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**THE IMPACT OF SUMMER/ACADEMIC YEAR
LEARNING PROJECTS ON THE ACADEMIC
ACHIEVEMENT OF STUDENT
PARTICIPANTS**

by

Glenn S. Beer, B.S., M.S.

A Dissertation Presented in Partial Fulfillment of the
Requirements for the Degree Doctor of Education
in Curriculum and Instruction

COLLEGE OF EDUCATION
LOUISIANA TECH UNIVERSITY

May 2009

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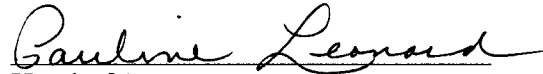
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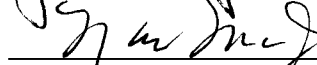
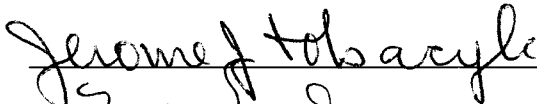
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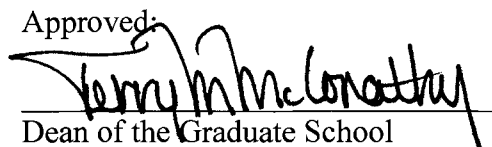
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Dean of the Graduate School



Dean of the College

ABSTRACT

This study examined differences in the academic achievement between students who participated in the Louisiana Gaining Early Awareness and Readiness for Undergraduate Programs (LA GEAR UP) Summer/Academic Year Learning Projects and students who did not participate in the program. The sample consisted of 111 students who attended schools participating in the LA GEAR UP program and who attended at least 4 LA GEAR UP summer learning camps and a comparison group of 111 students attending the same schools but who did not attend a summer learning camp. Participating students were individually matched with non-participants on 7 variables, including 6th-grade Iowa Test of Basic Skills (ITBS) composite scores as a baseline academic measure. The dependent variables included grade point average for grades 10, 11, and 12 and student scores on all components of the Louisiana Graduate Exit Exam (GEE). The data were analyzed using a one-way Multivariate Analysis of Covariance (MANCOVA) and a one-way Analysis of Covariance (ANCOVA) with the 6th-grade ITBS composite score as covariate. Statistical analyses revealed a positive and significant difference in favor of participants for combined GPA for grades 10, 11, and 12, as well as for GPA in grades 10, 11, and 12 individually. The analyses of the Graduate Exit Exam scores indicated no significant difference between groups for (a) the combined scores on the Graduate Exit Exam; (b) the mathematics test, and (c) the science test. The analyses found a significant difference in favor of participants for the English/language arts and social studies tests.

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Author Alvin R. Ben
Date 5/11/09

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To future doctoral students, a few words of advice from the trenches. First, remember that time is a precious gift; give it wisely to your work and freely to those you care about. A dissertation demands much of your time, but those that care about you treasure it. Write as often as you can, the end is that much closer every time. Finally, remember that APA is not a four-letter word!

CHAPTER ONE

Introduction/Problem

Increasing access to college for all, regardless of family background or income, has been a goal of educational leaders in the United States for over 60 years. Through a variety of programs introduced at the national level since 1947, educational officials in the United States have aggressively sought to expand access to postsecondary education for traditionally under-represented populations including low-income and minority students.

Shortly after the enactment of the G.I. Bill, President Harry S. Truman created the Commission on Higher Education, sometimes referred to as the Truman Commission (President's Commission on Higher Education, 1947), which was charged with finding ways to expand educational opportunity. The Commission called on "the community, at the local, state, and national levels, to guarantee that financial barriers do not prevent any able and otherwise qualified young person from receiving the opportunity for higher education" (Advisory Committee on Student Financial Assistance, 2006, p. 4).

President Lyndon B. Johnson strengthened the nation's commitment to expanding access to higher education for all Americans when, on November 8, 1965, he signed the Higher Education Act of 1965 (HEA). Johnson articulated his vision for the HEA when he stated that its promise would be fulfilled when "a high school senior anywhere in this

great land of ours can apply to any college or any university in any of the 50 States and not be turned away because his family is poor” (Cotton, 2006, p. 1).

Under Title IV of the HEA, several early intervention programs were created that were designed to provide “low-income and first-generation students with the opportunity to develop, early in the education pipeline, the college-related skills, knowledge, aspirations, and preparation that are required for postsecondary enrollment and attainment” (Perna & Cooper, 2006, p. 40). Today, these programs, collectively referred to as the TRIO programs, are comprised of initiatives that are designed to identify qualified individuals from disadvantaged backgrounds to prepare them for a program of postsecondary education. The TRIO programs provide support services for such students who are pursuing programs of postsecondary education in order to motivate and prepare them for doctoral programs and to train individuals serving or preparing for service in programs and projects so designed (1998 Amendments to Higher Education Act of 1965, 20 U.S.C. 1070a-11, U.S. Department of Education, 1998 in Perna & Cooper, 2006). The TRIO programs include (a) Upward Bound; (b) Talent Search; (c) Student Support Services; (c) the Robert E. McNair Postbaccalaureate Achievement Program, and; (d) Educational Opportunity Centers.

In 1972, Senator Claiborne Pell introduced an amendment to the Higher Education ACT (1965) to provide Basic Educational Opportunity Grants, now referred to as Pell Grants, which provided grants to low-income students to pay for a college education. This furthered the notion that every qualified student should be able to attend college regardless of his or her socioeconomic status.

Authorized under Section 403, Part A, of Title IV under the 1998 amendments to HEA, a new early intervention program was introduced that replaced the National Early Intervention Scholarship Program. The new federal program titled Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP) offered grants to states and to partnerships comprised of one or more local educational agencies representing; (a) at least one elementary and one secondary school; (b) one institution of higher education, and; (c) at least two community organizations (1998). These grants were to be used to provide supplemental support services to P-12 students who are academically at-risk, and information to students and parents about college and financial aid benefits and requirements. This program currently serves over 1.2 million students nationwide (Perna & Cooper, 2006).

Despite a significant investment of federal dollars, the promise of these programs remains unfulfilled. Spending on these programs includes \$300 million per year for GEAR UP, \$16 billion per year for Pell Grants, and \$828 million per year for TRIO programs (U.S. Department of Education, 2006). However, the gap between the college enrollment of low- and high-income students stands at 30 percentage points—essentially the same as it was in the 1960s when the Higher Education Act was enacted (Perna, 2002).

Additional troubling gaps associated with income persist at the national level that exacerbate the lack of improvement in closing the college enrollment gap. Although there has been a general decline in the number of low-income students who drop out of high school, little improvement has been noted since the early 1990s, producing a persistent gap by income for high school drop-outs. The size of the gap by race has remained

essentially constant since the mid-1980s between African American/Hispanic students and White students. Similar gaps by income and race exist for high school graduates. College completion rates exhibit similar income-related characteristics. According to McPherson and Schapiro (2006), 77 % of students from affluent families compared to only 54 % of low-income students actually complete college once enrolled (McPherson & Schapiro, 2006).

In Louisiana, where 61.2 % of P-12 students are eligible for participation in the federal free or reduced-price lunch program, a common indicator of poverty, the gaps for low-income and minority students are even more pronounced given the overall poor performance of the state's P-12 education system (Louisiana Department of Education, 2006a). According to a 2002 report by the Secondary School Redesign Commission (Louisiana Department of Education, 2003), of 100 Louisiana kindergarten students:

- About 45 do not graduate from high school,
- 29 go directly to work or into the military (52% of high school graduates),
- 26 go directly (or within one year) to college (48% of high school graduates),
- 9 graduate from college within 6 years (16% of high school graduates). (p. 6)

In a recent report from the Editorial Projects in Education Research Center (2008), Louisiana received a score of D+ on the "Chance for Success Index." The index "combines information from 13 indicators that span an individual's life from cradle to career" (p. 3). The indicators include: (a) family income; (b) parent education; (c) parental employment, and; (d) linguistic integration in the early foundations category. Additional indicators are employed in the schooling years and adult outcomes categories.

While the overall performance of the K-16 education system in Louisiana is below average, the impact on low-income and minority students is even more acute. Half of the African Americans who graduated from a Louisiana high school in 2004 and enrolled in college required remedial coursework. Not surprisingly, only 28% of African American college freshmen in the state's 4-year institutions of higher education earn a degree within six years (Louisiana Department of Education, 2006a). Clearly, these students are not adequately prepared to succeed in college upon high school graduation.

For comparison purposes, Table 1 provides data for the 10 Louisiana school districts with the highest percentage of low-income students as determined by the percentage of students eligible for free or reduced priced lunch. Table 2 provides data for the 10 districts in the state with the lowest percentage of low-income students. Data presented were compiled from the 2005-2006 Louisiana State Education Progress Report (Louisiana Department of Education, 2006b). A comparison of the data demonstrates some of the inequities that may contribute to the lower performance of low-income students:

- Low-income students are less likely to be taught core subjects by a highly qualified teacher. In poorer districts, an average of 73.4% of core courses are taught by a highly qualified teacher compared to an average of 86.7% in more affluent districts.
- Low-income students are more likely to drop out of school (7.73% in poorer districts compared to only 3.63% in wealthier districts), and

- Districts with a higher percentage of low-income students have lower than the state average daily attendance rates. Poorer districts average 93.4% compared to the state average of 93.7% and more affluent districts exceed the state average with 94.43% average daily attendance.

Table 1.
Data for 10 Louisiana Districts with the Highest Percentage of Low-Income Students

State/District	Percent Free or Reduced Lunch	Percent Minority	Percent Core Courses Taught by Highly Qualified Teacher	Percent Dropout Grades 9-12	Percent Daily Attendance
LOUISIANA	61.2	48.5	79.6	7.0	93.7
Bogalusa City	94.0	61.3	85.3	7.8	92.8
East Carroll	93.4	93.9	57.2	11.5	95.3
St. Helena	88.1	93.7	55.0	4.8	93.3
Tensas	86.5	92.8	81.7	3.5	93.6
Washington	85.8	37.1	78.2	3.3	94.4
East Feliciana	85.6	78.5	70.5	6.5	93.6
Iberville	84.5	76.3	76.7	10.6	92.3
Madison	83.8	92.1	65.0	7.7	93.7
Red River	82.8	69.6	97.9	13.1	94.4
Franklin	80.1	52.3	67.0	8.5	91.6

Table 2.
Data for 10 Louisiana Districts with the Lowest Percentage of Low-Income Students

State/District	Percent Free or Reduced Lunch	Percent Minority	Percent Core Courses Taught by Highly Qualified Teacher	Percent Dropout Grades 9-12	Percent Daily Attendance
LOUISIANA	61.2	48.5	79.6	7.0	93.7
Bossier	42.8	36.6	89.4	3.9	94.3
Zachary Community	42.8	42.1	92.7	2.9	95.8
St. Tammany	43.9	19.9	91.8	4.1	93.9
Ascension	44.2	34.5	86.5	4.1	94.0
Ouachita	47.4	32.5	92.3	5.0	94.6
Livingston	48.7	7.0	91.4	3.9	94.1
St. Charles	49.9	40.2	81.7	4.6	94.6
West Feliciana	50.1	44.4	97.5	3.6	94.2
Beauregard	50.8	19.3	87.9	1.2	94.4
Vernon	52.8	28.4	63.3	3.0	94.4

The Louisiana data support the conclusion of McPherson and Schapiro (2006) that students from impoverished backgrounds are less well-educated and less well-prepared for college than are those from more favored backgrounds. “The simple fact is that they have grown up and been educated in circumstances that are much less favorable than those facing other Americans” (p. 20). Additionally, the authors suggest that early intervention programs, such as the federal GEAR UP program, may be effective in

reducing the impact of socioeconomic status on the college enrollment of students from such backgrounds.

Purpose of the Study

The purpose of this study was to examine whether there were changes in overall student academic achievement as a result of participation in an early intervention program, LA GEAR UP, that includes the Summer/Academic Year Learning Projects (SAYLP) component. LA GEAR UP is the state grant program awarded through the national GEAR UP program provided by the U.S. Department of Education. Specifically, the researcher wanted to determine if students who persisted in the program exhibited college-entrance behaviors such as, higher grade-point averages and higher achievement on standardized tests when compared to students who did not participate in the SAYLP component of the LA GEAR UP project.

Justification for the Study

Beginning with the establishment of the Truman Commission in 1947, through the enactment of the Higher Education Act in 1965, and the subsequent investment of billions of tax dollars in the resulting TRIO programs, Pell Grants, and GEAR UP, expanding access to postsecondary education to students from disadvantaged backgrounds has been an important goal in the United States. Unfortunately, little progress has been made in closing the gap in participation in postsecondary education between low- and high-income students since President Johnson signed the Higher Education Act into law in 1965 (Reed, 2006).

The lack of significant progress in increasing participation in postsecondary education among low-income students is of even greater concern today than it may have been in the Johnson era since two out of every three jobs created during the present decade will require some type of postsecondary education. The negative economic and social impact of a lack of participation in postsecondary education is devastating and translates into an increased societal burden that, left unchecked, will create an “opportunity crisis” for future generations of high school students (Louisiana Department of Education, 2006a).

In September 2002, the U.S. Department of Education awarded a \$12.5 million Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP) grant to the State of Louisiana. The primary mission of the GEAR UP program was to elevate the academic achievement of low-income students and to increase the number of students who enroll and succeed in post-secondary education programs. This challenging goal required implementation of multifaceted initiatives including (a) professional development for teachers, (b) student financial assistance and advice, (c) parental support, and (d) community and business partnership development. A six-year grant, which ended in 2008, Louisiana GEAR UP (LA GEAR UP) provided services and assistance to approximately 12,000 students in 39 middle and high schools in 11 districts throughout the state (Louisiana Board of Regents, 2005).

During summer 2003, LA GEAR UP introduced Summer Learning Camps (SLCs). These camps were designed to prepare students with the academic and leadership skills needed to succeed in postsecondary education upon graduation from high school. The SLCs proposed to: (a) provide stimulating learning opportunities in mathematics,

science, technology, and/or English/language arts; (b) develop and promote career and educational aspirations; (c) help students develop an early awareness of the need to plan for college both academically and financially; and (d) combine learning and fun.

Enrollment in SLCs increased from 473 students in 2003 to over 1,200 in 2007

(Louisiana Board of Regents, 2007).

