texas Education Agency (TEA) 2005/06 School Report Card (2007)

5.4 Study Design

This evaluation will focus on program operations during the most recent program year, between August 15 2006 and July 31 2007, and employ quantitative and qualitative data analysis. The units of analysis are the five participating DISD high schools—A. Maceo Smith, James Madison, Lincoln, Moises Molina, and North Dallas. Data is reflected at the campus level, and all data obtained for this research was provided by the MLK Center which supports the accuracy of its numbers. The principal investigator obtained permission to conduct this research from the University of Texas at Arlington Institutional Review Board (IRB) and the MLK Center which includes bodies from the city of Dallas, the supporting arm of the MLK CTC program.

In restating the purpose, this evaluation seeks to determine if the MLK CTC program was effective. Through the use of a single system research design, this study looks specifically at each program objective in order to make determinations of the program's outcome.

The second tier of this evaluation looks specifically at educational gains within the program as measured by Woodcock Reading Mastery pretest and posttest scores. This evaluation will also make determinations regarding how the program could be improved based on observations, interviews, and statistical data.

5.5 Data Analysis Procedures

A mixed methodology was employed for the purpose of this evaluation and incorporates both quantitative and qualitative designs. By presenting "numbers and

narratives," this evaluation hopes to "enhance the quantitative findings with richness and depth" (Royse et al. 2006, 93).

Qualitative and quantitative data are subject to threats to construct and internal validity. To counter this threat, the primary investigator will use multiple sources (standardized testing, faculty/administration interviews, and observations) to improve confidence in the information and allow for "triangulation" on conclusions to justify them (Guion 2002; Royse et al. 2006).

5.5.1 Quantitative Research Design

Simple descriptive statistics were used to evaluate the number of at-risk students who were served by the MLK CTC program. These methods were also utilized to make determinations of outcomes for the following objectives: hours spent in the MLK CTC computer labs, the number of Low English Proficiency or ESL participants, the number of students who demonstrated proficiency on the state's TAKS exams, the number of students who had Parent/Teacher/Student Compacts, and professional development objectives. Descriptive statistics were also used to make comparisons among the various types of students. Information related to student retention was also analyzed.

An important component of this evaluation is the assessment of educational gains within the program's technology based on the program's software, namely the Woodcock Reading Mastery program. The purpose of utilizing a quasi-experimental or within-program pretest and posttest design in determining educational gains is that these outcomes needed to be measured using a familiar instrument to both the participants

and the program staff/funders. Also, this computer program was the only technology utilized throughout the program that produced both pretest and posttest data.

A total of 239 youths participated in the MLK CTC program for the 2006/2007 program year. All youths in the study were asked to complete intake forms as well as a computer-based Woodcock Reading Mastery vocabulary and comprehension pretest at the beginning of the program year. Intake forms asked youth to record their first and last name, school identification number, school, age, grade, ethnicity, and gender. Upon the close of the program year, students were administered Woodcock Reading Mastery vocabulary and comprehension posttests to aid in the determination of educational gains within the program. The test scores were downloaded and distributed to the primary investigator by the education specialist.

Woodcock Reading Mastery tests were not administered to MLK CTC ESL student participants (N=19). Further, of the 220 students who completed pretests, only 139 participants completed posttests; leaving 81 sets of incomplete data. Because both groups came from within the same schools, the primary investigator believes that this study can draw a fairly accurate assumption about the overall effectiveness of the MLK CTC program on student participant's educational gains.

It should be noted that access to the MLK CTC program data was granted by DISD; however, under a confidentiality agreement with MLK and DISD, the principal investigator was only granted access to nondescriptive data to protect against the identification of minors. Further, in addition to confidentiality restrictions, the MLK CTC program was prohibited from turning away any student who wanted to participate;

therefore, it precluded any possibility of having a treatment and nontreatment group comparison.

In evaluating the educational gains among participants of this program, two hypotheses were developed. All tests' statistical analysis was completed using the Statistical Package for the Social Sciences (SPSS). The first evaluation hypothesis states that technology-based instructional strategies are successful in improving the academic performance of at-risk students within the MLK CTC program. To test this hypothesis, the study compares the means of two groups: student participants with pretests and those with posttests. This research employs a *t*-test of dependent samples to observe the difference in the means of the pretest and posttest groups of the vocabulary and comprehension Woodcock Reading Mastery exams. The *t*-test determines if there is a statistically significant difference between the mean score in the pretest and the mean score the posttest.

The second evaluation hypothesis states that participation rates or program duration have an impact on academic performance of at-risk students within the MLK CTC program. To test this hypothesis, the study employs a one-way analysis of variance (ANOVA) which is designed to determine if one given factor, such as hours, has a significant effect on educational gains across multiple groups without specifying which differences are statistically significant (Backstrom and Hursh-Câesar 1981). For the purpose of this analysis the dependent variable are identified as the differences in test scores within both the Woodcock Reading Mastery Vocabulary and Comprehension exams and the independent variable was hours served by MLK CTC program

participants broken into groups of high, medium, and low participation rates. Student participants were placed into three groups based on the number of hours they served during the 2006/2007 program year within the MLK CTC program computer labs. Group 1 contained students who served 72 or more hours; group 2 contained student who served between 25 and 71 hours; and group 3 contained students who served 24 or fewer hours.

5.5.2 Qualitative Research Design

In addition to the quantitative analysis, this evaluation employs a qualitative research design through in-depth, semistructured interviews with all available and interested MLK CTC program administrators, teachers, and school administrators to "allow interviewees to express their opinions and ideas in their own words" (Esterberg 2002, 87). In total, four interviews were completed, each taking approximately one hour to conduct. Interviews are beneficial in that they allow an evaluator to gain a better understanding of the organization thus allowing for a deeper analysis of the data that is often impossible to accomplish through analyzing data. By digging deeper and with more care, this evaluation hopes to uncover unexpected yet provocative data about the program's inner workings (Royse et al. 2006). It should also be noted that qualitative research relies on "empirical and systematic" documentation, just like the quantitative counterparts (88).

Essentially, this evaluation approached qualitative design from this perspective:

> The word qualitative implies an emphasis on process and meanings that are not rigorously examined, or measured (if measured at all), in terms of quantity, amount, intensity, or frequency. Qualitative researchers stress the socially constructed nature of reality, the intimate relationship between the

> researcher and what is studied, and the situational constraints that shape inquiry. They seek answers to questions that stress how social experience is created and given meaning. In contrast, quantitative studies emphasize the measurement and analysis of causal relationships between variables, not processes. Inquiry is purported to be within a value-free framework. (Denzin and Lincoln 1994, 4)

Participation in this evaluation study was voluntary; interviews were audiotaped and later transcribed and coded; not all questions had to be answered by interviewees; informed consent was established upon initiating any interview either by mail or in written form; and ethical issues of confidentiality were upheld to the highest degree, if requested. A total of four interviews were conducted in total; two with MLK CTC program directors, one with an MLK CTC teacher, and one with an anonymous source who had access to program implementation. Interviews took approximately one hour to conduct and the location of the interview was either by telephone, per the interviewee's choice, or held in a location of the interviewee's choice. For those requesting confidentiality, upon transcription of the interview the data was immediately coded using unidentifiable symbols and the interview tape was destroyed; the notes were kept locked in a file cabinet. All documents will be destroyed within three years following the completion of this evaluation. The interview questions were developed based on knowledge gathered during the empirical literature review and program objectives. To avoid any potential pitfalls such as unintended body language and steering the interview in a biased direction, thereby damaging the integrity of this research, the principal investigator tapped into in-depth interviewing skills gained through prior experience as a journalist.

To provide greater validation and understanding of the data, this analysis utilized data triangulation which occurs when the researcher relies on corroboration between more than one source to enhance the accuracy of findings (Royse et al. 2006; Rubin and Babbie 2001).

Table 12 provides a description of those interviewed, with the exception of any anonymous sources.

Table 12: Description of MLK CTC Evaluation Interview Participants

Name	Labels within the body of this research	Relationship with MLK CTC
Gilbert Norman	Norman	Math teacher at Molina High School and MLK CTC program teacher in the computer lab at Molina High School. Gilbert Norman has since retired from his teaching position with Molina.
Evelyn Lawson	Lawson	MLK CTC Director of Education
Odus Oglesby	Oglesby	MLK CTC Program Director
Anonymous	Anonymous	Anonymous source with access to the MLK CTC program's implementation.

In analyzing the data, several steps were taken. Upon the completion of the interviews, the data was transcribed into a Microsoft Word document and was then examined thoroughly in an effort to get "intimate with the data" (Esterberg 2002, 157). This data management process served to strategically organize the information and build a strong foundation for analysis (Royse et al. 2006). The primary investigator was already familiar with the data as a result of having taken the role of the interviewer and

the transcriber of the interviews. During this microanalysis, the primary investigator listened to the interviews and followed along with the transcription.

The reason the primary investigator decided to utilize familiar word processing software for the purpose of data analysis rather than learn a new, somewhat demanding, qualitative data analysis software, such as NUDIST or HyperQUAL, was that the data set was relatively small, making transcribing and organizing interview data more manageable. Further, preset categories (based on the program's objectives) were already in place, making the organization of data relatively simple.