At its March 2005 meeting, the Louisiana Systemic Initiatives Program (LaSIP) Council approved an expansion of the SLC program based on a model developed at Louisiana Tech University. The new initiative, known as Summer/Academic-Year Learning Projects (SAYLPs), involved a three-part program that spanned the calendar year. The program design included summer programs for students and guidance counselors followed by academic-year activities designed to sustain summer learning and leadership training, and to support student-led school and community service projects (Louisiana Board of Regents, 2007).

Preliminary data indicate that the SLCs had not only elevated the academic achievement of participating students, but also positively impacted student behavior as evidenced by: (a) a reduction in disciplinary referrals; (b) increased attendance, and; (c) raised student academic motivation and engagement. Additionally, SLCs helped to transform LA GEAR UP student spirit and attitude and also heightened their expectation for college (Louisiana Board of Regents, 2006; Beer, LeBlanc, & Miller, 2008).

Despite this promising preliminary data related to the LA GEAR UP program, many researchers (Cabrera, et al., 2006; Gullatt & Jan, 2002; Perna, 2002) criticize early pre-college outreach programs including GEAR UP and the TRIO programs for providing little empirical evidence of their effectiveness.

Gullatt and Jan (2002) examined a national survey of 1,100 programs and determined that “a lack of internal, rigorous evaluation in these programs limits their ability to serve more students effectively, to make authentic and lasting links with the schools their participants attend, and to impact more significantly state and local policy regarding educational opportunity” (p. 7). The researchers further suggest that most programs operate on the fringe of the P-12 systems, and therefore do not contribute significantly to overall school reform. Martinez and Klopott (2005) suggest that college access programs can be effective catalysts for school reform efforts that explicitly address the predictors of college-going behavior.

In one study, Cabrera and his associates determined that the “atomistic nature of most of the intervention strategies is increasingly being recognized as a possible culprit for this disparity in college participation rates” (Cabrera, et al., 2006; p. 80). Citing the work of Perna (2002), the authors point out a general lack of alignment between the research related to the college-going decision process and the interventions provided through these programs may further explain the continuing lack of progress in closing the college access gap that has persisted since the 1960s. In her examination of a national survey of 1,100 college outreach programs, Perna (2002) identified eleven ideal program components directly related to what prior research has shown to be reliable predictors of college enrollment, and examined the extent to which these programs included these components. She found that only about 25% of the programs included at least five of the most important components.

Louisiana, like much of the nation, has less than adequately prepared students for postsecondary education. With a significant decline in the number of high school

graduates projected over the next several years and an increasing demand for college graduates, particularly in acute shortage areas such as education, healthcare, and engineering, calls for dramatic measures to improve educational outcomes have resulted in recent efforts to redesign high schools in the state. In 2004, Louisiana Governor Kathleen Blanco created the Commission on High School Redesign to redesign high schools enabling all Louisiana youth to graduate from high school prepared to succeed. In a report released by the Commission in 2006 (Louisiana Department of Education, 2006a), the critical need for reform is summarized in the following mandate:

We must fundamentally *redesign* our entire system of high school education—what Louisiana’s high schools are for, how they work, what they ask of teachers and students, and what they provide to our young people. We cannot afford to be timid about it, and we cannot afford to wait. (p. 12)

Given the massive investment of public resources dedicated to increasing college access through a variety of federal programs, including LA GEAR UP, and the lack of empirical evidence of their success, it is essential that a rigorous evaluation of programs and program elements take place to inform state and national policy, and likewise funding, decisions. This study will provide policymakers and educational leaders with a research-based analysis of programmatic elements that will serve to guide decisions regarding institutionalization of effective practices.

In the midst of the current reform efforts aimed at fundamentally redesigning the P-12 education system of Louisiana, particularly at the secondary level, it is even more important that evidence be provided to identify programs that are successful in raising the academic and career aspirations of low-income students, since the majority of the

students served in Louisiana public schools fall into that category. With LA GEAR UP specifically targeting schools with a high percentage of low-income students, evidence that the program can successfully improve the academic performance of participants should be of great interest to those seeking to improve the P-12 system overall. Further, if the interventions provided by college access programs such as LA GEAR UP can be shown to contribute significantly to overall school improvement, then closer collaboration between such programs and state and local educational agencies would be advantageous. Through collaborative, focused efforts and the sharing of resources to support and institutionalize programs that are proven successful, a realization of the fundamental changes required to achieve college access for all may be possible.

Theoretical Framework

Although the purpose of this study was to determine the impact of participation in SAYLP on the academic achievement of participating students, it is important to emphasize that SLCs occur in the context of a larger program, LA GEAR UP, and that the mission of LA GEAR UP is to increase the number of low-income students who enter and succeed in postsecondary education. Since adequate academic preparation is the most significant predictor of college success (Martinez & Klopott, 2005; Cabrera, et al., 2006), it is logical to examine all program elements through this lens. However, as Cabrera, et al. (2006) and others (Perna, 2002; Hossler, Schmit, & Vesper, 1999) have stated, traditional approaches to the design of these programs have been atomistic in nature. For example, student financial aid programs are explicitly designed to overcome economic barriers to college access among low-income students, but do not address the psychological, social, and academic barriers that also exist among low-income students.

Similarly, researchers who have studied the college enrollment behaviors of students have tended to use theoretical frameworks that address the issue from a variety of perspectives. Perna (2002) suggests that researchers have primarily used three conceptual frameworks in examining the observed differences in college enrollment behavior. These include econometric models, sociological status attainment models, and information gathering and processing models. The latter combines economic and sociological assumptions to frame college choice as occurring in several stages such as that posited by Hossler and Gallagher (1987). The stages include first the disposition stage, followed by the search and choice stages.

These frameworks are useful in examining college access programs in terms of specific intervention strategies, but a broader theoretical framework may be necessary to fully appreciate the impact of simultaneous membership in low socioeconomic and minority groups. Cabrera et al. (2006) based their work on the cultural and social capital theories proposed by Pierre Bourdieu. The theoretical framework for this study combines a conceptual framework proposed by Perna (2006) with that of Hossler and Gallagher's model that combines economic and sociological assumptions. The blending of these two frameworks provides an organizational framework for the design of the SLC program element of LA GEAR UP. The intent of the program is to increase college access among low-income students. While improved academic achievement is a strong indicator of college enrollment, this framework acknowledges that improved academic achievement occurs not only as the result of changes in internal attitudes and behaviors of the student, but also occurs in and is impacted by the family and school as well as the social and economic policy context within which the student resides.

The Hossler and Gallagher Model

Utilizing a sociological model, Hossler and Gallagher (1987) reduced the college enrollment process to three stages that emphasize the student over the institution. The stages include: (a) predisposition, the decision to go to college rather than to pursue some other postsecondary option such as work or military service; (b) search, the process of learning about specific institutions and their characteristics, and; (c) choice, where applications are actually completed and the student ultimately chooses one institution in which to enroll. The socialization that occurs through interactions with family, peers, and school environments is the basis for the sociological status attainment models. These interactions either support or inhibit the college entrance decision process, depending on the dispositions of the various groups. As Silva (2005) states, the “social class of parents has a profound formative influence on the life course of individuals” (p. 87). Children learn the class-based cultural orientations of their parents, thereby shaping their class trajectory. She further suggests that, due to the cultural dominance of higher-status culture, schools tend to teach and reward the higher status cultural behaviors that favor students from families that belong to that class. The result is that the higher-status students are better equipped with the educational qualifications for better opportunities.

In the first stage of Hossler and Gallagher’s model, predisposition, students decide whether to attend college or to pursue some other postsecondary option. Again, given the impact of the social class of parents, students from low-income backgrounds are generally not oriented towards postsecondary educational pursuits, and schools generally perpetuate that orientation through low expectations and reduced access to information and services designed to promote postsecondary aspirations. Thus, the

second stage, search, is severely impeded for students in the lower socioeconomic status. The result is that in the third stage, choice, lower SES students are far less likely to choose college over other postsecondary options. As summarized in Table 3, Cabrera and La Nasa (2000) further refined this model by defining a timeline for each stage and identifying the factors that impact each stage as well as the ideal outcomes expected.

Table 3.
College-Choice Process: Stages, Factors, and Outcomes

<i>Stages</i>	<i>Factors</i>	<i>Outcomes</i>
Predisposition: Grades 7-9	Parental encouragement and support Parental saving for college Socioeconomic status Parental collegiate experiences High school academic resources Student ability Information about college	Reading, writing, math, and critical thinking skills Career and occupational aspirations Educational aspirations Enrollment in college-bound curriculum
Search: Grades 10-12	Parental encouragement and support Educational aspirations Occupational aspirations Socioeconomic status Saliency of potential institutions Student ability High school academic resources	Listing of tentative institutions Narrowing list of tentative institutions Securing information on institutions
Choice: Grades 11-12	Educational aspirations Occupational aspirations Socioeconomic status Student ability Parental encouragement Perceived institutional attributes (quality, campus life, majors, availability, distance) Perceived ability to pay (perceived resources, perceived costs)	Awareness of college expenses and financial aid Awareness of institutional attributes and admission standards Attaining scholastic aptitudes and attitudes Perceived support from family and friends Institutional commitment Submission of applications Preregistration and attendance Application for financial aid

Perna's Conceptual Model of Student Success

In proposing a Conceptual Model of Student Success, Perna (2006) first conducted a comprehensive review of the literature across four disciplines including Education, Psychology, Sociology, and Economics in an effort to first define student success and then to present a model that ties together much of the research within each of these disciplines.

Figure 1 depicts the definition of student success that includes 10 student success indicators across 4 key transitions proposed by the researchers.

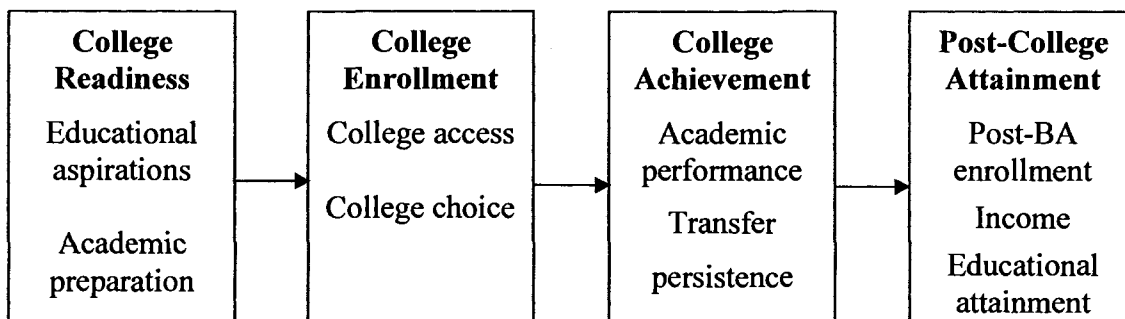


Figure 1. Key Transitions and Indicators of Student Success.

The researchers recognize that this definition of student success emphasizes certain outcomes such as: (a) enrolling in college; (b) persistence to degree completion; (c) enrollment in advanced degree programs, and; (d) subsequently earning a high income, that may or may not be consistent with the goals of all individuals. However, many policies and practices are directed toward achieving these outcomes, and, despite these efforts, the shares of students who accomplish these outcomes vary systematically across socioeconomic, racial/ethnic, and gender groups. Additionally, since the overall mission of the LA GEAR UP program is to increase the number of low-income students who

enter and succeed in postsecondary education, this definition of student success fits well with the purpose of this study.

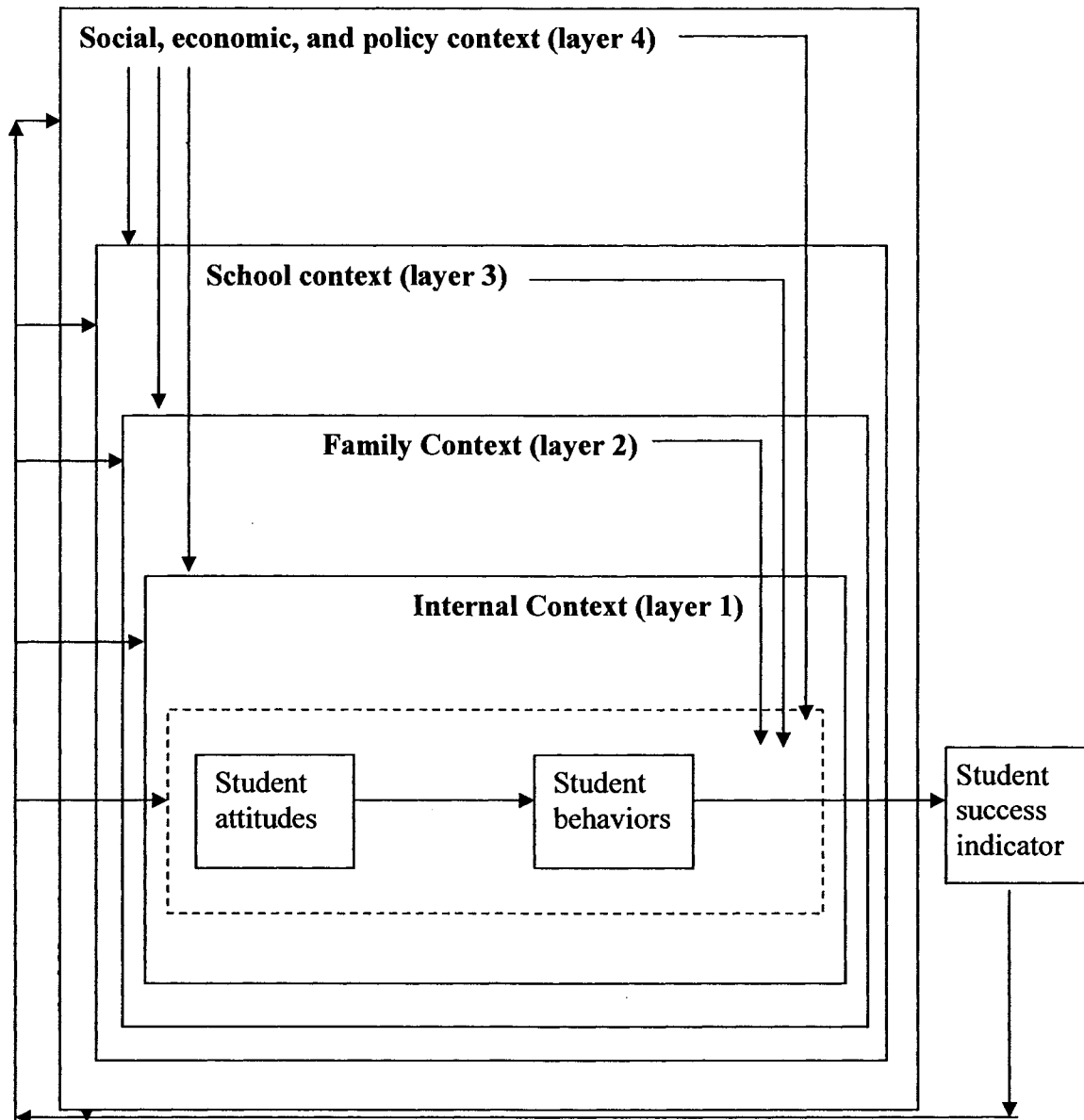


Figure 2. Conceptual Model of Student Success Adapted From Perna (2006).