Following data management was a process of open coding and then the organization of themes based on the program's objectives. The data was then evaluated for "categories of phenomena and for relationships among the categories" (Goetz and LeCompte 1981, 57). As themes or patterns developed among the various data, the primary investigator began grouping them into categories that related directly to the MLK CTC program objectives. This form of coding is called priori codes, as they are developed before the examination of the data. Basically, the primary investigator read and reread the transcriptions, wrote notes in the margins, color-coding items of interest, and categorized items according to program objectives. Each objective was separated onto its own page. These quotes were accompanied with line number, page, and participant's identifier (name or symbol).

Coffey and Atkinson (1996, 26) wrote, "The segmenting and coding of data are often taken-for-granted parts of the qualitative research process. All researchers need to be able to organize, manage, and retrieve the most meaningful bits of our data."

During the evaluation, the primary investigator was given permission to enter one of the five partnering schools only one time during the course of this evaluation. Observations took place during April 2007. The principal investigator silently observed program activities for approximately two hours in the computer classroom making note of any adult–youth interactions, peer interactions, and student reactions to the computer software. This type of examination was used to assess the overall quality of activities and whether or not quality it linked to youths' own perceptions of their particular experiences. However, "because we cannot hope to capture everything we see, we aim for unbiased observation of the physical setting, actors' behaviors and interactions, and both verbal and nonverbal communication" (Royse et al. 2006, 99).

5.6 Description of MLK CTC Program Participants

The following text provides a description of MLK CTC program participants. Program recruitment was based on the most recent TAKS scores along with referrals from school counselors, the MLK community liaison, and/or parents/caregivers. Table 13 describes the gender and ethnic breakdown of program participants. According to intake forms given to participants at the beginning of the 2006/2007 program year, 239 students participated in the MLK CTC program. Tables 14 and 15 provide the average age and grade level for program participants.

Table 13: MLK CTC Program Participation by Ethnicity and Gender

Ethnicity and Gender	Number of Students	
African American Female	63	(27%)
African American Male	37	(15%)
Hispanic Female	75	(32%)
Hispanic Male	59	(25%)
White Female	0	
White Male	3	
American Indian Female	1	
American Indian Male	1	
Total	239	(100%)

Table 14: MLK CTC Program Participation by Age

Age	Number of Students	
14	2	(1%)
15	20	(8%)
16	48	(20%)
17	70	(29%)
18	51	(21%)
19	32	(13%)
20	7	(3%)
21+	9	(4%)
Total	239	(100%)

Table 15: MLK CTC Program Participation by Grade

Grade	Number of Students
Freshman (9)	66 (28%)
Sophomore (10)	47 (20%)
Junior (11)	73 (31%)
Senior (12)	53 (21%)
Total	239 (100%)

According to the tables, there were 239 student participants (N=239). The Hispanic participant's measured 57% and 42% were African American. Females outnumbered males by 18%, Hispanic females outnumbered African American females by 9%. Most students were 17 years old, and at the junior level in high school. Further analysis indicates that Moises Molina High School had the largest percentage of MLK CTC student participants (28%), Maceo Smith and Lincoln followed with approximately 21% and 22% respectively. Moises Molina had the highest percentage of Hispanic MLK CTC student participants. Maceo Smith and Lincoln each had the largest concentration of African American student participants. The largest percentage of females within the MLK CTC program was at Maceo Smith; and the largest percentage of males was at Moises Molina. According to MLK CTC program directors, participants were invited to participate in the program for as many years as necessary until their school's counselor or the MLK CTC director of education felt they were ready to transition out of the program, or they had met the requirements to graduate. Many of the same students participated in the program from the time of the program's inception. However, because the evaluator was not granted access to the individual identities of the participants from one year to the next, it had to be assumed that the MLK CTC administrative staff had an accurate picture of student participation from one year to the next.

5.7 Summary and Limitations

The community served by the MLK Center is comprised predominantly of a minority population facing severe poverty, low labor-force participation, and disappointing levels of educational attainment. In response, the MLK CTC in conjunction with the city of Dallas and the Department of Education offered a technology-based after-school program, designed to provide instruction to low-achieving students in grades nine through twelve, to five high-poverty, low-achieving DISD high schools.

Student participants within the MLK CTC program were predominantly Hispanic or Latino. The highest concentration of Latino students was found at Moises Molina High School. Maceo Smith and Lincoln High Schools had a predominantly African American student population. In general, females outnumbered males in CTC program participation; most participants were age 17, and most were juniors.

Several methodological concerns arose during the course of this evaluation. In looking specifically at the research design, one of the reasons for using a single system research design is that it can produce reliable and valid outcome measures which can be continually assessed over time using simple visual analysis. Conclusions drawn from such evaluations, however, are threatened primarily by limited external validity, because almost by design most program evaluations make use of the available data (program participants) and not randomly selected ones. It should be noted, however, that other evaluation methodologies such as group designs, for example, suffer from this limitation (Royse et al. 2006). Therefore, according to the authors, “this limitation is in

actuality not particularly salient." Further, most program evaluators are more focused on the particular program's implementation and outcomes than they are with issues of generalizability, and "single system research designs are a great tool for that purpose" (190).

Another concern, especially within the evaluation of after-school programs, is the difficulty of creating a comparison or control group. Within these single system designs, without a control group, it is difficult to assess the success of participation. Additionally, if the comparison group participants are attending other after-school programs or engaged in many extracurricular activities at school and in the community, evidence of program effects could be minimized. As a result, as suggested by previous researchers, this evaluation utilizes a "within-program" or within-subject design (Miller 2003, 51). One example of this type of research design can be found in the evaluation of the KLIK! Program. Researchers utilized a quasi-experimental, pretest and posttest design which defined clubhouse participants as the treatment group, and nonparticipating students with access to the program as the control group. The reason for this comparison group was that all students had access to the program (Girod, Martineau, and Yong 2004).

Similarly, this evaluation utilized a quasi-experimental, single system research design using within group pretest and posttest scores to compare means and test hypothesis. The reason for this was also that all students had access to the MLK CTC program.

Yet another methodological concern was that during the middle of the program year there was a communication error between several of the participating high schools and DISD regarding the school district's approval of the program's content in the schools. This lapse caused a gap in service between (approximately) February 23, 2007 and May 24, 2007. This obviously poses challenges in ascertaining the accuracy of determining program effectiveness, and the reliability of generalizing the results. However, because this analysis employs a qualitative design in addition to quantitative methods, the findings allowed for the triangulation of data to provide a more holistic look at the program; the research also places a strict focus on the program schools.

The study also lacked of physical student involvement in the analysis of the MLK CTC program. Initially, the principal investigator had wanted to conduct a focus group with student participants; however, during initial conversations with program administration, it was made clear that obtaining permission to interview students within the program would have been impossible for the following reasons: (1) dropout rates within the program were high; and (2) the time and hurtles necessary to obtain permission from DISD. The principal investigator was also required to sign a confidentiality agreement prior to the evaluation stating that all data provided by the MLK CTC be stripped of student names and identifiers.

The principal investigator had also intended to conduct individual interviews with all involved MLK CTC administrators, teachers, and school principals involved with the technology-based program. However, because of a number of problematic scenarios within the program (i.e., termination of staff, communication barriers), and

hesitation of teachers and school principals to participate in this research, the interviews were limited to only four (40% participation rate). Adding to these challenges was the fact that several participating high school principals were unaware of the program's presence in their school. Apparently there were two predominant reasons for this miscommunication: (1) the ever-increasing number of staffing changes within DISD; and (2) another similar program, the 21st Century Reconnection program, was also available in many of the participating schools and many of the principals assumed that the MLK CTC program and Reconnection were one and the same. In-depth interviews shed light on this revelation as well as provide a more detailed look at student participants, their environment, and the program's ability to aid in the academic success of its participants.

CHAPTER 6

FINDINGS

There is evidence that technology-based after-school programs can support the academic success of at-risk high school students, and the findings from the evaluation of the MLK CTC maintain this theory. This chapter presents an analysis of data collected from the MLK CTC 2006/2007 program year in an effort to evaluate the program's goals, outcomes, and lessons learned based on the following MLK CTC program objectives:

- Provide supplementary instruction in reading, mathematics, language, ESL, and career development to 250 unduplicated, disadvantaged, and low-achieving ninth- through twelfth-grade students at A. Maceo Smith, James Madison, Lincoln, Moises Molina, and North Dallas High Schools.
- 95% of MLK CTC participants receiving supplementary instruction in reading and math will complete at least 0.5 credits on NovaNET during the course of the program.
- 85% of MLK CTC students will meet or exceed state required expectations on each performance objective on the Texas Assessment of Knowledge and Skills subtests.
- 75% of students tested using the Woodcock Reading Mastery test will show academic gain on reading comprehension and vocabulary subtests.

- 90% of students will complete at least 96 hours.
- 100% of the MLK CTC teaching staff will receive professional development training.
- At least one parent or caregiver of each student will attend at least six family workshops provided by MLK CTC, and at least one parent or caregiver of each student will enter into a Parent/Student/Teacher Compact.

The study's findings are grouped into four groups related directly to the stated objectives of the MLK CTC program: (1) At-risk teens and program implementation, (2) the impact of technology on academic achievement outcomes, (3) professional development, and (4) lessons learned. Both quantitative and qualitative data were gathered and analyzed for each of the four sections.