The proposed conceptual model for student success depicted in Figure 2 (Perna, 2006) is generic in that it can be used to understand any of the 10 indicators of student success and in that it incorporates both the commonalities and differences across theoretical and

methodological approaches to student success. The intent is to provide a framework for understanding student success as opposed to providing a theory.

A Comprehensive Framework for Student Success

The purpose of this study, however, is specifically focused on the extent to which participation in an early intervention program impacted student achievement. Student achievement is a key indicator for postsecondary education participation, and the overall mission of the early intervention program studied, LA GEAR UP, is to increase the number of low income students who enter and succeed in postsecondary education. Therefore, the blended model proposed as the theoretical framework for the study and depicted in Figure 3 will use the Perna model (2006) as a foundation, and incorporate the Hossler and Gallagher model (1987) as it was further refined by Cabrera and La Nasa (2000). The blending of these models into a more comprehensive framework enables a better understanding of the interaction of the multiple layers that impact student attitudes and behaviors. In addition, this blended approach could also serve as a foundation for further evaluation and study of early intervention programs. Since each of the success indicators are broken down into specific factors that can be positively impacted by an effective early intervention program, and the positive outcomes leading to each success factor are explicitly stated, the basis for an effective evaluation or research study is readily discernible. For the purpose of this study, only the two initial transition points comprised of four success indicators in Perna's model (2006) will be included in this framework. The entire Hossler and Gallagher model (1987) fits into these initial transition points, and the college enrollment success indicator is the primary mission of all early college intervention programs, including LA GEAR UP.

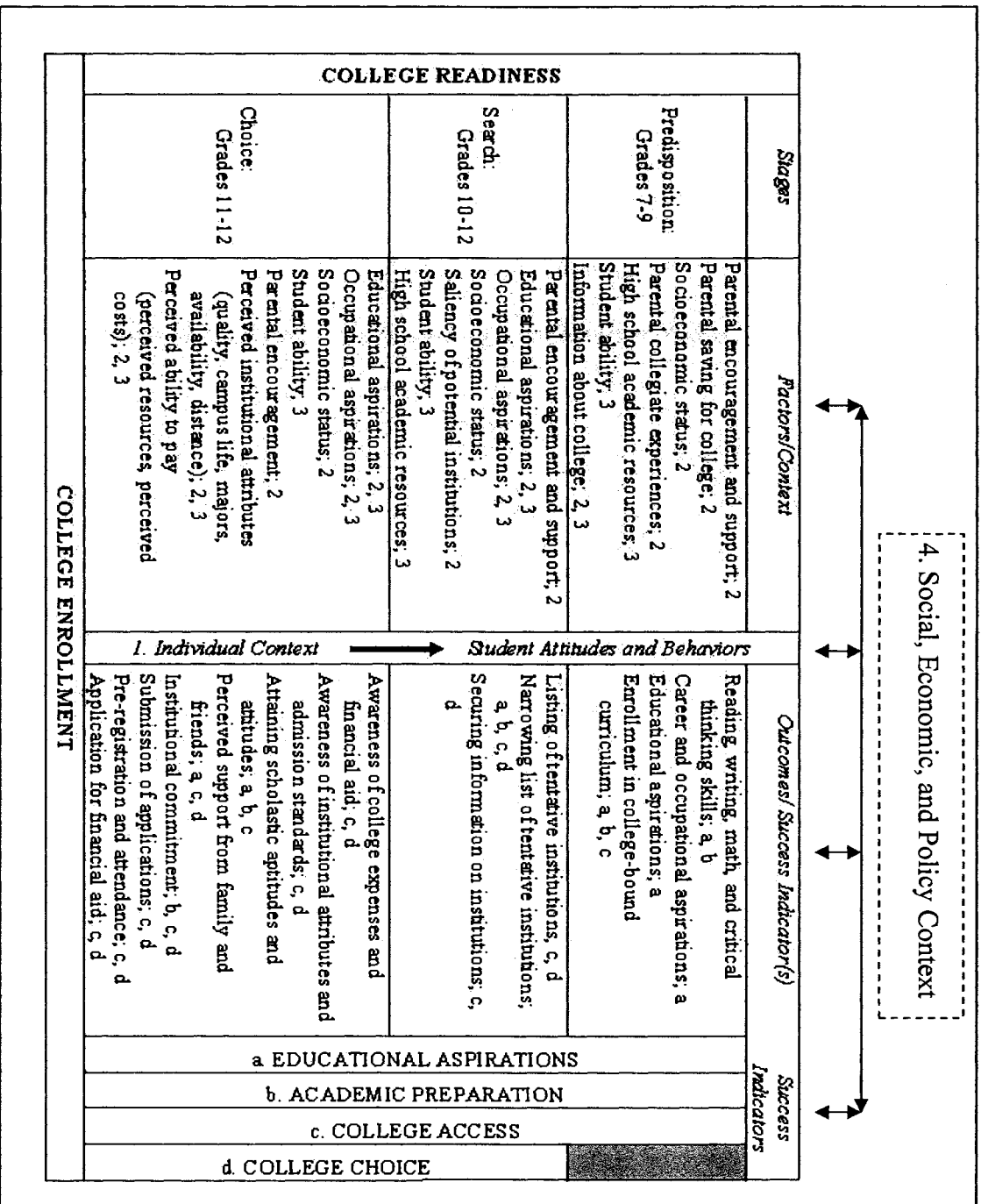


Figure 3. A Comprehensive Framework for Student Success.

This comprehensive framework begins with the assumption that all activities related to a student's college entrance decision-making process occur within and are directly impacted by the social, economic, and policy context (denoted as context number 4 in Figure 3). As Perna (2000) suggests, college choice is influenced directly and indirectly by changes in social forces such as demographic changes, economic conditions such as unemployment rates, and public policies such as the creation of a needs-based grant program. Further, Perna and Titus (2004) used multilevel analyses to determine that direct appropriations to higher education institutions, tuition, financial aid to students, and elementary and secondary education were related to the college enrollment patterns of 1992 high school graduates.

The transition referred to as College Readiness spans the three stages of the Hossler and Gallagher model including the predisposition, search, and choice stages. College Readiness is, therefore, a process that begins no later than the seventh grade and continues through the 12th grade and through the transition of college enrollment. The factors included in each stage are based on the model proposed by Cabrera and La Nasa (2000). However, each factor is aligned with a particular context within which the factor occurs. For example, parental encouragement and support occurs within the context of the family (denoted as context number 2 in Figure 3). The factor of high school academic resources occurs in the school context (number 3 in Figure 3). Some factors, such as information about college, may occur both in the context of both the family (2) as well as the school (3). It is useful in designing intervention programs to address particular factors affecting the college decision-making process to understand the context within which the intervention might be most effective.

The central idea of the proposed framework is that the ultimate goal of any intervention program is to alter student attitudes and behaviors in such a way that the decision to pursue postsecondary education is a logical and expected outcome of high school graduation. Given that, the model places the individual context at the center. Each student will respond to any given intervention based on the individual context or circumstance in which the student finds him or herself. Other studies (McDonough, 1997; Cabrera & La Nasa, 2000) include a consideration of social and cultural capital theory in explaining the college decision-making process and the impact of early college intervention programs on individual students. The blended model proposed as the theoretical framework for this study includes this consideration in that the services provided through early college intervention programs enhance the social and cultural capital of individual students across multiple contexts including the individual, family, school, and social, educational, and policy contexts. The review of the literature will expand on the relationship of social and cultural capital theory to these contexts and to individual student outcomes.

Research Questions/Hypotheses

The following research questions were investigated in this study:

1. Does participation in Summer/Academic Year Learning Projects affect student achievement on state criterion-referenced tests?
2. Does participation in Summer/Academic Year Learning Projects affect student academic performance in high school?

In conjunction with the above research questions, the following null hypotheses will be tested:

1. There will be no significant difference in overall grade point averages for the 10th, 11th, and 12th grades between students who participate in Summer/Academic Year Learning Projects and those who do not participate in Summer/Academic Year Learning Projects (SAYLPs).
2. There will be no significant difference in grade point averages for the 10th grade between students who participate in Summer/Academic Year Learning Projects and those who do not participate in Summer/Academic Year Learning Projects (SAYLPs).
3. There will be no significant difference in grade point averages for the 11th grade between students who participate in Summer/Academic Year Learning Projects and those who do not participate in Summer/Academic Year Learning Projects (SAYLPs).
4. There will be no significant difference in grade point averages for the 12th grade between students who participate in Summer/Academic Year Learning Projects and those who do not participate in Summer/Academic Year Learning Projects (SAYLPs).
5. There will be no significant difference in overall academic achievement on the Graduate Exit Exam (GEE) between students who participate in Summer/Academic Year Learning Projects and those who do not participate in Summer/Academic Year Learning Projects (SAYLPs).
6. There will be no significant difference in academic achievement on the English/language arts (ELA) portion of the Graduate Exit Exam (GEE) between

students who participate in Summer/Academic Year Learning Projects and those who do not participate in Summer/Academic Year Learning Projects (SAYLPs).

7. There will be no significant difference in academic achievement on the mathematics portion of the Graduate Exit Exam (GEE) between students who participate in Summer/Academic Year Learning Projects and those who do not participate in Summer/Academic Year Learning Projects (SAYLPs).
8. There will be no significant difference in academic achievement on the science portion of the Graduate Exit Exam (GEE) between students who participate in Summer/Academic Year Learning Projects and those who do not participate in Summer/Academic Year Learning Projects (SAYLPs).
9. There will be no significant difference in academic achievement on the social studies portion of the Graduate Exit Exam (GEE) between students who participate in Summer/Academic Year Learning Projects and those who do not participate in Summer/Academic Year Learning Projects (SAYLPs).

The conceptual hypotheses guiding this study include the following:

1. There will be a significant difference in grade point average with the 10th grade students who participated in Summer/Academic Year Learning Projects earning a higher GPA than those who did not participate in Summer/Academic Year Learning Projects (SAYLPs).
2. There will be a significant difference in grade point average with the 11th grade students who participated in Summer/Academic Year Learning Projects earning a higher GPA than those who did not participate in Summer/Academic Year Learning Projects (SAYLPs).

3. There will be a significant difference in grade point average with the 11th grade students who participated in Summer/Academic Year Learning Projects earning a higher GPA than those who did not participate in Summer/Academic Year Learning Projects (SAYLPs).
4. There will be will be a significant difference in academic achievement on the English/language arts (ELA) portion of the Graduate Exit Exam (GEE) with students who participated in Summer/Academic Year Learning Projects scoring higher than those who did not participate in Summer/Academic Year Learning Projects (SAYLPs).
5. There will be will be a significant difference in academic achievement on the mathematics portion of the Graduate Exit Exam (GEE) with students who participated in Summer/Academic Year Learning Projects scoring higher than those who did not participate in Summer/Academic Year Learning Projects (SAYLPs).
6. There will be will be a significant difference in academic achievement on the science portion of the Graduate Exit Exam (GEE) with students who participated in Summer/Academic Year Learning Projects scoring higher than those who did not participate in Summer/Academic Year Learning Projects (SAYLPs).
7. There will be will be a significant difference in academic achievement on the social studies portion of the Graduate Exit Exam (GEE) with students who participated in Summer/Academic Year Learning Projects scoring higher than those who did not participate in Summer/Academic Year Learning Projects (SAYLPs).

Definitions

For the purpose of this study, the following terms are defined:

Academic Achievement- Academic achievement, as operationally defined by the researcher, is a measure of student knowledge and gains in student knowledge over time as measured by scores on the IOWA Test of Basic Skills (ITBS), the Graduate Exit Exam (GEE), and grade point averages (GPAs) earned in high school.

Access Database- The Access Database software used for sorting the student records for this study is a Microsoft Office product. The program uses data in various tables and allows the user to link tables by student identification numbers. Using the query feature of the program, it is much easier to locate individual student records and to match students according to any given criteria.

EPAS- The Educational Planning and Assessment System (EPAS) refers to a series of tests produced by American College Testing (ACT). These tests include the Explore Test which is administered to all eighth grade students in Louisiana, and the Plan Test, which is administered to all 10th grade students. These tests are used as predictors for student scores on the ACT College Admissions Test, commonly used by all Louisiana colleges and universities in setting admission standards. These tests are also predictors of student scores on the state criterion-referenced high stakes tests at the eighth grade and the high school exit exams.

Graduate Exit Exam- The Louisiana high school criterion referenced test that students are required to pass in order to graduate from high school. The test may be referred to as the GEE or the GEE 21.

Iowa Test Composite Score- The 6th-grade Iowa Test of Basic Skills includes tests in the following areas: (a) vocabulary; (b) reading comprehension; (c) language; (d) mathematics; (e) social studies (f) science, and; (g) sources of information. The composite score is an average of scores on each of these subtests.

Summer/Academic Year Learning Projects (SAYLP)- SAYLP include three interconnected programs that are designed to impact student achievement and college decision-making processes. Summer Learning Camps (SLCs), the main component of SAYLP, are one-week residential programs conducted on university campuses throughout Louisiana. A second component of SAYLP is the professional development for school guidance counselors provided through LA GEAR UP. Upon completion of this summer professional development, participants return to school to serve as an Explorers Club sponsor, the third component of SAYLP. These are school-based clubs designed to continue the learning for students that occurred at the SLC under the direction of a school representative who completed the counselor professional development. Club activities promote educational and career aspirations among student members.

Participation in SAYLPs- A student was considered to have participated in SAYLPs if they had attended at least four summer learning camps during the period 2003-2008.

CHAPTER TWO

Review of the Literature

Despite substantial investment in student financial aid by the federal government, state governments, state agencies, and colleges and universities, college access and choice remain stratified by socioeconomic status (SES) and race/ethnicity (Perna, 2006). Even with students receiving \$122 billion in financial aid from all sources in 2003-04, individuals with low family incomes, those whose parents have not attended college, African-Americans, and Hispanics are less likely than other individuals to attend college (The College Board, 2004). This behavior is true even when considering only high school graduates who are academically qualified to enroll in college (Fitzgerald, 2004).