6.1 At-Risk Teens and Program Implementation

6.1.1 Defining At-Risk

The purpose of the MLK CTC program was to provide computer-assisted instruction to low-achieving ninth- through twelfth-grade students enrolled or entering A. Maceo Smith, James Madison, Lincoln, Moises Molina, and North Dallas High Schools.

One of the objectives of this study is to provide a definition of what it means to be at risk of academic failure. The research states that, in general, an "at-risk student" encompasses the following characteristics: resides in areas of high poverty, attends low-performing schools, has a single-parent household, speaks English as a second

language; pregnancy, lack of employment, and poor academic skills are also evident (Druian and Butler 1987). When asked to describe the characteristics of at-risk youth within these five schools, interviewees agreed that aforementioned descriptors did in fact describe the type of student labeled at-risk in their schools, but then added that poor attitude and criminal behavior also play a role in student's disconnection from school.

One interviewee explains: "Our schools are filled with angry, violent, hostile, and criminally minded 16- and 17-year-olds—we can only help those who want to be helped. At the research level, every child should learn, but you have to want to be helped to get help. We have something like two thousand students on any one campus and only a handful of us to educate those students."

Gilbert Norman, an MLK CTC teacher adds: "These kids are the meanest, toughest kids I've ever encountered. They have parole officers, tracking units, and are involved in crimes. In fact, I had one student who I worked with all day on the software. I thought we made some excellent progress, I thought he went home feeling like a success, but when he got home, he shot a family member. You have to treat every day like it is a new day. I think I'll look back on this job and shiver—like when you just miss a bad car accident and look back upon it with the fear of God. This was one of the most impossible jobs, and yet the most fulfilling—hey, we got pretty good numbers turned around and nobody else would touch them."

One of the most powerful determinants of becoming at risk of educational failure is truancy. Schools cannot control every aspect of a child's life, but the problem of absences is very much under the school's direction (Wehlage and Rutter 1986).

For the most part, MLK CTC evaluation respondents agreed that absenteeism is primarily to blame for students becoming at risk; however other variables surfaced as well, such as teen pregnancy, poverty, poor work habits, and criminal incarceration. One respondent explains: “These kids are chronically absent or chronically disconnected from school. They have family problems. They have to work a great deal. They’re involved in criminal activities. Pregnancy is a big issue. There are all kinds of reasons. It’s a pretty rough deal.”

Participation in the MLK CTC program was voluntary and based on a recommendation from the school’s counselor and/or determined by the education specialist based on the student’s academic performance. However, any currently enrolled student who wanted to participate in the program was welcome.

Program objectives required that students spend a minimum of 96 hours in the computer lab during the program year. However, keeping track of lab hours proved problematic for two reasons. First, student participation was hand-recorded on a sign-in sheet located in the front of each computer lab. Students were responsible for signing in and out of the lab. However, at Molina High School the MLK CTC program sign-in sheet was only available from 7:00 a.m. until 8:30 a.m.—therefore, if a student worked longer than what was offered during that time frame or came in at a different time, MLK CTC participation was not accurately recorded. When asked why this occurred, an MLK CTC respondent stated that the lab was used for a number of in-school and after-school programs and many of the same students participated in multiple programs. Data gathered from CTC program directors indicate that only four students completed

the MLK CTC program objective of 96 or more hours during the 2006/2007 academic year. The limited time-recording process could have had a significant impact on the hours recorded for student participants (see table 16).

Another challenge to maintaining the number of hours was a stop in operations mandated for the MLK CTC between February 23, 2007 and May 24, 2007. This gap in service severely impacted the number of hours students were able to complete during the program year. Norman explains: "Our only major setback this year was that MLK had to stop working. Basically we had a change in administration in the middle of the year and the new principal wasn't fully apprised of the program. The old principal set the program in progress and when he was fired, the new principal didn't know what was going on, and when she found out, it scared her—so she, DISD, and MLK CTC worked closely to repair the problem. Everything worked out fine—DISD didn't find anything wrong with the program."

Table 16: MLK CTC Program Participation: Hours Completed

N	Valid	217
	Missing	22
Mean		19.05
Median		5
Mode		5
Std. Deviation		26.557
Range		177
Minimum		1
Maximum		178
Sum		4,133

Table 16 illustrates the spectrum of hours completed by student participants. As outlined, the median number of hours spent on the computers was five. The minimum was one hour and the maximum was 178 hours. There were 22 missing, unrecovered fields within the data column. The information derived for this analysis was provided by the MLK CTC program directors.

In measuring the MLK CTC's program performance, three objectives were the focus: serving the right number of youth within the five partnering schools, ensuring that each student spend a sufficient amount of time on the computers, and providing instruction to students whose first language is not English. Table 17 provides quantifiable data as an illustration of these performance measures.

Table 17: Performance Measures for MLK CTC

Objective	Data Collection Approach	Outcome
Provide supplementary instruction in reading, mathematics, language, ESL, and career development to 250 unduplicated, disadvantaged, low-achieving 9th- through 12th-grade students at A. Maceo Smith, James Madison, Lincoln, Moises Molina, and North Dallas High Schools	Review of MLK CTC academic records	239 Students Served (96% of goal)
Attain a completion rate of a minimum of 96 hours of supplemental instruction in reading and/or mathematics for 250 students–a 90% participation rate.	Review of MLK CTC academic records	4 Students completed 96 or more hours (1.7% of goal)
At least 15 adolescents will receive ESL instruction during the 2006/2007 program year.	Review of MLK CTC academic records	19 ESL students received instruction (127% of goal).

Based upon the data analysis, total number of student participants being 239, the program was able to reach 96% of its stated goal of providing supplementary instruction in reading, mathematics, and language to 250 low-achieving ninth- through twelfth-grade students enrolled at James Madison, A. Maceo Smith, Moises Molina, Lincoln, and North Dallas High Schools. The program was measureably successful at targeting its ESL student population; the program's objective was initially 15, and 19 students enrolled which exceeded its goal by 27%. Only 1.7% (4) logged 96 or more hours during the course of the program signifying that duration of participation in the program was extremely low; the MLK CTC program objective was to have 90% of the students complete at least 96 hours during the program year.

6.1.2 Demographic Characteristics

Hispanic students were the largest group of participants and the most likely to stay in the MLK CTC program. The data indicates that of the original participants within the program, 87% of Hispanic students completed the program; 81% of African American students completed the program; completion of the program was determined based on continuous enrollment within the program from August 2006 to July 2007. Further, from the original population, again not including missing data, 87% of those remaining in the program were seniors, 84% were juniors, and 86% were freshmen. Sophomores and juniors also represented the largest numbers of dropouts, as compared to original participation rates, with 13% and 14% respectively.

Among the schools, of the original participants, 100% of ESL students remained in the program, 93% of those attending Moises Molina High School remained, and 80%

attending North Dallas and A. Maceo Smith remained in the program. Those schools with the largest declines, among the original participants, were students attending Lincoln High School (26%). Among the ages of participants, those between the ages of 14 and 15 had the highest rate of program retention (91%) followed by those ages 18 to 19 (86%); those aged 20 and older followed with 81%. Students who withdrew from the program, as compared to original participants, were between the ages of 16 and 17 (14%). Among the original participants, the percentage of males who completed the program was 85%; 83% of females completed the program.

Tables 18 through 22 provide an illustration of student status for the MLK CTC program for variables including year in high school, high school, age of participants, gender, and ethnicity.

Table 18: Student Status and Year in School for MLK CTC Program

Student Status	Year in High School				Total
	Freshman	Sophomore	Junior	Senior	
Completed Program	57	37	61	46	201
Withdrew from Center	6	6	10	6	28
Missing	3	4	2	1	10
Total	66	47	73	53	239

Table 19: Student Status and High School for the MLK CTC Program

	High School						
Student Status	North Dallas	Madison	Molina	Lincoln	Smith	ESL	Total
Completed Program	35	2	63	37	45	19	201
Withdrew from Center	5	0	5	13	5	0	28
Missing	0	9	0	0	1	0	10
Total	40	11	68	50	51	19	239

Table 20: Student Status and Age of Participant for the MLK CTC Program

	Age of Participant										
Student Status	14	15	16	17	18	19	20	21	22	25	Total
Completed Program	2	18	43	54	44	27	6	5	1	1	201
Withdrew from Center	0	1	5	11	5	4	1	1	0	0	28
Missing	0	1	0	5	2	1	0	1	0	0	10
Total	2	20	48	70	51	32	7	7	1	1	239

Table 21: Student Status and Gender for the MLK CTC Program

	Gender		
Student Status	Female	Male	Total
Completed Program	116	85	201
Withdrew from Center	15	13	28
Missing	8	2	10
Total	139	100	239

Table 22: Student Status and Ethnicity for the MLK CTC Program

Student Status	Ethnicity				Total
	Black	Hispanic	White	Am. Indian	
Completed Program	81	116	2	2	201
Withdrew from Center	12	15	1	0	28
Missing	7	3	0	0	10
Total	100	134	3	2	239

Tables 18 through 22 show that, of the original 239 participants, 201 students (84%) remained active throughout the duration of the program. There were 28 students (12%), receiving varying amounts of instruction, who left prior to the completion of the program. It should be noted that there were 28 records (4%) regarding student status that were missing from this particular data set. These absent fields are the result of missing, unrecoverable data within the information provided by the MLK CTC.