Some researchers argue that the continued gaps in educational opportunity are primarily due to the inadequacy of financial aid programs (Fitzgerald, 2004; St. John, 2003). Others stress the barriers that are imposed by inadequate academic preparation (Ellwood & Kane, 2000; Perna, 2004). A third explanation for continued gaps in college enrollment may pertain to the adequacy of information about financial and academic requirements for attending college, as well as the availability of student financial aid to offset the cost of attendance (Kane, 1999).

Perna (2006) suggests that one reason for the disagreement about the relative contributions of financial and academic resources to the inequities in educational opportunity is that researchers have used a variety of theoretical and methodological

approaches to examine the problem. Primarily, two theoretical approaches have guided the research on college access and college choice for almost two decades: (a) economic models of human capital investment and (b) sociological models of status attainment.

Human capital investments should enhance an individual's mental and physical abilities that in turn, improve productivity (Perna, 2006). Human capital theory predicts that increases in productivity are rewarded by higher earnings (Becker, 1993). Different individuals make different investments in personal development, such as quantity and quality of education. Rational models of human capital investments assume that individuals decide to invest in additional education based on a comparison of the expected lifetime benefits with the expected costs (Ellwood & Kane, 2000). The benefits of a college education include increased earnings. Baum and Payea (2004) assert that individuals who earn a bachelors degree will earn 1.73 times as much in their lifetime than those who only earn a high school diploma. Perna (2006) also describes other benefits of degree attainment including: (a) more fulfilling work environments; (b) better health; (c) longer life; (d) more informed purchases, and; (e) lower probabilities of unemployment. Those who attend college, asserts Perna (2006), also consider the costs which include the direct cost of attendance such as tuition, books, and living expenses as well as the opportunity costs of foregone earnings and leisure time.

Social and Cultural Capital

Sociological approaches to college choice usually focus on an examination of the ways in which socioeconomic background characteristics influence student decisions. These approaches have evolved from traditional status attainment models developed in

the 1970s and 1980s to models that emphasize the constructs of cultural and social capital (Hearn, 1984; Sewell, Hauser, & Wolf, 1986).

The traditional status attainment models focused on the impact of student socioeconomic status (SES) on educational and occupational aspirations. The model posits that educational aspirations, a prerequisite to postsecondary enrollment, are determined by such behaviors as academic preparation and such demographic characteristics as SES (Hossler, Schmit, & Vesper, 1999). Such models predict that those with higher levels of academic preparation and achievement receive greater encouragement from teachers, counselors, and peers and that this encouragement promotes higher aspirations. Higher aspirations then, it is expected, lead to greater educational and occupational attainments.

Other research, however, focuses on the ways in which the sociological constructs of social and cultural capital influence student college decision-making processes. Just as human capital and physical capital are resources that may be invested to enhance productivity, social and cultural capital are resources that can be invested as a means of facilitating upward mobility. Cultural capital refers to a system of attributes, such as language skills, cultural knowledge, and mannerisms, that is derived, in part, from one's parents and that defines an individual's class status (Bourdieu & Passeron, 1977). McDonough (1997) suggests that middle- and upper-class individuals possess the most valued form of cultural capital. Those who lack the required cultural capital may: (a) lower their educational aspirations and self-select out of particular situation (such as choosing not to enroll in postsecondary education) because they do not know the particular cultural norms; (b) over-perform to compensate for their less-valued cultural

resources; or (c) receive fewer rewards for their educational investment (Bourdieu & Passeron, 1977).

Social capital focuses on social networks and the ways in which social networks and connections are sustained. Social capital is acquired through an individual's relationships with others, particularly through memberships in social networks and other social structures (Portes, 1998). A primary function of social capital is to gain access to human, cultural, and other forms of capital, as well as instructional resources and support (Perna, 2006). Bourdieu (1986) asserts that the amount of social capital to which an individual may gain access through social networks and relationships depends on the size of the networks as well as the amount of economic, cultural, and social capital that individuals possess. As a result, an individual's actions cannot be fully understood except in relation to the social context in which the action occurs.

Most researchers agree that academic preparation is the most significant predictor of college attendance and success (Adelman, 1999; McDonough, 1997, Hossler, Schmit, & Vesper, 1999). Since increasing the number of low-income students who enter and succeed in postsecondary education is the stated mission of the GEAR UP program, the extent to which program participation improves student academic performance should be a critical component of the program evaluation. The theoretical framework for this study combines elements of human capital investment and sociological status attainment theory with the social constructs of social and cultural capital. Some researchers argue that in order to enter college, students must accomplish such tasks as becoming academically prepared for college and graduating from high school (Cabrera & La Nasa, 2000). Perna (2006) suggests that a model such as that used as the theoretical framework for this study

may be used to test the hypothesis that student habitus toward college enrollment influences student decisions to become academically prepared for college and/or graduate from high school.

The research review will begin with a brief overview of social and cultural capital theory as it relates to the college decision-making process. Then, a review of the two longitudinal studies that have formed the basis for much of what is known about the college decision-making process will be followed by a closer examination of studies that illustrate the mediating nature of the various contexts within which students experience intervention efforts intended to impact student attitudes and beliefs. Finally, a few studies that have examined, on a limited basis, the impact of early college intervention programs on the academic achievement of participating students will be summarized.

The Impact of Context on Student Achievement

One reason for the persistent racial/ethnic and socioeconomic gaps that exists in postsecondary enrollment may be that traditional approaches to increasing college access (e.g., student financial aid programs) have focused too narrowly on the issue of college enrollment, without sufficient attention to the steps required to be academically, socially, and psychologically prepared to enter and succeed in college. Success in this regard is ultimately dependent upon the ability of our society at large to address the inequities that affect education and opportunity for all groups (Swail & Perna, 2002).

The longitudinal studies conducted by McDonough (1997) and Hossler, Schmit, and Vesper (1999) provide a basis for understanding the complex nature of the college access and decision-making processes. In fact, these studies demonstrate that the student attitudes and behaviors necessary to promote academic achievement, college readiness,

and subsequent college enrollment are impacted directly or indirectly by the context within which the student finds himself or herself. The individual context includes student characteristics such as race, gender, peer group membership, and socioeconomic status. The family context includes the educational level of parents, and parental support and encouragement. High school academic resources, availability of information about college, guidance counseling systems and curricula, and the school culture are all attributes of the school context. The social, economic, and policy context includes a variety of issues including the availability of needs-based financial aid, and the organizational habitus of the school a student attends.

McDonough (1997) chose to conduct a qualitative study that included rich case studies of the college choice processes and the organizational contexts that shaped those choices. A cross-case analysis of the high schools attended was included as well. In order to hold race and gender constant as McDonough examined social class and organizational variables, she chose to include only White females in the study. Each participant was a middle-range academic performer and was representative of the SES of the school as a whole. It should be noted, however, that one low SES student was included from each school to determine if there were any differences in the way that those students accessed and interpreted information.

To explore issues of bounded rationality and school influences, the researcher chose schools that had weak or strong guidance support systems as defined by counselor-to-student ratio, as well as high or low SES student populations. Bounded rationality refers to a behavior that is rational but limited by the cognitive constraints on decision making. The college choices that high school seniors make are influenced by their

physical location, social networks, and environmental stimuli, as well as the anticipated goals and consequences for college. In that study, McDonough defined levels of SES based on two variables: (a) parent's educational level and (b) employment status. Essentially, participants were classified as high SES if both parents had at least a bachelor's degree and were employed in professional occupations, while low SES was defined as those families not meeting the high SES standard. Schools were considered high SES for the purposes of this study if more than two-thirds of the student body could be classified as high SES.

Participants were selected from four high schools in California that were a mix of high and low SES. In addition, the schools also had either a high or low college guidance operation. The definition of a strong (high) guidance operation was based on an above state average counselor-student ratio. In the end, twelve female participants were selected, three from each of four high schools. One counselor from each school was included in the study. One best friend and one parent of each of the twelve participants were also included in the study in order that the researcher could further explore the concept and impact of habitus. In addition to interviewing the subjects, the researcher collected achievement data such as grade point averages, Scholastic Aptitude Test (SAT) scores, and high school transcripts.

Hossler, Schmit, and Vesper (1999) conducted a longitudinal study in the state of Indiana between 1986 and 1994. Using a cluster sampling technique, 4,923 students and their parents were surveyed in January 1987. Over the next three years, eight surveys were administered to the whole group and to smaller subsamples. An additional subsample of 56 students and their parents were interviewed in depth nine times between

the years 1989 and 1994. All participants were in the first year of high school when the study began and had been out of high school for four years when the study concluded.

Limitations of the study recognized by the researchers included the fact that Indiana ranked in the bottom half among the 50 states in terms of parental income and educational levels. In addition, Indiana did not have a large community college system. Their study also did not include a large number of high-ability students.

Hossler, Schmit, and Vesper (1999) used the Hossler and Gallagher (1987) three-stage model of college choice to organize their findings. The predisposition stage refers to the plans students develop for education or work after they graduate from high school. Student family background, academic performance, peers, and other high school experiences influence the development of post-high school plans. The search stage includes student discovery and evaluation of possible colleges in which to enroll. In the choice stage, students choose a school from among those they have considered. As the academic performance of students and socioeconomic status of their families increase, the number of colleges considered also increases.

Individual Context

McDonough (1997) reviewed the status attainment and school effects literature in an effort to develop a new theoretical approach that would integrate investment, aspiration, and individual-institution fit perspectives of the prevailing college choice models of the time. The researcher found that academic achievement remained the most important determinant of whether and where students ultimately attend college. However, she cited several studies that found upper-income students much more likely to attend college than lower-income students independent of academic factors.

Especially worthy of note are studies that suggest educational expectations playing a major role in college placement. In fact, Thomas (1980) found that these expectations are the single strongest predictor of four-year college attendance. Further, Alexander and Cook (1979) demonstrated that intending to go to college increases the likelihood of going by 21% when that intention develops prior to the 10th grade, compared to plans formulated during the 12th grade. This is a particularly significant finding that would support early college intervention programs, such as LA GEAR UP, that begin working in students in the seventh grade.

McDonough (1997) points out that the most persistent barrier to parity in entrance to college is social class background. Social class status exerts twice as much effect as ethnicity or gender. There are a number of differences that exist between low SES, first-generation college-bound students and high SES students whose parents have completed college. For example, low SES first-generation students tend to begin thinking about going to college much later than high SES students whose parents had attended college. Usually, the college going ideas in low SES students are triggered by teachers and school counselors, whereas the parents of high SES students begin college preparations as early as elementary school by encouraging the maintenance of good grades and taking appropriate courses. High SES parents who have attended college provide information about different types of colleges and other information that low SES parents do not convey. In addition, low SES students are also faced with confronting cultural conflicts that arise between their new college-oriented world, and the world of their friends, family, and community.

According to Hossler, Schmit and Vesper (1999), most high school students formalize their educational plans between the eighth and 10th grades. While most students in the study made decisions in the eighth or ninth grade, the decision was not necessarily irrevocable. However, 67% of the students who made the decision to go to college in the eighth or ninth grade enrolled within a year after high school graduation. The most important reason for going to college reported by both students and parents was to be able to get a good job. The researchers state that these findings suggest that interventions intended to influence the educational aspirations of students are more likely to succeed if they take place by the eighth or ninth grade.

This study also found that parents, other family members, and, to a lesser extent, peers had the largest effect on student college aspirations. The best predictors of college aspirations among ninth grade students included talking more to parents about college plans than with teachers or counselors along with parental support and encouragement. Multivariate analyses were conducted in which the variables included: (a) significant others (parents, siblings, friends); (b) student achievement; (c) family background, specifically parental income and educational level; (d) parental encouragement for their children to continue their education; (e) students' achievement level (as measured by high school grade point average); (f) frequency of student discussions with peers, teachers, counselors, and others about their plans after high school, and; (g) student involvement in high school activities (Hossler, Schmit, & Vesper, 1999).

In examining the effects of peers on predisposition, Hossler, Schmit, and Vesper (1999) found that ninth grade students with friends who planned to continue their educations after high school were more likely to have college plans. Other studies

(Coleman, 1966; Falsey & Heyns, 1984; Tillery, 1973) reported that the more students come into contact with other students with college plans, the more likely they are to consider going on to college. Interestingly, none of the analyses indicated that teachers or counselors had an impact on student predisposition to college.

As the grade point average of students increased, the likelihood that they planned to attend college increased. Indeed, next to parental encouragement, student achievement (as measured by self-reported grade point average) was the best predictor of postsecondary aspirations (Sheppard, Schmit, & Pugh, 1992). This study, along with others (McDonough, 1997; Weiss, 1990) suggested that students who earn better grades receive more encouragement from parents—and also from teachers, peers, and other family members—to continue their education. In addition, the researchers agreed that grades are an indicator of success, and success itself encourages continued involvement in the source of that success—school.

While the Hossler, Schmit, and Vesper research (1999) found no statistically significant difference in educational aspirations by gender or ethnicity, there were significant differences by gender and ethnicity in the factors that influence educational aspirations. Female students talked more to parents about college attendance than male students, and also talked more to friends, teachers, and counselors. For males, parental encouragement and support to attend college as well as student achievement had the most effect on their postsecondary plans.

Hossler et al. also found that students who are involved in more high school activities are more likely to have higher educational aspirations (1999). The researchers

speculate that the degree of student involvement in high school activities may be an indicator of overall levels of motivation and self-confidence among students.

According to Hossler, et al., in the ninth grade, parental encouragement, student achievement, and parental education, in that order, have the greatest influence on student college plans. Where parents cannot be influenced, efforts to improve student academic performance might also have positive effects on student college aspirations. At this level, students are most interested in finding information about career opportunities in areas that interest them, while parents are more interested in finding information about the costs of postsecondary education.

The findings of the Hossler et al. study have several implications for the design of any early intervention program. For example, since parents have the greatest impact on student college aspirations, interventions should focus on parents in this stage of the college decision-making process. The findings suggest that these interventions should occur by the time students enter the fifth or sixth grade. By the ninth grade, parents are already interested in financial aid and agree with students that a college education is important for getting a good job. Therefore, information provided to parents should connect college education to the labor market while also providing information about the availability of financial aid and the actual cost of postsecondary education.