6.2 Program Retention

Although the number of students who completed the required hours or stayed for the entire year may not appear substantial, for program managers, these numbers are meaningful. Norman, an MLK CTC teacher, states: “If we reach 50% of the students, then we have succeeded beyond what we had originally hoped for.” However, the lack of hours is of concern. Pointing to the literature, one explanation could be that high school students, especially those labeled at-risk, are some of the hardest populations to attract and retain in out of school time (OST) programs (Hall, Israel, and Shortt 2004; Herrera and Arbreton 2003). Some of the reasons for these recruitment and retention challenges include: it is more difficult to attract high school students to programs; high

school students are less likely to want to spend time at school during non-school hours; high school students have outside commitments to work, family, and household responsibilities; high school students are less likely to participate in an after-school program more than one or two times per week; high school students are more independent and mobile, and have the ability to vote with their feet if dissatisfied (Hall, Israel, and Shortt 2004; Herrera and Arbreton 2003). And just as absences are a part of what creates the at-risk teen, absences were also prevalent within the program. Norman confirmed this: "Absences were a terrible problem, but unfortunately we can't go get the students and force them to be here. Not all of them are going to change. We can only help the ones that want to learn. Those programs are not easy. They are rigorous."

Another facet of the MLK CTC program that affected retention was the staffing of the program's retention and outreach specialist. This individual was tasked with identifying students at risk of withdrawing from the MLK CTC program and/or school early in the process; providing academic and social interventions to help target students overcome barriers; working collaboratively with the school's community liaisons to connect students with at least one teacher from their school, a school counselor, and at least one MLK CTC teacher; working collaboratively with the school's community liaisons to assign a teacher to advise a group of MLK CTC students and work with them each year until they complete high school; working collaboratively with consortium partners to involve parents in school activities and in their child's Individual Educational Plans (IEPS); and coordinating the efforts of community agencies and organizations. However, according to an e-mail dated May 4, 2007 from MLK CTC

Education Director Evelyn Lawson: “The retention and outreach specialist is no longer with us for funding reasons. We are currently using the assistant to do this role now, but she has not had a chance to really work in this capacity since we have been frozen.”

According to the literature, meager earnings and part-time hours driven by budgetary constraints and a limited number of qualified youth workers make staff retention in after-school programs one of the biggest challenges of these programs (Baldwin Grossman et al. 2002).

The researcher was unable to gain an interview with the new retention and outreach specialist and was not given permission to interview the former staff member who filled this role. MLK CTC Program Director Odus Oglesby made this statement with regret in his voice: “If the kids [involved in the MLK CTC program] are having a tough time in school, there are reasons for that. Our goal was to learn what those reasons were, and help them get through it onto doing better in school and identifying a future career. We used to have a retention specialist, but we didn’t push that avenue enough and it’s another regret I have.”

The next objective of this evaluation is to determine outcomes within the program’s academic objectives. These include NovaNET, TAKS test, and Woodcock Reading Mastery. This section also includes hypotheses testing for educational gains made within the program using the Woodcock Reading Mastery pretest and posttest scores.

6.3 The Impact of Technology on Academic Achievement Outcomes

Waxman, Yolanda, and Arnold (2001) point to five practices that have proven successful in improving the academic success of at-risk students, one of these being technology-based instruction. The reason this type of learning method is successful is that it utilizes individualized, self-directed learning; in addition, the computer is nonjudgmental and offers students infinite patience and even provides the student with the correct answer. This process allows students to focus on a particular lesson for as long as they need to retain the information (Hall, Israel, and Wellesley Centers for Women 2005; Norris 1994).

Table 23 describes the academic objectives of the MLK CTC program, showing the data collection approach, performance measures, targets, and outcomes. According to the table, 88 students completed at least 0.5 credit hours or one class on NovaNET reading and/or math supplemental instruction (40%)—the target was 95%, or 227 students. It should be noted that out of 239 students, records were available for 149 students, leaving 90 records missing from the information as provided for this research by the MLK CTC program directors. The mean number of credit hours completed by MLK CTC participants was 1 and the median was 0.5. From the available data, 60 students (40%) completed no credit hours; 38 students (26%) completed 0.5 credit hours; 48 students (32%) completed between 1 and 5 credit hours; and 3 students (2%) completed between 6 and 7.5 credit hours. The minimum number of credit hours completed was 0 and the maximum was 7.5 credit hours.

The only information available from the MLK CTC records regarding TAKS testing was whether or not the student passed the exam. According to the data provided by the MLK CTC program directors, at the time of the study only 60 student participants had received information on the status of their TAKS scores. Of those students, 18 (30%) passed both the reading and the mathematics sections of the TAKS test—the target was 51 students, or 85% at the time of this evaluation.

Table 23: Academic Achievement Objectives for MLK CTC

Objective	Data Collection Approach	Performance Measures	Target	Outcome
At least 95% of MLK CTC students will receive supplementary instruction in reading and math and complete at least 0.5 credit hours or one class on NovaNET.	Review of MLK CTC Records	Achievement is recorded if the student logged at least 0.5 hours or one class on NovaNET during the program	Target–227 students (95% of 239)	88 (40%)
At least 85% of MLK Jr., CTC students will meet or exceed state required expectations on each performance objective on the Texas Assessment of Knowledge and Skills (TAKS) reading and math subtests	Review of MLK CTC Records	Achievement is recorded if the student meets or exceeds state required expectations on TAKS reading and math subtests	Target–51 (85% of 60 student tests)*	18 (30%)
At least 75% of students tested using the Woodcock Reading Mastery Test will show academic gain on reading comprehension and vocabulary subtests.	Review of MLK CTC Records	Achievement is recorded if the student's performance on the Woodcock Reading Mastery test improves.	Target–179 (75% of 239)	Of the 239 students, 139 completed both the pretest and the posttest. 136 student's demonstraited gains (98%)

**Not all TAKS information was available at the time of evaluation*

Tables 24 and 25 illustrate total individual student outcomes on the Woodcock Reading Mastery vocabulary and comprehension posttests as compared to pretest scores. According to the literature, studies spotlighting reading and language arts demonstrate that technology can have a positive academic impact on the learned structure of sounds and language, vocabulary development, reading comprehension, and spelling (Sivin-Kachala and Bialo 2000).

It should be noted that the following scores were missing from the data as provided by the MLK CTC program: only 4 of 51 pretest and posttest scores were provided for this evaluation by A. Maceo Smith High School; 15 tests were missing from Lincoln High School; 9 from Madison High School; 5 from North Dallas High School; and 5 from Moises Molina High School, for a total of 81 sets of incomplete data. On a positive note, it appears as though students who took both the pretest and posttest within the MLK CTC program, regardless of where they attended high school, registered gains across both exams.

Table 24: Demonstrated Achievement Gains on Woodcock Vocabulary Posttests

School	Number of Students Registering a Gain	Number of Students Registering a Decline	Total
Lincoln	33	2	35
James Madison	2	0	2
Moises Molina	62	1	63
North Dallas	35	0	35
A. Maceo Smith	4	0	4
Total	136	3	139

Table 25: Demonstrated Achievement Gains on Woodcock Comprehension Posttests

School	Number of Students Registering a Gain	Number of Students Registering a Decline	Total
Lincoln	35	0	35
James Madison	1	1	2
Moises Molina	62	1	63
North Dallas	34	1	35
A. Maceo Smith	4	0	4
Total	136	3	139

Before testing hypotheses regarding educational effectiveness within the MLK CTC program, it is helpful to begin by providing some descriptive statistics on the Woodcock Reading Mastery pretest and posttest variables used in this evaluation (see Table 26).

Table 26: Descriptive Statistics for Academic Dependent Variables

	N	Minimum	Maximum	Mean	Std. Deviation
Pretest Composition	220	25	63	43.47	9.545
Posttest Composition	139	37	99	53.40	11.187
Difference Pre & Post Comp	139	-4	47	8.79	4.985
Pretest Vocabulary	220	62	98	78.64	7.767
Posttest Vocabulary	139	70	100	86.81	7.669
Difference Pre & Post Vocabulary	139	-2	21	7.62	2.698

The first statistical analysis utilizes a *t*-test for dependent samples which is used to determine whether there is a statistically significant difference between the mean score in one group and the mean scores of another group (Bloom, Fischer, and Orme 2006). Tables 27 and 28 contain information comparing the hours of participation of two groups—group (1) pretest, and group (2) the posttest scores for both the vocabulary and the comprehension exams within the Woodcock Reading Mastery program.

Table 27: Comparing the Means of Woodcock Reading Mastery Vocabulary Pretest and Posttest Scores of the MLK CTC Program

Pretest & Posttest Vocabulary	N	Mean	Sig. (2-tailed)
Pre	139	79.19	0.000***
Post	139	86.81	

*0.10 level of significance **0.05 level of significance ***0.01 level of significance

According to the data, in the *t*-test window there is a difference between the two groups (pretest and posttest) within the Woodcock Reading Mastery vocabulary program for MLK CTC participants. This significance is shown at the 0.01 level of significance; therefore the difference between the two groups is real suggesting that participation in the MLK CTC program does improve educational gains.