Hossler et al. (1999) also found that intervention efforts should focus on encouraging parents and their children to talk about their children's futures. Parents need to articulate their educational expectations for their children. Intervention programs should also focus on activities that bring peers together to discuss their college plans and aspirations.

The final survey of the Hossler et al. study (1999) was conducted eight months after the cohort completed high school. Student achievement, as defined by student reported grade point averages, was the second strongest predictor of college aspirations. Of the A students, 91% attended a four-year college, 4% entered the workforce or military service, and 1% attended a vocational or technical school. Of the B students, 65% attended a four-year college and 16% entered the workforce or military service. For the C students, the numbers begin to change: (a) 32% entered the workforce or the military service, (b) 17% entered a vocational or technical school, and (c) 29% attended a four-year college.

These results provide a picture consistent with previous research on the predictive nature of grade point average on college attendance: that student achievement was the second strongest predictor, behind parental encouragement. As mentioned earlier, parental encouragement may be related to student academic achievement: as student grades increase, the parent level of support and their educational expectations increase. The survey administered to ninth grade students for the Hossler, Schmit, and Vesper study (1999), asked what the highest level of education students expected to achieve. More than 78% of the students reported aspirations that included some form of postsecondary education. Approximately 67% of the students in the study actually enrolled in some form of postsecondary education in the year after high school. At the time, this was consistent with a statewide survey conducted in Indiana that had been administered to ninth grade students each year for ten years and reported that 81% of ninth grade students statewide reported postsecondary aspirations.

In examining the stability of these aspirations over time, Hossler et al. (1999) divided the respondents from the ninth grade survey into three distinct categories. These included the going cohort (students who planned to attend school after high school); the not-going cohort (students who planned to stop their formal education after high school); and the undecided cohort (students uncertain about their plans after high school).

Among the going cohort in the study, 63% actually attended some form of postsecondary education, with the majority (84%) attending a four-year institution. The high percentage of students attending a four year institution may be partially attributable to the fact that Indiana did not, at the time, have a large system of community or technical schools. By the 10th grade, those students with college aspirations attended some form of postsecondary education at a much higher rate, 82%. Those aspirations remained fairly constant into the 11th grade with 97% having the same plans.

The not-going cohort did not follow through on their postsecondary plans at the same level as the going cohort. Of the ninth grade students planning to enter the workforce immediately following high school, only 28% actually did so, with 23% actually attending some type of postsecondary school. For 10th grade students with workforce aspirations following high school, 44% actually went to work and 22% attended some type of postsecondary school. Many of the ninth grade students (29%) that planned to join the military following high school changed their plans and continued their education beyond high school with only 15% actually joining the military service. For 10th grade students with military service plans following high school, the change was even more dramatic with 46% attending some type of postsecondary school and only 14% actually joining the military service.

Of particular interest, the not-going cohort had the highest high school dropout rate among the three groups (18% compared to 5% for the going cohort and 12% for the undecided cohort). Those with plans to enter the military after high school had a dropout rate of 12%. “Clearly, students who either are uncertain about their plans or did not plan to continue their education after high school are at greater risk of dropping out” (Hossler, Schmit, & Vesper, 1999, p. 113)

The undecided cohort in the study demonstrated the greatest variability in actualized plans among the three groups with: (a) 36% attending some type of postsecondary educational institution; (b) 22% entering the workforce, and; (c) 4% joining the military. Among undecided 10th grade students, 55% continued their education after high school, as did 41% of undecided 11th grade students.

These findings are significant in terms of the usefulness of college aspirations as a predictor of actual post graduation outcomes for students. By the 12th grade , “students aspirations became reliable predictors of what they [the students] would actually do” (Hossler, Schmit, & Vesper, 1999, p. 112). In addition, the researchers suggest that there is a direct relationship between aspirations of ninth grade students and the actualization of those aspirations. The higher the ninth grade educational expectation, the greater the likelihood that the expectation will be actualized.

The results of the study (Hossler, Schmit, & Vesper, 1999) demonstrate a consistency of ninth grade plans. This may be surprising given common descriptors of ninth grade students that include self-centeredness, immaturity, and a preoccupation with trivial aspects of themselves. However, it was apparent in this study that ninth grade students thought seriously about their postsecondary plans and followed through with

those plans with significant consistency. Also, students with college plans as early as ninth grade gain information-processing and decision-making skills that contribute to college persistence (based on a follow up with 56 families that participated in the study indicating a high percentage of students with four-year college plans achieved that goal). Many of the students planning to attend college spoke about information-gathering activities and exhibited indicators of critical thinking about the decisions before them. These decisions included: (a) attending camps; (b) taking achievement tests; (c) sending away for information, and; (d) visiting campuses. The researchers theorize that these information-processing and decision-making experiences built confidence which the students used to make a myriad of decisions while in college, resulting in persistence to college graduation.

In a recent study involving 751 eighth grade students, Alomar (2006) examined the impact of personal and family factors on individual student achievement. Six achievement tests were used for generating empirical data. The researcher used a structural equation model that yielded a comparative fit index of .97. The findings suggested that prior achievement, gender, and academic self-concept had highly significant direct impacts on individual student achievement. At the same time, family size, parent education, and family cultural context exhibited indirect effects on achievement.

Family Context

McDonough (1977) found that although individuals developed their own personally synthesized aspirations, college-bound students of relatively the same academic achievement and similar social class backgrounds made remarkably similar

college choices. The class-based patterns found in the McDonough study stood in stark contrast to traditional aspiration and expectation research that assumed an individual-level analysis. As a result, McDonough (1997) suggested that it was necessary to examine traditional functionalist educational attainment theory which posited that abilities and achievement and ability determine aspirations and subsequent attainment. Class-based patterns of aspirations were a joint product of family and school influences.

McDonough (1997) asserted that not all college-bound students faced equal choices if they started out with different family and school resources that enable or constrain their educational and occupational mobility possibilities. These differential resources contributed to the persistence and reproduction of a social class-based stratified system of postsecondary opportunity that thwarted meritocratic ideals. The SES of a student could either contribute to or detract from the possibilities available to them as they worked through the college decision-making process.

Families and schools were in a mutually influencing process that affected student outcomes. Some parents made the decision to enhance their child's education by placing them in private schools or hiring tutors and/or private counselors. Other parents moved to certain neighborhoods to place their children in better school districts. Not all families had those options available to them and, instead, reacted to their children's opportunities based on what school personnel said was possible (McDonough, 1997).

Hossler, Schmit, and Vesper (1999) found that the single most important predictor of postsecondary educational plans is the amount of encouragement and support parents give their children as measured by the frequency of discussions between parents and children about the parents' expectations, hopes, and dreams for their children. Parental

support is more tangible than parental encouragement. Parental support includes parent saving for postsecondary education, taking students on college visits, or attending a financial aid workshop with their child. Of course, parental support and encouragement alone is not sufficient to determine student plans. Other factors are necessary for students to both develop aspirations and to achieve their goals.

Family income was much less important in the development of educational aspirations than parental encouragement and grades. In fact, the researchers found no statistically significant relationship between parental income and educational aspirations. When the extent to which students realized their educational aspirations was examined, parental income played a significant role. However, what parents said and did were more important than family wealth in the development of educational plans and aspirations (Hossler, Schmit, & Vesper, 1999).

Hossler, Schmit, and Vesper (1999) also reported that 75% of the students who reported receiving “strong encouragement” from parents to continue their education after high school attended some form of postsecondary education, with 64% attending a four-year institution. Among students who entered the work force after high school, only 18% reported receiving strong encouragement. Students who were encouraged rather than strongly encouraged also attended a two-year college at twice the rate of the strongly encouraged group (9% to 4%).

Parent level of education directly impacted ninth grade aspirations with: (a) 59% of students whose parents had at least some high school education; (b) 75% of students whose parents had a high school diploma or some college, and; (c) 86% of students whose parents had a college degree or higher aspiring to attend some type of

postsecondary education. The effect was even greater on actualized plans as half of the students whose parents had a high school diploma or some college and almost 75% whose parents had a college degree attended college. The higher the level of parental education, the greater the likelihood of their child going to college (Hossler, Schmit, & Vesper, 1999).

School Context

McDonough (1997) criticized much of the status attainment literature for focusing too much on individual attributes as primary determinants of existing inequalities. The researcher contends that educational institutions play a central role in continuing and expanding inequalities in attainment. It was also suggested in this study that the interaction of school context, SES, and family combine to further shape the college decision making process. McDonough's criticism is similar to that of Perna (2002) when she suggested her conceptual framework for student success that has been incorporated into the theoretical framework for this study.

The high school environment exerts a powerful influence on student college decision-making processes. This is evidenced by higher college attendance rates among high school graduates from private schools when compared to public school graduates. While about half of the difference in the higher college attendance rates of private schools can be attributed to socioeconomic status (Coleman, 1987), researchers attribute the remainder of the difference to school factors such as: (a) the organization and content of the curriculum and extracurricular activities; (b) higher academic standards and the value climate; (c) formal and informal communication networks; (d) orientation of school

staff; and (d) resources devoted to counseling and advising of college-bound students (Falsey & Heyns, 1984).

If college-going decisions and behaviors are improved by having college plans at least by the 10th grade, attending a college-focused high school, having parents that expect their children to go to college, and having assistance in navigating the process for acquiring adequate financial aid, then it is reasonable to expect that schools at both the middle and high school levels would strengthen institutional efforts to encourage postsecondary education. Research related to guidance and counseling suggests that schools can impact student college plans “through an ethos of enabling student” (McDonough, 1997, p. 7). The researcher stated that this ethos should be held and acted upon by knowledgeable staff in daily interactions without necessarily exposing students to specific college preparatory programs. However, each school operates within the context of a community that may or may not value postsecondary education to the extent that they would support the allocation of resources to strengthen the guidance and counseling efforts of the school. All of these factors interact to shape each student’s college decision-making process.

Organizational habitus, according to McDonough (1997), is a way to understand school roles in reproducing social inequalities. It refers to the impact of a social class culture on individual behavior through an intermediate organization, in this case, the high school. The high schools in this study were nested in social class communities that shaped the specific, current patterns of college choice options highlighted and downplayed by each school, which was reinforced or challenged by the habitus of family and friends. Organizational habitus is distinct from organizational culture, climate,

context, and structure. It brings social class back into organizational analyses by showing (a) how organizational habitus similarities exist across the upper-middle class communities of the schools in this study; (b) how differences exist between upper-middle class and working-class high schools' organizational habitus; and (c) how high schools' internal organizational cultures and habitus are shaped by the larger socioeconomic environment. McDonough states that her study demonstrates the need to reassess equity in college choice and reorient policies to increase students' cultural capital and to reexamine school contexts for equity.

In a more recent study, Willie (2001) studied the contextual effects of socioeconomic status on student achievement test scores by race in the Charleston, SC school district. His study included 32,551 students enrolled in 60 elementary and middle schools within the district. The schools were categorized into three clusters: (a) poverty-concentrated, (b) socioeconomically mixed, and (c) affluent concentrated. In the poverty-concentrated schools, 8 out of every 10 students are eligible for free or reduced-priced lunch, while 8 out of every 10 students are ineligible to participate in the subsidized lunch program at the affluent-concentrated schools. Of the 60 schools included in the study, 45% were included in the poverty-concentrated category, and another 40% were included in the socioeconomically mixed category. Only 15% of the included schools were placed into the affluent-centered category. Willie noted that 35% of all African-American students in Charleston attend poverty-concentrated schools compared to only 7% of White students. At the same time, 31% of White students are enrolled in affluent-concentrated schools as compared with only 6% of White students in poverty-centered schools.

To measure the academic achievement of participating schools, the norm-referenced Metropolitan Achievement Test (MAT) was administered to all students. The researcher found that the lowest proportion of students scoring above the national norm for the MAT for African-American and White students is found in poverty-concentrated schools while the highest proportion of students scoring above the national norm for both racial groups was found in affluent-concentrated schools. Additionally, the average achievement score among African-Americans in affluent-concentrated schools is 27 percentage points higher than their average score in poverty-concentrated schools. At the same time, the average achievement score for Whites was 20 points higher in affluent-centered schools than in schools with low-income students. Willie (2001) concludes that “the achievement scores of Black and White students appear to be influenced by the context in which learning occurs, such as the socioeconomic characteristics of the schools they attend” (p. 468).

Social, Economic, and Policy Context

According to Tajalli and Opheim (2004), student socioeconomic status has been shown to have a significant impact on academic performance, while factors that are within school control (e.g., spending decisions and school policies) seem to make little, if any, difference in the academic achievement of students. Other research, however, suggests that these other factors are making a positive difference in student outcomes (Verstegen & King, 1998). Some factors, it has been proposed, positively impact students in some settings but not others.

Research by Tajalli and Opheim (2004) focuses not only on SES but also on process variables, which are divided into three general categories: (a) school

characteristics (school size, student/teacher ratio, and campus expenditures by function and program), (b) teacher characteristics (salary and experience levels), and (c) per pupil expenditure. School size has had mixed reviews in terms of its impact on student achievement, with SES appearing to be a mediating variable. The data on student/teacher ratios are also equivocal, particularly at the secondary level, but a general trend seems to point toward smaller class size as predictive of greater student achievement. Resources allocated by function refer to money spent toward direct instruction versus money spent toward instructional leadership (i.e., managing, directing, supervising, and providing leadership for instructors) and support. Resources allocated by program refers to money spent on regular instruction, bilingual education, compensatory programs, gifted/talented programs, and career/technology programs. Teacher experience and salary have both been tied to greater student achievement. Finally, per pupil expenditure (PPE) has had mixed reviews in regard to its effect on student achievement, with some researchers suggesting that PPE has an indirect rather than a direct effect on student outcomes.

Tajalli and Opheim (2004) utilized data on finances, students, and school characteristics from the Texas Education Agency data pool. Schools were excluded from the study if they had fewer than 50 students, had less than 50% economically disadvantaged students, or did not seem appropriate for the study (e.g., campuses that didn't have any regular expenditures or had unrealistically low PPE). The final sample included 532 schools for fourth grade, 198 schools for eighth grade, and 97 schools for 10th grade.

The dependent variables for the study were the passing rates of fourth, eighth, and 10th grade students on the Texas Assessment of Academic Skills (TAAS). High

performing schools had 90% or higher pass rates, and low-performing schools had 50% or lower pass rates (those between 50% and 90% were excluded from the study).