Table 28: Comparing the Means of Woodcock Reading Mastery Composition Pretest and Posttest Scores of the MLK CTC Program

Pretest & Posttest Composition	N	Mean	Sig. (2-tailed)
Pre	139	44.61	0.000***
Post	139	53.40	

*0.10 level of significance **0.05 level of significance ***0.01 level of significance

According to the data, in the *t*-test window there is a difference between the two groups (pretest and posttest) within the Woodcock Reading Mastery composition program for MLK CTC participants. This significance is shown at the 0.01 level of significance; therefore, again the difference between the two groups is real, suggesting that participation in the MLK CTC program does improve educational gains.

The second test of significance within this evaluation divided student participants into three groups to conduct a one-way analysis of variance (ANOVA) to determine significant differences among multiple means. It should be noted that tests of ANOVA do not specify which differences are statistically significant (Backstrom & Hursh-Câesar 1981). For the purpose of this analysis the dependent variables are identified as the differences in test scores within both the Woodcock Reading Mastery

vocabulary and comprehension exams and the independent variable was hours served by MLK CTC program participants broken into groups of high, medium, and low participation rates. Student participants were placed into three groups based on the number of hours they served during the 2006/2007 program year within the MLK CTC program computer labs. Group 1 contained students who served 72 or more hours; group 2 contained student who served between 25 and 71 hours; and group 3 contained students who served 24 or fewer hours.

Table 29: One Factor Analysis of Variance: Woodcock Reading Mastery Vocabulary Pretest and Posttest

Difference Pretest & Posttest Vocabulary	N	Mean	Std. Deviation
Group 1: High	9	5.44	3.972
Group 2: Medium	27	7.56	3.262
Group 3: Low	101	7.78	2.318
Total	*139*	*7.62*	*2.698*

ANOVA

Difference Pretest & Posttest Vocabulary	Sum of Squares	df	Mean Square	F	Sig
Between Groups	56.695	3	18.898	2.691	0.049
Within Groups	948.097	135	7.023		
Total	1004.791	138			

*0.10 level of significance **0.05 level of significance ***0.01 level of significance

According to the data in Table 29, there is no statistical significance in the difference between the groups for the means of the difference in pretest and posttest scores within the Woodcock Reading Mastery Vocabulary exams. Even though the

MLK CTC students scored on average nearly eight points higher on the posttest than they did on the pretest. Findings suggest that although the mean scores for all three groups are different, they do not vary enough to be statistically significant. Therefore, implications are that increased participation rates do not necessarily impact educational gains within the MLK CTC program.

Table 30: One Factor Analysis of Variance: Woodcock Reading Mastery Composition Pretest and Posttest

Descriptives Difference Pretest & Posttest Composition	N	Mean	Std. Deviation
Group 1: High	9	5.78	4.324
Group 2: Medium	27	9.19	3.026
Group 3: Low	101	9.08	5.355
Total	139	8.79	4.985

ANOVA

Difference Pretest & Posttest Composition	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	173.454	3	57.818	2.398	0.071
Wihtin Groups	3255.496	135	24.115		
Total	3428.95	138			

*0.10 level of significance **0.05 level of significance ***0.01 level of significance

According to the data in Table 30, there is no statistical significance in the difference between the groups for the means of the difference in pretest and posttest scores within the Woodcock Reading Mastery Comprehension exams. Even though the MLK CTC students scored on average nearly nine points higher on the posttest than

they did on the pretest. Findings suggest that although the mean scores for all three groups are different, they do not vary enough to be statistically significant. Therefore, implications are, again, that increased participation rates do not necessarily impact educational gains within the MLK CTC program.

To recap, it's clear that the original academic objectives for the MLK CTC program were optimistic. The program was only able to meet 40% of its NovaNET objective and 30% of its TAKS objective. However, not all TAKS information was available at the time of the study. TAKS tests are only offered during certain times of the year and the release of scores is not immediate. Further, it is impossible to measure the starting point from which the students began, thus it was not possible to clearly determine the effect of the program. In addition, not all test scores were available at the time of this evaluation. Nevertheless, student gains were noteworthy, especially among the Woodcock Reading Mastery tutorial program. The results of simple statistical analysis indicate that 98% of student participants in the MLK CTC program, who took both the Woodcock Reading Mastery pretest and posttest, reported a gain. According to the statistical analysis utilizing the t-test, in comparing the means of the pretest and posttest scores, the data indicates that participation in the program does impact student educational gains within the Woodcock Reading Mastery program in both vocabulary and comprehension sections. However, according to tests using the one-way analysis of variance, there are no statistical differences in the means of the differences in scores within the Woodcock Reading Mastery Vocabulary and Comprehension exams among

the three groups suggesting that the number of hours of participation does not have impact educational gains within the MLK CTC program.

In evaluating the role technology can play in the academic success of at-risk high school youth, it became clear during the interviews that the use of technology is a controversial strategy for teaching these at-risk students. But staff members at the MLK CTC clearly see the benefits of this type of intervention for targeted student populations. Education Director Evelyn Lawson states: "Technology provides something that a transient student population can't do on their own; it adds something to the traditional educational setting by providing a systematic way of tracking progress and allows students to pace themselves during their studies."

Norman, a veteran teacher, adds: "There is something magical about a computer. Students read and you answer questions—it allows them to focus on their lessons, something these at-risk students can't find in a traditional classroom….When you put this type of student in front of a computer, first off it isolates them; they are no longer in the classroom, no longer talking, no longer acting out. Secondly, the rigorous repetition of the computer lesson is useful to their retention of the assignment."

Finally, another respondent highlights the need for new strategies to retain at-risk kids: "There are those who like it, they say there's no rush, no pressure. They can just get their lessons done; they're also able to repeat a lesson whereas in the classroom, they don't get that opportunity. This program is also very helpful for at-risk students who are pregnant or in similar situations that might keep them from coming back and

finishing their education. The other positive thing about this program is that it doesn't care who you are or what you look like; to the computer, the kids are all the same."

MLK CTC Program Director Odus Oglesby focused his appreciation for technology-based learning on the technology itself. "Today everything is technological: know how to use technology or get left behind. That was our fundamental philosophy behind this type of learning tool—we wanted to give students an opportunity to use technology while learning the curriculum currently being taught in their school. A second aspect of this program is that it provides, as an additional step toward learning, a teacher in each MLK CTC computer classroom. For example, we have one teacher who is a mathematical expert and his experience has provided the students with multiple ways of tackling problems. These strategies will ultimately help kids succeed in life."

But the staff members were not without criticism of this new technology and its limitations. A respondent states: "The ones that go to this after-school program are the ones that are not doing well with the traditional system, and it's perceived by some as a shortcut. If they don't do well in class, they go to tutoring, and summer school, and eventually the school ends up with a 16-year-old freshman, and they wonder, what's in store for this student. So we put them in this after-school program where they go and they sit there. It works like an online class at a university. It's good for the people who can sit in front of a monitor and fill in the answers. However, we had one girl who had seizures while at the program; other students get bored and start skipping."

Another staff member argues for not dismissing the importance of an educator's personal touch: "Overall, I think the program does a good job for those who are cut out

for it; but that's not all students. To get these kids to buy into the system, they need more personal attention—they need an actual person to talk to."

Other staffers may fear that this technological wave of the future could impact their jobs: "Personally, I've always thought that the school system would love a system like this where they could control the entire educational delivery system. It's just a matter of time before they get rid of the teachers and sit all the kids in front of the computer. Well, maybe not that extreme."

As part of the observations recorded for this evaluation, during a visit to Moises Molina High School it appeared as though several computers were shut off; there were approximately 25 computers in the room and approximately 60% were turned on. Norman commented on this almost immediately, stating: "The only problem we face in the computer lab is that many of the computers don't work. A lot of them are refurbished and can't handle the software."

During the time of evaluation, the room was approximately 30% full of students who appeared to be working quietly on the computers. During the visit, two students were sharing earbuds (headphones) while listening to a single iPod; the teacher, after witnessing this behavior, quickly and quietly asked them to put away their music. Norman, the teacher on duty, upon returning to his desk, said, "When they are here, I am not their teacher, I serve as their mentor. I know what each student is doing and they are encouraged to ask questions, but we aren't here to baby them—they have to work."

The room utilized a U shape with the teacher sitting at the front of the room and the computers spaced equidistantly around the perimeter of the room. In between the

teacher and the computers were long tables with chairs. The teacher worked on grading class assignments during most of the visit and occasionally, when called upon, worked with a student on his or her computer lesson.

6.3.1 Technology and Educational Gains

According to researchers, "educational technology has demonstrated a significant positive effect on achievement. Positive effects have been found for all major subject areas, in preschool through higher education and for both regular education and special-needs students" (Sivin-Kachala and Bialo 2000, 10).

Program staff agree that success within this program should not be measured by large gains; rather, as Oglesby stated: "If one student succeeds in their education, then the program is a success. Success, in my opinion, is happiness. If you are happy, then you live longer and you'll do a better job in life." Other personal narratives about the appropriate strategies for evaluating these types of programs are stated below.

In setting the stage, Oglesby offers this explanation for why the MLK CTC program is effective: "I've read that nearly 50% of black males are failing to pass their TAKS test; my belief is that when your population isn't passing, then you need to emphasize that and help them with it. The MLK Center has done that by providing a free program to these at-risk students that allows them to utilize current technology, work at their own pace, and get feedback about a lesson so they can understand what's being taught."

According to the literature, tutorial software, similar to what is used in the MLK CTC program, that provides feedback of correct responses was found to be more useful

to students than those programs that require participants to continue answering questions until they pick the correct answer. Another interesting study found that learning that takes place on the computer has been shown to be as effective as traditional instruction methods (Sivin-Kachala and Bialo 2000).

Technology, according to Norman, is beneficial because it isolates the students from negative peer pressures and focuses them on their education. “Many of our students come in here angry and resentful, but after a while they get less angry and hook on. Some still have problems, but we try to work through them and finally—finally, get them to graduation and to the point where they have an accomplishment under their belt. Many don’t pass their TAKS test the first round, but if they hang on and continue to work with the program, most of them will pass. We do have a few student’s who have not passed TAKS yet, but it’s not because they aren’t smart enough, it’s not because they couldn’t do it, it’s because they are lazy. They got angry or discouraged. We have very few though—most finally pass the test.”

Norman continues, “I’ve seen a lot of progress with a lot of our participants and I’m happy with it. The teachers have taken a lot of their spare time to participate in this program, and we have pushed so that the kids could get the most out of this program. I was surprised when I saw how many participants there were and how many graduated—that was a good feeling.

“With this type of student, we are happy if 50% of them succeed. We have murderers, prostitutes—criminals of all kinds. And when you take a kid like that and get them to graduation, it’s a miracle. We get kids that nobody else can handle. I’m

personally pleased with any of them that pass or graduate. More than 50% is just wishful thinking. We did lose a bunch and gain a bunch throughout the year. The program doesn't look very good on paper, but I'm here to tell you that for those that participated, they entered in sad, sad shape and for those that hooked on, it was simply a miracle. I've made a lot of good progress with this program. Those that were enrolled in the program and graduated know they owe their success to this program."

Another respondent stated, "What we are trying to do is to get people to buy into a system that works regardless of who's in the administration. We all want kids accountable. We want them socializing, intelligent, talking—but accountable talking and accountable to the community inside and outside of school—this is the objective. This is what every teacher is trying to do in class. Everything we teach must relate directly to the TAKS objective, this program can help with that process. But we as a district have to be committed to the software, committed to the kids in general. We need also to elevate everyone's commitment level."

6.4 Professional Development Goals

Developing and maintaining the "right staff" is critical to the success of any after-school program (Education Development Center, 2001). All of the computers, supplies, and plans in the world are useless without dedicated, well-trained, fulfilled, and caring staff (Education Development Center, 2001).

Table 33 outlines the professional development goals of the MLK CTC program and provides a determination of success. A number of workshops were provided to all teaching staff and outside evaluators as a means of providing both general and

instructional information regarding the program's implementation and technology-driven instruction.

Table 31: Professional Development for MLK CTC

Objective	Data Collection Approach	Methodology	Outcome
100% of the MLK CTC teaching staff will receive professional development training.	Count of workshops Sign-in attendance sheets	Simple tally	Yes

As illustrated in table 33, all members of the professional teaching staff and the outside evaluators attended in-school and Saturday sessions held at the MLK CTC Center. The following statements provide an in-depth look at the level of professional development and the kind of teachers who worked in the MLK CTC program.

Interviewees were first asked if teachers were provided with the tools necessary to provide students with the highest levels of OST activities. Respondents agreed that professional development was a core component of this program. Interviewees were then asked to describe the kind of teacher that could be found within the confines of the MLK CTC program. Program leaders responded that the teachers who participated in this program were exemplary; some had previous experience with at-risk students and all were supported through professional development training hosted by the MLK CTC. Oglesby states: "We selected teachers that we already had working in the Reconnection program within the schools to provide the students with a familiar face." The Reconnection program is offered to nearly 20 DISD high schools and is available to

students who had previously dropped out of school or were in situations which made it impossible for them to continue on to graduation. The program was designed as a means of earning credits for graduation.

MLK CTC teachers were also provided with extensive support and training, which, as one teacher comments, was successfully built on the Reconnection program: "MLK used our [Reconnection] program which was nice, but we did have outside training. We were in regular contact with the people at the MLK. They would come up and have representatives come a few times a month to provide us with training and support—we also had meetings on various Saturdays."

But, as Oglesby states, there was also an extra element in the type of teacher these types of programs require. "What we found overall was that these teachers had so much compassion for these students—some would even offer to teach these kids at home. I was very impressed. You don't get that kind of dedication anymore. We had one teacher who had a pregnant girl in her class and she offered to teach her at home so that the girl could graduate. She [the teacher] was willing to do whatever it took to help this girl succeed."

6.5 Parental Involvement and the MLK CTC

Table 34 provides information regarding parent/teacher/student involvement within the MLK CTC program. Each parent was expected to attend at least six family workshops provided by the MLK CTC as well as enter into a Parent/Teacher/Student Compact.

"Parental involvement, in almost any form, produces measurable gains in student achievement" (Dixon 1992, 19). Parental involvement, therefore, is vital to academic achievement. However, it appears that parental involvement declines as students grow older and progress in their education (Stouffer 1992).

Table 32: Parent/Caregiver Involvement for MLK CTC

Objective	Data Collection Approach	Statistical Methodology	Outcome
At least one parent or caregiver of each student will attend at least six family workshops provided by MLK CTC.	Documented parent attendance at family workshops	Simple tally	2 of 6 workshops were held due to lack of attendance.
At least one parent or caregiver of each student will enter into a Parent/Student/Teacher Compact.	Documentation of records on file.	Simple tally	23 (10.6%)

In general, the program was unable to involve caregivers in any significant numbers. Only 23 parents (10.6%) entered into a Parent/Teacher/Student Compact. Due to lack of attendance by the parents/caregivers, the family workshops were terminated after only two sessions. It is unclear whether the fault lies with the shortness of the program's duration due to the gap in service, scarce resources, or overcoming the caregivers' concern over whether or not their children and school want them involved.

In transitioning to a discussion on lessons learned as a result of this journey, Oglesby states: "I was also disappointed with the lack of parent involvement. When

kids get older their parents sometimes aren't as involved as they once were, and the parents of these kids typically work two to three jobs just to survive—they just don't have the time to devote to their kids' education. However, as parents they really should have been more involved—we needed to have the parents push their kids harder in school. It hurts that we couldn't meet the full extent of parental involvement with the program."

According to scholars, parental involvement is intensely influential to teenage youth as they seek the approval and guidance of their parents in determining their standards, values, and educational or occupational goals (Huang 2001).

In addition to parental involvement, other primary issues include lessons of collaboration, extending financial resources, and the modernization of technology.

6.6 Lessons Learned

Evaluations are tools designed to help programs make the best use of their resources as they work to improve the quality of their design (Royse et al. 2006). An evaluation can uncover a wealth of information and provide program directors with assessments about the "efficacy of their efforts" based on program objectives (Huang 2001, 45).

The program managers were asked to share "lessons learned" during their work with the MLK CTC program. Financial matters and matters of collaboration were the primary subjects discussed. Parental involvement was another lesson learned. As discussed earlier, Lawson and Oglesby agreed that more parental involvement was necessary to the success of the program and its participants. A third lesson was the need

for up-to-date technology. Table 35 briefly describes the various lessons learned by MLK CTC program directors as derived through interviews with MLK CTC administration and teaching staff.

Table 33: Lessons Learned for MLK CTC

Objective	Data Collection Approach	Response
From the perspective of the MLK Center, how could the project be improved and/or changed to better serve the needs of the target audience?	Transcription of Interviews	• Emphasis on maintaining a limited budget. • More collaboration with the five partnering high schools concerning program goals, implementation. • Modernizing technology to support software

During interviews with program managers, each spoke with great emotion and heavy-hearted regret over any failure felt by its participants. It became evident that in spite of all of the program's faults, these managers expressed genuine concern for the educational well-being of their participants.

Financial constraints were the number one obstacle facing this program. According to the literature, this is not an uncommon problem. One of the biggest issues with after-school programs designed to help low-income youth in inner-city schools is the lack of funding (Halpern 1999). The MLK CTC managers agreed, as Oglesby states, "The number one challenge we faced was money. We should have requested that the monies awarded to fund this program be spread out over a longer period rather than

distributed all at one time….[As a result,] we ran out of money before the end of the program and had to make some changes to the program's core—such as releasing the retention and outreach specialist."

Another financial obstacle felt by the program staff was the poor condition of computers and outdated technology within the five partnering schools. Pointing at the literature, it's not uncommon for low-income schools to be left with the poorest quality computers. According to researchers Sivin-Kachala and Bialo (2000), low-income and minority students had considerably less access to computer technology in their schools as compared to students in more affluent areas. The computers in the MLK CTC classroom, according to one respondent, were antiquated and unable to appropriately run the program's software.