Independent variables used in the regression models were the following: (a) campus size, (b) percent of economically disadvantaged students, (c) percent of White students, (d) percent of expenditure on regular program, (e) percent of expenditure on bilingual program, (f) percent of expenditure on compensatory program (fourth and eighth grade only), (g) percent of expenditure on gifted/talented program, (h) percent of expenditure on career and technology program (high schools only), (i) operating expenditure per pupil, (j) percent of expenditure on instruction, (k) percent of expenditure on instructional leadership, (l) teacher-student ratio, (m) average teacher base salary, and (n) average teachers' years of experience.

The forward logistic regression procedure produced models with the best goodness-of-fit and independent variables that were statistically significant for fourth, eighth, and 10th grade schools. All three models had four predictors each. The fourth grade model correctly classified 84.4% of cases; the eighth grade model correctly classified 91.4% of cases; and the 10th grade model correctly classified 81.4% of cases. For the fourth grade schools, percentage of students economically disadvantaged, percent of expenditure spent on bilingual instruction, percent of expenditure spent on instructional leadership, and teacher experience were predictive of higher performance. For eighth grade schools, percent of students economically disadvantaged, percent of students who are White, average teacher salary were predictive of student outcomes. For the 10th grade schools, percent of White students, percent of expenditure spent on regular

instruction, percent of expenditure spent on bilingual instruction, and teacher experience were predictive of student achievement.

For all three grade levels, SES was predictive of student outcomes as predicted. In fourth and eighth grade, the proportion of students economically disadvantaged adversely influenced student achievement. The study shows that for each percent increase in number of economically disadvantaged students, the odds of the school being a high-performing case drops by 6.3% for fourth grade campuses and 8.4% for eighth grade campuses. At the 10th grade level, percent of White students is positively correlated with student performance. In addition to SES, some process variables were predictive of student outcomes at all three levels.

Earlier in school, bilingual education seemed to have a positive impact, but in eighth grade there was no benefit and in 10th grade there was a negative impact. In fact, for high schools, for each percent increase in bilingual expenditure, the odds of being a high-performing school decreased by 23.3%.

Expenditures on instructional leadership had positive impacts at the elementary level but not at the middle and high school levels. For each additional percent spent on instructional leadership, elementary schools were 1.48 times more likely to be a high-performing school. Higher teacher salaries were associated with better performance only at the middle school level, whereas greater teacher experience was associated with higher performance at elementary and high school levels. For every additional \$1000 increase in teacher salary, middle schools had a 36.5% greater chance of being high performing. For every extra year of teacher experience, elementary schools had a 10.1% greater and high

schools had a 28.1% greater chance of being high performing. The study found no direct relationship between performance and school size, class size, or per pupil expenditure.

The study suggests that policy and expenditure decisions do matter in low-SES schools. Process variables are important after all, even though SES is still a critical predictor of success. Teacher characteristics are also important in improving student performance in low-SES schools.

Characteristics of Early College Intervention Programs

In an effort to learn more about the types of pre-college outreach programs operating nationwide, the College Board, in association with The Education Resources Institute and the Council for Opportunity in Education conducted the National Survey of Outreach Programs in 1999-2000 (Perna, 2002). The survey was designed as a closed-response instrument with eight sections: (a) general information, (b) program goals and services, (c) program operations, (d) program staffing, (e) student characteristics, (f) operating budget, (g) program needs, and (h) program outcomes. A web-based survey was used to reduce mailing and data entry costs. The survey yielded usable results from 1,110 programs, including programs from all 50 states, the District of Columbia, Puerto Rico, Guam, and Micronesia.

Perna (2002) reported that three fourths ($n = 851$) of the 1,110 responding programs target low-income students; two-thirds ($n = 735$) target historically underrepresented minorities, and two-thirds ($n = 751$) target potential first-generation college students. Only 7% ($n = 77$) of the responding programs focus on students with low academic achievement. These categories may overlap, however. For example, the majority of programs that target historically underrepresented minority students also

target potential first-generation College students (78%). Descriptive data were used to identify program characteristics. Since the four categories are not mutually exclusive, differences of means tests and chi-square tests were not conducted. The data were reported using the Hossler and Gallagher (1987) three-stage model as a framework for describing program components. Using what is known from prior research, Perna (2002) identified potential weaknesses of the responding outreach programs. It should be noted that since the total number of outreach programs is not known, a response rate can not be calculated and the extent to which the sample is representative of all outreach programs nationwide is uncertain.

According to Perna (2002), most programs appeared to recognize the importance of the predisposition stage. This is evidenced by the stated program goals. Increasing college attendance, increasing college awareness, and providing exposure to college are among the top four most frequently reported goals of responding programs that target low-income students, historically underrepresented minorities, and potential first-generation college students. Interestingly, however, the goal of increasing college completion is relatively less important, ranking seventh, eighth, or ninth of 15 possible program goals that emerged from the survey results.

Increasing college awareness and exposing students to college may be important steps toward raising educational aspirations and expectations, common indicators of predisposition to college. In their examination of the path to college enrollment among 1992 high school graduates who were at risk of not completing high school, Choy and colleagues (2000) found that the greatest leak in the pipeline was in the first step: developing by the 10th grade the aspiration to earn a bachelor's degree. As discussed

earlier, researchers have found that educational expectations and plans are important predictors of college enrollment (Hossler, Schmit, & Vespe, 1999). Perna (2002) also suggested that, based on prior research (Hossler, et al., 1999), focusing services on a particular school may be particularly effective given that students have been shown to be more likely to plan to attend college when their friends also plan to enroll.

Some early intervention programs facilitate the second stage of the process, the search, by offering most services on a college or university campus. Among programs that target low-income students, 40% indicated that a college or university campus is the primary location of services provided. Among the most common services provided that may facilitate the search phase of the college enrollment process are campus visits and tours, meetings with college faculty and college students, and college fairs (Perna 2002). Although prior research (Cabrera & La Nasa, 2000; Hossler, Schmit, & Vesper, 1999) has demonstrated that lower-income students generally rely on fewer sources of information about college and are less knowledgeable about college costs and financial aid than their higher income peers, encouraging financial planning is one of the least common goals of the programs responding to the survey, ranking only 13th of 15 possible goals that emerged from the survey.

Cabrera and La Nasa (2000) concluded that accomplishing the third stage of the process, choice, first requires becoming academically qualified to attend college and graduating from high school. As noted by Hossler, et al., parental encouragement and involvement is an important predictor of becoming academically qualified for college as well as for becoming predisposed to college and actually enrolling (1999).

The commitment of pre-college programs to improving academic preparation is suggested by the stated program goals and services offered. Improving academic skills was the most frequently reported goal of programs targeting students with low academic achievement. It was the third or fourth most frequently reported goal of programs targeting low-income students, historically underrepresented students, and potential first-generation college students (Perna, 2002).

Perna noted, however, that the goal of encouraging rigorous course-taking appeared to be less common, ranking only 10th or 11th out of the 15 possible goals. Again citing prior research (Adelman, 1999), the researcher suggests that this is a potential program weakness, given that research has found that the quality and intensity of the high school curriculum is a more reliable indicator of academic preparation than curricular track. Taking at least one advanced mathematics course has been shown to be associated with a higher probability of enrolling in a four-year college or university among students who are at risk of dropping out of high school (Horn, 1997) and among students aspiring to earn at least a bachelor's degree as high school sophomores (Perna, 2000). Altonji (1992) also found that, after controlling for family background, aptitude, and participation in an academic curricular program, that the number of years of postsecondary education completed increased with each year of high school science, math, and foreign language. Perna thus concluded that since only 29% of students with the lowest SES were at least minimally academically qualified to enroll in a four-year college or university, compared to 80% of students with the highest SES, it would seem that helping students to complete a rigorous high school curriculum would be a much more important goal for college outreach programs.

Cabrera and La Nasa (2001) observed that parental encouragement has two components: (a) motivation and (b) activity. Motivational aspects pertain to parental expectations for their children, whereas proactive aspects include the extent to which parents are participating in school activities, saving for postsecondary education, visiting college campuses, and discussing educational issues with their children. According to Perna (2002), the most frequently reported parental service provided by outreach programs is college awareness, a motivational service that may be intended to increase parental expectations of their child's education. Participation in student activities, a proactive component, is a service that is only provided by about half of all four program types. Financial aid counseling is offered by 58% of programs targeting low-income students, while campus visits are less common with only about 46% of those programs offering that service.

Between one half and two thirds of programs offer SAT or ACT training to program participants. However, the extent to which these programs assist students with college application requirements is not clear because the survey instrument did not ask the respondents to describe the availability of such services (Perna, 2002). This is an important missing element since it has been noted that 18% of all 1988 eighth grade students and 33% of eighth grade students from the lowest SES who were academically qualified did not apply to a four-year college or university (Cabrera & La Nasa, 2001). The researchers speculate that even for the most academically qualified students, the application process may be intimidating.

Among the challenges and potential weaknesses of early college outreach programs described by Perna (2002) after examining over 1,100 programs are: (a)

starting early enough in the educational pipeline; (b) focusing on particular goals; (c) coordinating with parents; (d) retaining students, and; (e) evaluating program effectiveness. The researcher identified 11 of the most important program components suggested by the current literature. These components include: (a) goal of college attendance; (b) goal of college awareness or college exposure; (c) college tours, visits, or fairs; (d) goal of promoting academic skills; (e) goal of promoting rigorous course-taking; (f) parental involvement component; (g) parental college awareness; (h) parent assistance with financial aid forms and involvement in student activities; (i) SAT and ACT training; (j) tuition reimbursement or scholarship; and (k) beginning by the eighth grade. Of all programs responding to the survey, only 6% contained all 11 of these components. Among programs targeting low-income students, those that have at least five critical elements were more likely to be GEAR UP programs than they were to be a federal TRIO program by a margin of 32% to 10% (Perna, 2002).

Gaining Early Awareness and Readiness for Undergraduate Programs

The U.S. Department of Education (2003) conducted a national evaluation of GEAR UP to summarize the first two years of the progress made by the program. The study follows a group of students who entered the program in seventh grade during the 2000-01 school year. This initial report is the first of a series that will comprise a longitudinal study as this cohort moves through the program.

Participants for the study were selected from partnership projects that began operating in the first year of GEAR UP, the 1999-2000 school year. In addition, projects selected for participation in the project were selected from among only those that indicated they would be picking up a new cohort of seventh-graders in the following

year. Every effort was made to include projects with applications that reflected different programmatic approaches and a mix of fiscal agents (i.e., school districts, colleges, and universities). The U.S. Department of Education (2003) then matched one middle school participating in each GEAR UP project with a middle school in the same or nearby school district with similar students but without GEAR UP for comparison purposes.

Due to the fact that students participating in this study are still in middle school, outcomes related to enrollment in college preparatory courses, high school completion, and college attendance will not be known for several years. However, the study does include information related to the background of the students and parents participating in the study as well as the comparison schools. In addition, information from site visits to each of the 20 projects is included. In addition to collecting programmatic information, the site visits allowed the researchers to conduct group interviews with students, parents, and teachers. Finally, information from the Annual Performance Reports (APRs) provided aggregate data for all projects. The first APR designed specifically for the program was submitted by all projects in May 2001 (U.S. Department of Education, 2003).

In its second year of operation, GEAR UP served nearly 200,000 students through 237 partnerships. 90% of those students were in the seventh or eighth grade. Participating students were predominately minority—36% were Hispanic, 30% African-American, 26% were White, 5% Native American and Hawaiian, and 3% Asian. The legislation supporting GEAR UP requires that participating schools have free or reduced-price lunch eligibility rates of 50% or higher. However, the GEAR UP partnership schools have a median rate of 67%. The researchers note that “several of the 20 middle schools visited as

part of the study were facing serious education problems” (U.S. Department of Education, 2003, p. 3). These problems included low academic performance, high staff turnover and low morale. These issues, the researchers report, initially led to resistance to GEAR UP as it was thought that the program would dilute school efforts to improve academics and test scores. This initial resistance faded by the time the second site visit was conducted in spring 2001, with school staff perceptions of GEAR UP improving dramatically. The services provided by the GEAR UP programs studied included: (a) tutoring, (b) mentoring, (c) college-planning activities, (d) individual guidance, (e) summer programs, and, (f) professional development for teachers (U.S. Department of Education, 2003).

In the student survey of administered by Westat as part of the national evaluation of GEAR UP, it was found that students beginning the seventh grade in both GEAR UP schools and the comparison schools had similar plans related to college attendance. The survey showed that 84% of the GEAR UP students and 83% of the comparison group indicated that attending college is “very important” to them. Even though going to college was important to them, only 51% of GEAR UP students and 56% of the comparison group indicated that they “will definitely go to college.” Fewer students in both the GEAR UP schools and the comparison schools planned to attend college or enter vocational school immediately following high school graduation: 44% in GEAR UP schools in 47% in comparison schools. The main reason cited for not continuing education after high school was the cost of attendance (U.S. Department of Education, 2003).

More than half of the students in the previous study came from families with household incomes less than \$30,000. Despite the relative low incomes and a lack of college experience, the parents of students entering the seventh grade had high hopes for their children. The survey administered to parents as part of this study found that 87% of the parents of GEAR UP students and 88% of parents of students from comparison schools thought that their children would get some postsecondary education and 74% of GEAR UP and 78% of comparison thought their children would earn at least a bachelor's degree. The majority of parents at both the GEAR UP schools and the comparison schools did not attend college and only 9% and 12% respectively completed a bachelor's degree or higher (U.S. Department of Education, 2003).

Deil-Amen, Prabhu, Terenzini, and Cabrera (2005) conducted a three-year longitudinal study of federal GEAR UP programs. The researchers used secondary data sources, namely the Annual Performance Reports (APRs) submitted by each funded program to the U.S. Department of Education. The objectives of the research included an examination of the effect of offering or not offering particular interventions, but also the impact of varying levels of both the intensity (level of effort) and extensity (proportion of students reached) of such services.

The theoretical framework for the study was based on the classic concept of social capital theory. The authors (Deil-Amen, et al., 2005) suggest that GEAR UP is based on an unspoken theoretical premise that particular interventions such as college awareness, tutoring, etc., can increase the social capital of low SES, racial minority, and first-generation college students that lead to academic success, college enrollment, and college completion. The purpose of the paper is to consider if and how schools can successfully

increase the college awareness and readiness of middle school students. The focus on college awareness highlights information as a form of social capital as they consider which school-based services seem to successfully increase awareness and aspirations among students and parents. The focus on college readiness considers which school-based services successfully translate the additional social capital into human capital in the form of academic improvement and college enrollment.