Another area of concern was the lack of parental involvement. Oglesby noted during his interview that the role a parent can play in a child's education is crucial. He also stated that parents of older children tend to spend less time with them academically. Beyond simply the amount of attention parents pay to their older children, Norman spoke of how many of these students live in situations where they are cared for by extended family because their parents are living in Mexico, and they have either lost contact or have limited access to their parents; he spoke of students whose households are not English-speaking, which presents an obvious disconnect from the school system. He also spoke of how many of these parents work two or three jobs just so they could keep a roof over the heads of their family and food on the table. He said,

“We can’t force these kids to be here; we can’t go get them where they live. They have to want to learn—and oftentimes, they have to do it on their own.”

Interviewees also spoke of lessons regarding collaboration with the school district and the community at large. As Oglesby points out, internal communication also needs to be improved. Lawson explains: “Looking back on the program, I think we should have collaborated with more schools and worked more closely with the central administration of the school district….We also saw a lack of support from the city of Dallas [one of the program’s founders]. The city was not involved in trying to sustain the program and didn’t appear to have any interest in what was happening with the program.”

In conclusion, one of the program’s biggest challenges was the revolving door of goals and objectives within the school district: “I didn’t know MLK CTC program was in school until just a few days ago when you informed me of it—I thought Reconnect and MLK were the same program. We’ve got so many programs. Every year we have another catchall to save all of these at-risk kids and every year we have a new set of goals and it should be a direct result of the previous year’s goals…but it’s not. Every year is different. You aren’t going to be able to change humankind overnight—but every single year we get the adage that the old is bad and new is good.”

CHAPTER 7

SUMMARY OF FINDINGS AND DISCUSSION

In evaluating the outcomes of the Martin Luther King Jr. Community Technology Center After-School Program between August 2006 and July 2007, it became clear that technology-based after-school programs, especially those that serve at-risk youth, are beneficial because they pace learning, promote accomplishments, isolate youth away from negative peer associations and unsafe environments, put the student in control of their own learning, provide feedback, and piggyback with what is already being taught in the classroom (Bransford, Brown, and Cocking 2000; Duran 2002; Hall, Israel, and Wellesley Centers for Women 2005; Roschelle et al. 2000; Slavin and Madden 1989; Waxman, Yolanda, and Arnold 2001).

In order to provide supporting evidence of these outcomes, this analysis involved the collection and analysis of data from MLK CTC program directors and relied on interviews and classroom observations to triangulate data.

The following program objectives served as the foundation for this analysis. The MLK CTC program was tasked with providing supplementary instruction in reading, mathematics, language, ESL, and career development to 250 disadvantaged, low-achieving ninth- through twelfth-grade students enrolled at A. Maceo Smith, James Madison, Lincoln, Moises Molina, and North Dallas High Schools. Of those students, it was expected that 95 percent of MLK CTC participants would receive supplementary instruction in reading and math, and will complete at least 0.5 credits on NovaNET

during the course of the program. Eighty-five percent of MLK CTC students were expected to meet or exceed state required expectations on each performance objective on the Texas Assessment of Knowledge and Skills subtests. Seventy-five percent of students tested using the Woodcock Reading Mastery test were expected to show academic gain on reading comprehension and vocabulary subtests. Ninety percent of students were required to complete at least 96 hours of computer lab work. All MLK CTC teaching staff was to receive professional development training. And at least one parent or caregiver of each student was expected to attend at least six family workshops provided by MLK CTC, and at least one parent or caregiver of each student was expected to enter into a Parent/Student/Teacher Compact.

In addition to these primary objectives, this evaluation also examined educational gains within the program as measured by Woodcock Reading Mastery pretest and posttest scores. Discussion includes empirically based implications for future program directors.

7.1 Summary of Findings and Implications

MLK CTC student participants were described as being at risk of school failure. According to evaluation interviews, youth participants were said to be some of the "meanest" and "toughest" students that the staff had ever encountered. The characteristics of MLK CTC participants are as follows: they come from areas of high poverty, they attend low state-ranked schools, they have poor academic skills, they come from single-parent households, their households experience a high rate of unemployment, and they have insufficient English skills. Other descriptors included

high instances of pregnancy and criminal involvement. One of the most prevalent reasons for youth's disconnection from school is truancy; other causes include criminal behavior, pregnancy, and the need to work in order to support family.

7.1.1 Program Performance and Youth Participation

In measuring program performance, the MLK CTC program was able to reach 96 percent of its target goal of providing supplementary instruction in reading, mathematics, and language to 250 low-achieving ninth- through twelfth-grade high school students enrolled at James Madison, A. Maceo Smith, Moises Molina, Lincoln, and North Dallas. In reaching its target ESL student population, the program exceeded its goal by 27 percent. However, only 1.7 percent, or four students, logged 96 or more hours on the computer's software during the course of the program. According to the data, the average number of hours spent on the computers was 19.

It is important to remember that tracking student hours in the computer labs was problematic for two reasons. First, hours were recorded by hand on a sign-in sheet, and program times were limited; for example, some schools only offered the program for 1.5 hours per day, but students could have worked on the computers for longer than that period and at any point throughout the day. Therefore, there is no evidence that student participation was accurately recorded. The second problem was a significant gap in service between February 23, 2007 and May 24, 2007. This interruption undoubtedly severely impacted the number of hours students were able to complete during the 2006/2007 program year.

According to the data, the overall retention rates of MLK CTC program participants was within the boundaries of the program's objectives; however, the program suffered from low duration as defined by the number of hours participants spent in the computer labs. Of the program's original 239 participants, 84 percent remained active participants throughout the duration of the program, while 12 percent left prior to the completion of the program. Student retention in after-school programs is an ongoing challenge. However, scores of literature repeatedly conclude that students who regularly participate in after-school programs benefit from exposure to program activities (Anderson-Butcher, Newsome, and Ferrari 2003). Unfortunately, high school youth are often the hardest to entice because they are less motivated, they have to work or have familial obligations, they're less likely to want to learn during nonschool hours, and they focus a significant amount of attention on their social lives (Afterschool Alliance 2005; Anderson-Butcher, Newsome, and Ferrari 2003; U.S. Department of Education 2000; Baldwin Grossman, Walker, and Raley 2001; Hall et al. 2003).

While the MLK CTC program had a clear idea of what its objectives were, as specified by concrete objectives, time frames became unstable due to unanticipated and unavoidable conflicts. The MLK CTC program also suffered from a lack of communication with a new principal which led to the suspension of the program, an unforeseen conflict that resulted in tremendous setback of program delivery. Implications are that future program directors should develop short- and long-term program objectives to ensure that a program is being monitored on a continual basis, allowing for program leaders and staff to maintain a grasp of the big picture, assess

needs, and make adjustments based on new trends, increasing demands, as well as unforeseen conflicts (Harvey and Shortt 2001).

Student retention is another important variable that the study results indicate merit more attention. School administrators must play a more active role to ensure that this school-after-school link is strong, which can serve to promote higher after-school program attendance (Little and Lauver 2005). Programs should also offer youth compelling reasons for regular attendance in after-school programs by persuading students that participation will lead to better grades and employment opportunities, or an advantage in the job market (Druian and Butler 1987; Little and Lauver 2005). The MLK CTC program did offer a Career Development component, but there was little evidence that this facet of the program was actively utilized by participants or supported by program staff. Finally, programs, especially those offered to at-risk high school students, should avoid too closely resembling the traditional school environment, instead focusing more on a diverse set of enriching student activities to ensure that there is something for everyone to enjoy (Little and Lauver 2005).

7.1.2 Educational Gains

With regard to academic objectives, the MLK CTC program was overly optimistic. The program was able to meet only 40 percent of its NovaNET objective, and 30 percent of its TAKS objective. However, at the time of the evaluation, only 60 student participants had received information on the status of their TAKS scores. In addition, it is impossible to measure the academic starting point from which the students began, thus it was not possible to clearly determine the effect of the program. However,

within the Woodcock Reading Mastery vocabulary and comprehension pretest and posttest scores, 98 percent of students who took both exams showed gains—the target was 75 percent of the total number of students who completed both the pretest and posttest.

A *t*-test for dependent samples was used to conclude whether there is a difference between pretest and posttest groups within the Woodcock Reading Mastery vocabulary and comprehension exams. According to the data, there is a significant difference between hours spent at the MLK CTC program and the two groups (pretest and posttest) within the Woodcock Reading Mastery vocabulary and comprehension program for MLK CTC participants. These findings suggest that participation in the MLK CTC program does improve educational gains.

Typically, program duration and intensity appear to be directly related to outcomes of participants (Huang et al. 2000; Lauer et al. 2003; Witt 2001). Findings from the MLK CTC program, however, do not support this theory. For the purpose of this evaluation, the hours of exposure were categorized into three groups and examined in relation to the difference in within-program pretest and posttest scores using the Woodcock Reading Mastery program using one-way analysis of variance (ANOVA). Implications were that "with regard to educational gains, the amount of time is less important than what occurs during that time and that extending the time for learning does not mean that students will spend that time in learning" (as cited in Lauer et al. 2006, 279-280). Meaning that to be effective, after-school programs should provide participants with enriching activities for a minimum amount of time; however,

according to the results of this analysis, duration of participants does not necessarily impact educational gains within the MLK CTC program.