Through an analysis of 254 APRs, Deil-Amen, et al. (2005), used ordinary least squares regression to examine a measure of college plans for the second year reports. The types of services of interest were college awareness for students and college awareness for parents. The dependent variable was whether or not a student reported that participation in the GEAR UP program changed their plans to attend college. The findings suggested that the presence or absence of a particular intervention has little effect on changing student plans. Similarly, the intensity of the intervention or service had little effect. Extensity, however, did have a statistically significant impact. The authors asserted that these findings suggest that reaching low-income students at all may be more important than the intensity of the services provided.

Recognizing that academic achievement is one of the most critical predictors of college enrollment, and a lack of longitudinal evidence of the effectiveness of outreach programs in raising academic achievement, Cabrera, Deil-Amin, Prabhu, Terenzini, Lee, and Franklin (2006) conducted a study of 34 GEAR UP partnerships in California. In selecting the sample for the study, the researchers considered the accessibility of relevant achievement data as well as a high concentration of GEAR UP programs. California met the criteria with the large number of programs operating and the availability of student

data and school characteristics through the California Department of Education's web site.

The focus group for this study included sixth grade students attending California public schools in the fall of 1999. The target population was narrowed to those schools serving students in grades 6 through 8 from 1999-2001. Comparisons across schools were possible using the Academic Performance Index (API) for each school. The API is a numeric index that ranges from 200 to 1,000 that reflects a rich array of student and school personnel characteristics at the school level. The Standardized Testing and Reporting (STAR) system is a database that contains information at the grade-within-school level on student performance on the Stanford-9 nationally norm-referenced exam that was administered to students in all public schools in California between the years 1998 and 2002 (Cabrera, et al., 2006). The researchers have data from tests in reading, mathematics, language arts, and spelling. In order to facilitate comparisons of academic progress across schools that face similar challenges, California uses the School Characteristics Index. This index is a composite measure of several demographic and background characteristics that include, among others: (a) pupil mobility; (b) pupil ethnicity; (c) pupil socioeconomic status; (d) teacher credentials; (e) average class size at each grade level, and; (f) percentage of students who are English language learners. The California Department of Education web site allows for the retrieval of 100 similar schools for any given schools (Cabrera, et al., 2006). Using this service, the researchers identified 107 schools to examine the impact of GEAR UP on measures of readiness in reading, and 112 schools to examine the impact on measures of readiness in mathematics.

The present study employed a multilevel, repeated measures design and analytical procedures to examine the effects of exposure to the GEAR UP programs and activities on two measures of college readiness. The study found that schools participating in GEAR UP for two years showed no significant difference in reading scores between participating and non-participating schools. The researchers noted, however, that the non-participating schools slightly outperformed the participating schools prior to the start of the program at a statistically significant level, and that no significant differences were noted at the end of the seventh grade. In mathematics, participating schools slightly but statistically significantly outperformed their non-participating counterparts. (Cabrera, et al., 2006).

The researchers suggested that the failure to find large differences in participating school reading and math scores may have been attributable to the small number of cases impacting the statistical power of the analysis. In addition, GEAR UP programs were designed to impact whole schools over time, and it may have been the case that two years was not long enough to have significantly impacted participants' academic achievement. However, the authors asserted that the findings were encouraging and that additional research was needed before any conclusions could be drawn (Cabrera, et al., 2006).

Research by Yampolskaya, Massey, and Greenbaum (2006) examined the impact of participation in a GEAR UP project in one Florida high school. The researchers noted that while the long-term goal of the GEAR UP program is to increase the number of low income students who enter and succeed in postsecondary education, proximal program goals included high school student grades and test scores, decreasing behavioral

problems, and reducing absenteeism. These goals have been assumed to increase the probability of successful transitions to colleges and trade schools.

The program mentioned above was based at a high school in Florida and had the following specific program goals: (a) to improve GEAR UP student academic performance and encourage high school graduation; (b) to educate GEAR UP students and their parents about opportunities for postsecondary education and; (c) to decrease the number of disciplinary referrals and truancy cases. The program model included three major components: (a) academic; (b) behavior-related, and; (c) social. The two purposes of the study are: (a) to investigate the effect of different components of the GEAR UP program on academic and behavior-related problems and (b) to examine differences between outcomes for at-risk students whose participation in the program varied by the amount of time they spent in GEAR UP activities (Yampolskaya, et al., 2006).

There were 475 GEAR UP students attending the high school, representing about 29% of the total student body. Students that dropped out of school or dropped out of the program were excluded from the study, yielding a sample consisting of 447 students. Participants ranged in age from 13 to 18 ($M = 15.00$, $SD = 0.98$). Race/ethnicity was 75% African-American, 11% White, 13% Hispanic, and 1% other. The population consisted of 38% males and 62% females with 49% in the ninth grade, 35% in the 10th grade, and 16% in the 11th and 12th grades. Most participants were from low-income families with 68% being eligible for participation in the free or reduced-price lunch program.

The primary data source for the study was the Student Course Information System (SCIS). The dataset included: (a) student demographic characteristics including race, sex, grade level, and free or reduced-price lunch eligibility; (b) class enrollment; (c) grades

and GPAs; (d) standardized test scores; (e) student attendance and; (f) disciplinary records. Baseline data were obtained at the end of the fall 2002 semester. The same information was collected at the end of the spring 2003 semester. Reports of disciplinary referrals were collected for academic years 2001-02 and 2002-03.

The second data source consisted of activity recording forms. Individual and group activity forms were used to collect data on the amount of time students spent on each activity. Data on participation in activities were available for only one semester and collected over the entire 5-month spring 2003 semester.

Outcome measures included: (a) GPAs; (b) standardized test reading scores; (c) standardized test math scores; (d) number of disciplinary referrals, and; (e) number of days of unexcused absences (including suspensions). Measured predictor variables consisted of participation and degree of participation in GEAR UP activities.

The research design consisted of a three-group comparison: (a) the No Participation Group; (b) the Low Participation Group, and; (c) the High Participation Group. Students in the Low Participation Group participated in GEAR UP activities, but the amount of time spent on those activities was below the median, whereas students in the High Participation Group spent above the median amount of time in GEAR UP activities. Different participation levels were calculated for each type of service provided (academic, behavior-related, and social). GEAR UP students who did not participate in a certain category comprised the No Participation Group.

Because students were not randomly assigned to participation groups, the propensity score method was used to control for initial differences across multiple background characteristics and baseline variables. Statistical analyses consisted of

repeated measures analysis of variance (ANOVA) and logistic regression. The results of the study revealed no significant difference in reading or math scores, or number of unexcused absences. There was a significant increase in disciplinary referrals for students who participated in behavior-related services, however. The researchers suggested that this increase was due to the fact that those students participating in behavior-related services were those students who were most likely to have behavioral problems resulting in disciplinary referrals (Yampolskaya, et al., 2006).

Summary

There is an abundance of research to suggest that the types of interventions that are supported by early college intervention programs such as GEAR UP are soundly grounded in the research about what is known about college choice behaviors of at-risk students. As Perna (2002) demonstrated with her analysis of over 1,100 programs, GEAR UP is more likely to provide more of what the research would identify as essential elements of an early college intervention program. Specifically, many researchers have shown that academic achievement is the strongest predictor of college enrollment and that GEAR UP should have the goal of improving the academic performance of participating students as a high priority.

However, there is currently very little research to support the assertion that GEAR UP has positively impacted student academic performance. This is due, in part, to the fact that the program is relatively new and is designed to be a longitudinal intervention. Additionally, the evaluation of GEAR UP projects has not specifically required programs to demonstrate improvement in academic performance among participating students.

What little research that has been conducted to date has not provided any evidence that student participation in GEAR UP programs has had any impact on student academic performance, attendance or behavior. Given that these indicators are, in most cases, prerequisites to college enrollment, the potential impact of the GEAR UP program on the eventual enrollment in postsecondary education of participating students is uncertain at best.

The current study examined academic outcomes of students who participated in the summer learning camp component of the LA GEAR UP program. One study (Deil-Amen, et al., 2005) had suggested that extensity of programs is more effective than intensity of programs, causing some concern for an intensive intervention program such as the summer learning camps. While this was only one element of the entire program, and served only about 15% of the total LA GEAR UP population, it is a costly intensive intervention necessitating an empirical analysis of its effectiveness.

CHAPTER THREE

Methodology

This study was based on a matched-pairs, two group post-test only design. Potential threats to internal validity of the study are minimized by the design of the study, specifically the utilization of matched pairs for the sample selection. Use of matched-pairs was a strategy to minimize the likelihood that the experimental (treatment) group and the control (comparison) group differed in extraneous or confounding variables that could have influenced the dependent variable scores. Therefore, each student in the treatment group was individually matched to a student in the control group on the following variables: (a) race; (b) gender; (c) age; (d) school attended; (e) eligibility for free or reduced priced lunch (socioeconomic status), and; (f) sixth grade IOWA test composite score. To further insure equivalency of groups on academic ability prior to treatment, the sixth grade IOWA test composite score was used as a covariate in all statistical analyses.

The use of multivariate matched sampling was motivated by the following considerations: (a) participation in the treatment group was voluntary, so random assignment to treatment or control groups is not possible; and, (b) each participant in the treatment group is matched with a student who attended the same school that is not in the treatment group, eliminating school-based variability. All participants attended schools that

were located in school districts selected for participation in LA GEAR UP based on a specific set of criteria. The criteria used in selecting these districts included: (a) 59% or more of the district students were eligible for free or reduced-price lunch; (b) the district average composite ACT score was 19.6 or lower; (c) the percentage of first-time college freshmen was 42.7% or lower, and; (d) the percentage of freshmen requiring remedial coursework was 45.6% or higher. Generalizability, then, may be limited to schools located in districts with similar characteristics.

Because the opportunity to participate in summer learning camps was available to all students in selected LA GEAR UP schools, yet not all students applied to participate, it could be argued that the individuals in the treatment group may be inherently different from those in the control group before any intervention occurred. Although the match-pairs techniques controls for race, gender, socioeconomic status, and academic ability, students self-select to participate in the summer learning camp component of LA GEAR UP. The act of choosing to apply to attend a summer learning camp may indicate a difference that has not been considered through the study.

Sample

The sample for this study consists of 188 high school students who were in the 10th, 11th, or 12th grade in the 2007-2008 academic year and who attended a school selected for participation in the LA GEAR UP project. These students are a subset of the entire LA GEAR UP student population. Initially 11 school districts were selected for participation, but following hurricane Katrina, the Orleans parish schools were essentially excluded from participation because many of the schools initially participating ceased to

exist when the district resumed operations. Therefore, participants were drawn from 10 Louisiana schools districts and 18 high schools within those districts. All students attending a LA GEAR UP school are eligible for all services provided through the program. As a result, LA GEAR UP served a total of 15,670 students in the final academic year (2007-2008) of the six-year program. Demographic information for that population is provided in Tables 4 and 5. Table 6 provides demographic data for the high schools participating in the study.

Table 4.
Ethnicity of LA GEAR UP Student Population

Ethnicity	Number of LA GEAR UP Students	Percent
American Indian or Alaska Native	207	1.4
Asian	57	.1
Black or African American	10,005	63.9
Hispanic or Latino	219	1.4
White	5,182	33.2
Native Hawaiian or Other Pacific Islander	0	0
Total Student Population	15,670	

Table 5.
LA GEAR UP Student Population by Gender

Gender	Number	Percent
Male	7,750	49.5
Female	7,920	50.5
Total Student Population	15,670	

Applications for participation in the summer learning camps were distributed to all participating schools beginning in 2003. Students interested in attending the camps completed the application and submitted the completed document to their school. Participants were selected on a first-come, first-served basis. All applicants received an invitation to attend a summer learning camp program in each year that an application was submitted. Those students who applied for and attended at least four summer learning camps during the period 2003-2008 were included in the study. A total of 188 students had attended at least four camps during that time. Out of the 188 who attended at least four camps, 52 attended five camps and 12 attended six camps.

Students included in the treatment group first attended camp after completing the sixth or seventh grade. This excluded 48 students who attended camp at least four times, but attended for the first time after completing the eighth or ninth grade. Students in the treatment group had been administered the Iowa Test of Basic Skills (ITBS) in the spring prior to attending camp for the first time. These tests provided a baseline for the academic performance indicator for both the treatment and comparison groups.

Table 6.
Demographic Data for Participating LA GEAR UP High Schools

High School	# of Students	% Eligible for Free/ Reduced Price Lunch	% White	% Minority	% Male	% Female
Bunkie H. S.	399	68.1	43.9	56.1	49.4	50.6
Marksville H. S.	537	67.7	56.0	44.0	47.1	52.9
Avoyelles H. S.	441	72.8	59.0	41.0	48.8	51.2
Lake Providence H. S.	307	85.7	0	100.0	46.3	53.7
Monticello H. S.	196	78.8	23.0	77.0	50.0	50.0
Clinton H. S.	323	100.0	5.0	95.0	50.8	49.2
Jackson H. S.	249	83.1	20.1	79.9	45.0	55.0
Franklin Parish H. S.	688	59.6	56.4	43.6	45.0	55.0
Pointe Coupee H. S.	563	86.8	1.2	98.8	50.8	49.2
Many High School	295	56.6	52.5	47.5	50.5	49.5
Zwolle High School	305	81.3	21.3	78.6	51.5	48.5
St. Helena Central H. S.	369	88.1	1.08	98.92	53.1	46.9
East St. John H.S.	1,452	76.4	18.9	81.1	48.8	51.2
Franklinton High School	774	65.1	67.7	32.3	48.7	51.3
Mt. Hermon School	486	65.0	67.1	32.9	52.7	47.3
Pine High School	589	89.5	78.1	21.9	51.6	48.4
Varnado High School	181	90.7	29.8	70.2	56.9	43.1
Madison High School	397	76.2	5.0	95.0	44.8	55.2

All of the participating high schools were represented in the sample. The number of participants from each school included in the sample ranges from 1 to 27. Variability in the number of participants may be due to several factors, including the degree to which each school fully implemented all components of the Summer/Academic Year Learning Projects. Table 7 provides demographic information for the students included in the current study who had attended at least four summer learning camps.