In evaluating the role of technology in supporting the academic success of at-risk high school youth, it became clear among the MLK CTC evaluation respondents that the instrument was controversial. On the one hand, it was agreed that the instrument did serve to support the academic achievement of many at-risk students who benefited from isolation away from negative peer influences, while being provided with the opportunity to pace and focus their learning. On the other hand, technology-based learning was criticized for serving as a shortcut for many struggling students, moving them away from the traditional role of school into an alternative means of learning. Other criticisms included the lack of personal interaction and the potential for students to lose interest and withdraw from the program. In order to sustain cohesive support of technology-based learning, these types of programs must integrate the after-school model as part of the overall school philosophy or plan. In other words, youth development becomes the engagement strategy for the entire school, and not just the after-school program (Hall et al. 2003).

When trying to determine whether or not technology can have an impact on learning, there are several issues to remember. First, technology is merely one type of instructional tool; it cannot be solely responsible for educating all students (Bransford et al. 2000; Coley, Cradler, and Engel 1998). Second, changes in technology are likely to be “nonlinear, and may show effects not only on student learning, but also on the curricula, the nature of instruction, the school culture, and the fundamental ways that

teachers do their jobs" (Coley, Cradler, and Engel 1998, 38). Third, the impact of technology is multidimensional; therefore, perhaps most important is that programs utilizing technology must remain flexible, modifying operations in order to gain a more thorough comprehension of the impact of technology-based learning on at-risk youth (Coley, Cradler, and Engel 1998; Slavin and Madden 1989).

7.1.3 Collaboration with Parents, Staff, and the Community

According to the literature, one of the most important aspects of a good after-school program is the involvement of committed and caring adults (Hall et al. 2003; Raley, Baldwin Grossman, and Walker 2005). Qualitative findings suggest that MLK CTC staff was compassionate, well-qualified, and devoted to the students within the program. The program teachers were employed by the schools and thus served to provide an important link from school to after-school (Little and Lauver 2005; Raley, Baldwin Grossman, and Walker 2005). Implications are that youth who are connected to school are more likely to have a better attitude toward school, learning, and teachers; are more motivated; and are less likely to engage in risky behaviors (Hall et al. 2003). Teachers and other staff members involved with an after-school program can also serve a second important function of encouraging program participation (Little and Lauver 2005; Raley, Baldwin Grossman, and Walker 2005).

With regard to development of staff, the MLK CTC program did meet its objective of offering informational and instructional workshops to all teaching staff and outside evaluators. Program data reflects that all staff and evaluators attended these workshops held at the MLK Center. Professional development of staff is critical to the

long-term success of the program. Implications are that professional development opportunities should work to assist staff in identifying best practices, and serve as time to share personal learning goals, assess progress, and even openly discuss and work through relevant problems (Raley, Baldwin Grossman, and Walker 2005).

Staff turnover has been identified as one of the most insidious challenges faced by after-school programs (Raley, Baldwin Grossman, and Walker 2005). This evaluation found that the organizational structure of the MLK CTC program was initially well staffed. However, the program did experience a higher than expected turnover. For example, the retention and outreach specialist, who served a critical function within the program, was released during the middle of the program year due to insufficient funding. Directors of these types of programs, as well as grant writers, must partner to seek additional funds from other public/private resources to maintain adequate staffing and continuity of the programs.

Qualitative data analysis also revealed that the MLK CTC program suffered from a lack of support from school administrators. In order to engage students in technology-based learning, it is essential that programs garnish the support of school staff and administration (Slavin and Madden 1989). School administrators are critical to the success of after-school programs in that they can encourage buy-in from and relationships with school teachers, staff, and parents (Little and Lauver 2005). By increasing awareness about high-quality after-school programs, directors can help build the support necessary to sustain their operations. Measures to increase awareness and support of after-school programs can come in the form of newsletters, school

conferences and meetings, and community forums (Harvey and Shortt 2001). Another way to boost awareness and rally support for an after-school program is by allowing participants to display their learned skills during school performances, exhibitions, and other venues (Little and Lauver 2005).

Another vital relationship that must be supported occurs among program staff, youth participants, and parents. According to the objectives of the MLK CTC program, parents were expected to enter into a Parent/Teacher/Student Compact. This evaluation found that the program was unable to involve caregivers in any significant numbers; a mere 10.6 percent entered into a Parent/Teacher/Student Compact. In addition, due to lack of attendance by the parents/caregivers, the family workshops were terminated after only two sessions. In order to be successful, these types of after-school programs must focus on the role that parents play in their children's education. By encouraging regular involvement in after-school programs, parents can serve to enhance their child's ability to learn and succeed in school. Furthermore, for many low-income families, quality after-school programs are the only avenue youth have for exploring the arts, workplace skills, and safe physical activities—therefore, in an effort to promote parental involvement and support of after-school programs, it is critical that parents feel welcome (Little and Lauver 2005).

Finally, in addition to positive relationships with program staff and parental involvement, youth crave opportunities to develop positive, long-term relationships with community members. These networks allow youth to explore educational and employment opportunities. According to the literature, meaningful connections to

community leaders across various sectors have been shown to support positive youth development (Hall et al. 2003). The MLK CTC program would have benefited from a direct connection to community leaders and outside partnerships with local government, law enforcement, foundations, as well as leaders from the ethnic, racial, and religious groups that make up the Center's community. Implications are not only that these connections would have allowed the program to build a more comprehensive structure for its participants, but it would have opened up the possibility for new funding opportunities and thus "maximize management capacity and broaden program-level impact" (Harvey and Shortt 2001, 19).

7.1.4 Necessary and Adequate Resources

Program resources referred to both monies for program operations and funds for staff, professional development, facilities and materials, and long-term planning. The results of this evaluation indicate that funding for the MLK CTC program was constrained. According to the program's director, it would have benefited the program if its early grant funding would have been spread out over the duration of the program year rather than dispersed at one time. Lack of sustained funding led to staff turnover. Therefore, funding should be sufficient to pay salaries at rates that not only attract but retain staff (Witt 2001).

Qualitative data analysis also revealed that the computers used by the MLK CTC program were often inadequate. To streamline resources, the MLK CTC program took advantage of hardware already available in schools' computer labs, with the exception of James Madison High School, whose participants used computers available

in the MLK Center. According to one program teacher, some of the computers at his school were unable to run the software used by the MLK CTC program. This issue is twofold and concerns the MLK CTC program as well as the school district.

First, the MLK CTC program offered services to five partnering high schools; however, not all schools were located within close proximity of the Center. For example, Moises Molina High School was located more than ten miles away from the Center. By utilizing the schools' computer labs, program directors were able to extend services to all participants without having to worry about logistical constraints. Further, because of limited budgets, the use of immediately available resources allowed program directors to concentrate on the purchase of the most effective software available on the market; this software would reflect what was already being taught in the schools. Implications are that programs should undergo continual review of their operations and resources (Harvey and Shortt 2001). If the MLK CTC program had done this, it is likely that any inadequacies in the technology would have been uncovered and adjustments could have been made to resolve the situation prior to the close of the program year.

The second issue, which extends beyond the control of the MLK CTC program, is the current cost of technology in schools. According to research, most schools allocate approximately "$3 billion, or $70 per pupil," or "just over one percent of total education spending" to wire schools. These funds, however, are insufficient; to adequately fund technology in schools, it could cost an estimated "$11 billion for a lab with 25 networked PCs in every school, to $47 billion for a networked PC for every five students" (Coley, Cradler, and Engel 1998, 5). In an effort to mediate these

expenditures, schools make use of a number of techniques such as discounted group rates, donated services, and special programs offered through public and private resources (Coley, Cradler, and Engel 1998).

If after-school programs are to focus on the development of high-quality programming, then it becomes necessary that these programs obtain funding for adequate resources that is not solely dependent on one-time or short-term grantsHall et al. 2003). Several recommendations arose out of the data analysis, including: fund a local youth development organization to influence, maximize, and pool public and private funds for after-school programming; fund activities that might generate public policy and community support of after-school programs through public funding; and fund activities that are connected with larger institutions which are willing to subsidize equipment, staff, space, or other necessary resources (2003).

In conclusion, technology has become an important tool in education. The active use of computers in schools can bridge the digital divide by increasing access to information and promoting alternative ways of learning, which could ultimately reduce the achievement gap (Bransford, Brown, and Cocking 2000; DeBell and Chapman 2006; Duran 2002; Hall, Israel, and Wellesley Centers for Women 2005; Judge, Puckett, and Bell 2006; Renwick 2006; Roschelle et al. 2000; Slavin and Madden 1989).

Technology can play a particularly crucial role in supporting the academic success of at-risk youth by pushing the boundaries of education beyond the traditional classroom (Duran 2002; Rochelle et al. 2000; Slavin and Madden 1989; Waxman,

Yolanda, and Arnold 2001). At-risk students generally have difficulties passively absorbing teacher-instructed material (Roschelle et al. 2000; Waxman, Yolanda, and Arnold 2001). Technology improves the academic outlook of these at-risk youth by putting students in control of the material and helping them to develop dynamic problem solving skills which can be used to tackle a variety of subject matters (Duran 2002; Roschelle et al. 2000; Waxman, Yolanda, and Arnold 2001). Finally, one of the most significant results of this research was that duration, the number of hours a student spent at the computer lab, did not have a significant impact on student academic achievement using program measures. Therefore, according to the results of this evaluation, duration does not necessarily mean better outcomes—time is less important than the quality of the program's design.

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