Table 7.
Demographic Information for Student Participants

Gender/Race	Number	Percent
Male	61	32.5
Female	127	67.5
White	28	14.9
Minority	160	85.1
Total Participants	188	

Each of the participants who attended at least four summer learning camps were matched with a student who did not attend any of the summer learning camps offered. Initially, students were matched by age, race, gender, grade level, school attended, and eligibility for free or reduced price lunch. In order to find matched pairs based on academic performance, participants in the treatment group were matched to students who attended the sixth or seventh grade the same year but did not participate in summer learning camps and will comprise the comparison group. For these students, the academic indicator used for matching purposes will be the standard composite scores on the Iowa

Test of Basic Skills (ITBS) administered in the spring prior to attending camp for the first time.

Instrumentation

The researcher used the Iowa Test of Basic Skills for matching purposes. The dependent variable of academic achievement was measured in two ways: standard scores on each component of the Graduate Exit Exam (GEE), and by the cumulative grade point average reported for the 10th, 11th, and 12th grade.

The English and mathematics components of the GEE are administered in the spring of the 10th grade and the science and social studies components in the spring of the 11th grade year. Data were collected using the Student Information System provided by the Louisiana Department of Education. The same system was used to collect all student data (demographic and achievement) for this study.

The Iowa Test of Basic Skills (ITBS)

The Iowa Test of Basic Skills (ITBS) is a group-administered, norm-referenced battery of achievement tests that were administered each spring to all students in the first, second, third, fifth, sixth, and seventh grades attending public schools in Louisiana. Of the three batteries of the ITBS that are available (Complete, Core, and Survey), Louisiana students were administered the Survey battery of tests. The tests are designed to measure growth in fundamental areas of school achievement including: (a) vocabulary; (b) reading comprehension; (c) language; (d) mathematics; (e) social studies (f) science, and; (g) sources of information (Hoover, et al., 1955, 1955-2003). The main purposes of the ITBS are to (a) obtain information that can support instructional decisions made by teachers in the classroom; (b) provide information to students and their parents for monitoring

student's growth from grade to grade, and (c) examine yearly progress of grade groups as they pass through the school and state curriculum. The ITBS was first published in 1955. The selection of the content for the tests was guided by a consideration of the typical course coverage across the country, current textbooks and teaching methods, and by recommendations of national curriculum groups.

The national standardization of the ITBS was based on the spring and fall 2000 administration of the tests to a carefully selected random sample. The sample was designed to be representative of the national population of students in grades K-8. The stratified random sample was weighted to ensure proportional representation of various subgroups such as: (a) public/private schools; (b) geographic regions; (c) socioeconomic categories; (d) district and diocese size; (e) grade level, and; (f) race/ethnicity. The sample included 170,000 students in the spring administration and 76,000 in the fall 2000 normative sample. The ITBS is restandardized with new norms approximately every seven years.

The ITBS provides three scoring frameworks including (a) raw scores and percent-correct scores, (b) developmental scores (grade equivalents and developmental standard scores), and (c) status scores (percentile ranks, stanines, and normal curve equivalents). The equivalent forms reliability of the ITBS is high. The internal consistency coefficients based on the Kuder-Richardson Formula 20 (KR20) range from the middle .80s to low .90s. The reliability coefficients tend to be slightly lower on subtests, shorter tests, and for younger students (Hoover, et al., 1955, 1955-2003).

Although content validity is extremely important for this type of achievement test, it should be noted that the extent to which the ITBS is a valid measurement for a

particular school or school district is a decision that should be made at the school district and school level. Given that caveat, the ITBS was developed to correspond with common goals of instruction across schools in the nation. In addition, sensitivity reviews by content and fairness committees and differential item functioning were examined to ensure the validity of the test.

The Graduate Exit Exam (GEE 21)

The Louisiana State Board of Elementary and Secondary Education (BESE) approved rigorous new content standards for students in grades P-12 and, at the same time approved a new criterion-referenced testing program that was to be aligned with the new standards. Students are tested in English/language arts, mathematics, science, and social studies at the fourth and eighth grades. The test administered is called the Louisiana Educational Assessment Program for the 21st Century (LEAP 21). Beginning in 2001, English/language arts and mathematics are tested at the 10th grade and, beginning in 2002, science and social studies are tested at the 11th grade. The high school testing program is called the Graduate Exit Examination for the 21st Century (GEE 21) (Louisiana Department of Education, 2006c).

Score reporting for GEE 21 are scale scores. The scaling method used for these tests is the same Item Response Theory method that is used by the National Assessment of Educational Progress (NAEP). The baseline administration of the GEE 21 tests are scaled with a mean of 300 and a standard deviation of approximately 50. The lowest obtainable scale score (LOSS) is 100, and the highest obtainable scale score (HOSS) is 500 for all GEE test forms (Louisiana Department of Education, 2006c).

Reliability of the GEE is evidenced by the statistics provided in Table 8 based on the spring 2006 test administration. In addition to the traditional reliability method, Cronbach's alpha, a second form of reliability was computed. The second method, Stratified alpha, takes the test design into consideration, namely the inclusion of constructed response test items. These items are typically scored in a graded manner across a range of possible points. Since a reliability coefficient above .80 is considered good, and those above .85 are considered excellent, all forms of the GEE for all grades and content areas have accepted reliability for this study.

Table 8.
Reliability of GEE Tests Based on Spring 2006 Administration

Grade Level	Content Area	Stratified alpha	Cronbach's alpha
10	English Language Arts	.90	.88
10	Mathematics	.94	.93
11	Science	.88	.87
11	Social Studies	.93	.92

A thorough process was utilized ensure the validity of the GEE tests. In-state committees first defined the content domain upon which the tests were to be based. These committees, composed of Louisiana educators, Louisiana Department of Education (LDE) curriculum and assessment staff, and an outside consultant, developed the content standards for each subject and grade. These standards were widely distributed for input from other educational stakeholders and revises as necessary. A test blueprint was then constructed following the development of content frameworks for the tests. The content validity was verified by content review committees, LDE staff, and the test contractor.

Procedural Details

Overview of LA GEAR UP and Summer/Academic Year Learning Projects

In September 2002, the U.S. Department of Education awarded a 5-year, \$12.5 million Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP) grant to the State of Louisiana. In its first year, Louisiana GEAR UP (LA GEAR UP) focused on a cohort group of 2,542 seventh grade students in 25 middle schools in 11 districts throughout the state. Students in the selected districts were judged to have above-average needs, based on four criteria: (a) 59% or more of the school district's students are eligible for free or reduced lunch; (b) the school district's composite ACT score is 19.6 or lower; (c) the percentage of first-time college freshmen is 42.7% or lower; and (d) the percentage of freshmen requiring remedial courses is 45.6% or higher.

The primary mission of LA GEAR UP is to elevate the academic achievement of low-income students and to increase the number of students who enroll and succeed in post-secondary education programs. This challenging goal requires implementation of multifaceted initiatives such as (a) professional development for teachers, (b) financial assistance and advice, (c) strengthening parent support, and (d) collaboration with partners. During summer 2002 LA GEAR UP introduced Summer Learning Camps (SLCs). These week-long programs provided: (a) content-related instruction in mathematics, science, and English/language arts with integration of technology; (b) enrichment opportunities such as field trips; and (c) recreational activities. Camps also provided information about academic requirements, admission standards, and financial aid resources required to pursue postsecondary studies. Figure 4 illustrates the growth in popularity of the SLC program among LA GEAR UP students from 2002-2008.

Summer Learning Camps were placed in a broader context due largely to experiences at Louisiana Tech University, recommendations of the 2004 Review Committee, and follow-up actions of the Louisiana Systemic Initiatives Program (LaSIP) Council. The Review Committee was impressed by these attributes of Summer Learning Camps at Louisiana Tech: (a) integration of academics and behavioral support, (b) the bridging of student learning from the summer through the academic year, (c) the organization of summer camps for students and professional development for counselors around common themes, and (d) the organization of Explorers Clubs to give academic-year meaning and substance to summer activities.

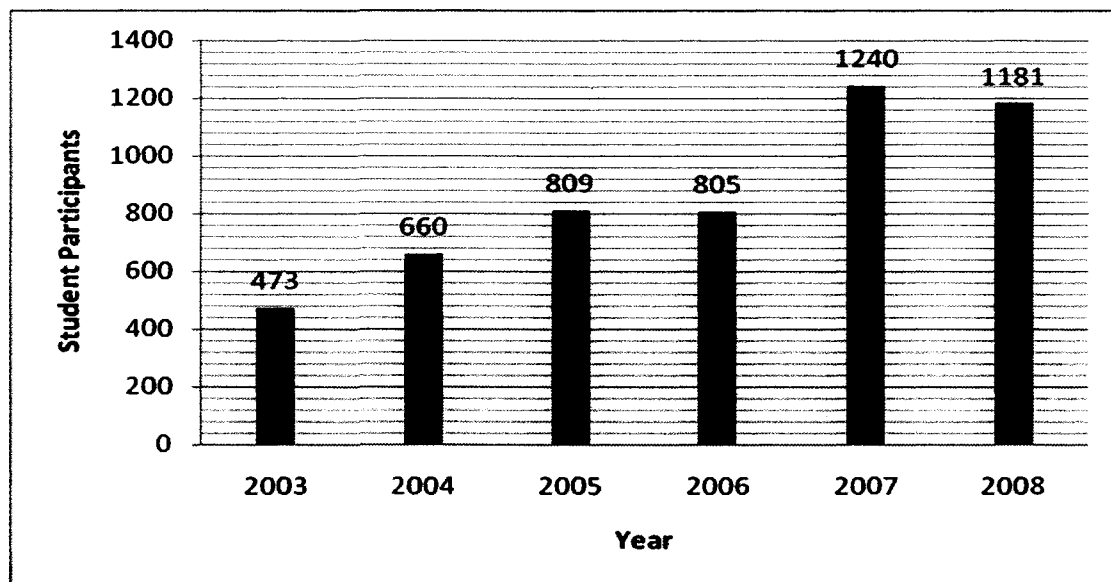


Figure 4. SLC Participation 2003-2008.

After reviewing these considerations and recommendations, the LaSIP Council voted unanimously in March 2004 that a State model should be organized around practices begun at Louisiana Tech University. Based on this decision, LA GEAR UP designed three requests for proposals to support the 2005-06 LA GEAR UP Summer/Academic Year Learning Projects: (a) Summer Learning Camps (SLCs); (b)

Professional Development Project for Counselors (PDPC), and; (c) Statewide Management Project for SLCs and the PDPC.

Based upon recommendations of the 2004 out-of-state review panel for Summer Learning Camps and subsequent actions of the LaSIP Council, LA GEAR UP expanded Summer Learning Camps (SLCs) to include a full-year of activities designed to assist students to enter postsecondary education upon graduation from high school. The design of the Summer/Academic-Year Learning Projects is established on connecting themes as shown in Figure 5 and the explanation that follows.

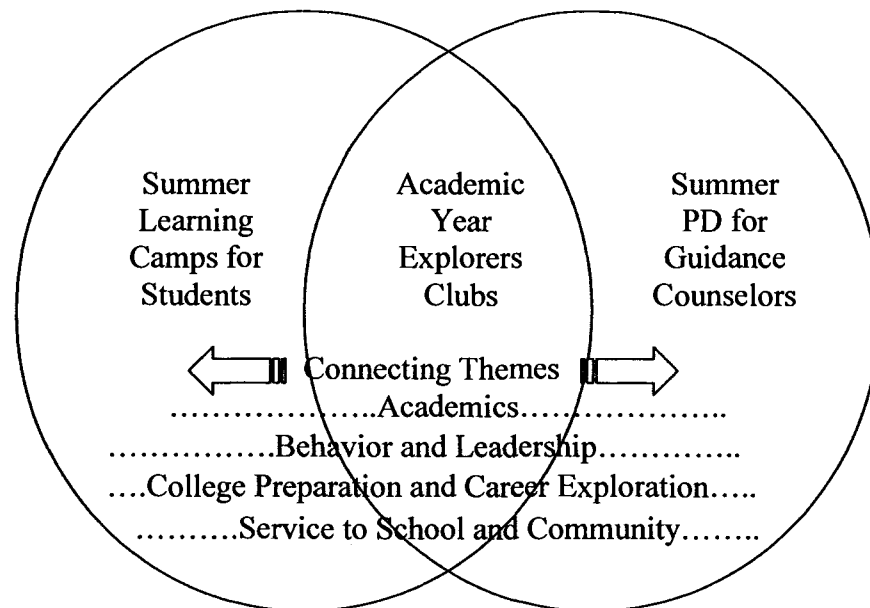


Figure 5. Connecting Themes of Summer/Academic Year Learning Projects.

Summer Learning Camps (SLCs) for Students

Summer Learning Camps are one-week residential camps held on college campuses to prepare LA GEAR UP students to enter postsecondary education upon graduation from high school. In addition to camps held at Louisiana Tech University, camps were also offered at the University of Louisiana at Monroe, Grambling State

University, Nicholls State University, Northwestern State University, McNeese State University, the University of Louisiana at Lafayette, and Southeastern State University.

All SLCs provide instruction in standards-based mathematics, science, technology, and/or English/language arts, as well as information about available financial aid resources and admission standards required to pursue postsecondary studies. Students experience life on a college campus by residing in dorms, utilizing food services, and attending classes during camp. Visits to other Louisiana learning sites such as research laboratories, museums, science facilities, etc. as well as planned recreational activities are included as part of the design.

Professional Development Project for Counselors (PDPC)

School coordinators for LA GEAR UP are represented by faculty members or guidance counselors from LA GEAR UP schools contracted to serve as a liaison between LA GEAR UP and participating schools. Coordinators play a critical role in the academic year (AY) follow up to summer camps. Summer professional development for these coordinators provide training, resources, and AY support in such areas as academic and career planning, current counseling trends and issues, and assistance in planning academic year activities to support the overall goals of LA GEAR UP. To facilitate continuity throughout the academic year, the school coordinator at each LA GEAR UP school served as the Explorers Club sponsor. The role of the sponsor is to: (a) schedule club meetings; (b) plan activities, and; (c) provide documentation of all meetings and activities. The school coordinator designs an Explorers Club action plan that supports their school improvement plan and connects selected themes such as: (a) academics; (b) behavior and leadership; (c) college preparation and career exploration, and; (d) service

to school and community. Special emphasis is placed on incorporating two critical elements of the LA GEAR UP initiative: (a) the Educational Planning and Assessment System (EPAS) and; (b) Positive Behavior Support (PBS). Participants are introduced to the following resources to be used in support of their academic year objectives: (a) *The Individual Career Portfolio*; (b) *The Career and Life Explorer* (middle school), and: (c) *Pathfinder* career exploration workbook.

Academic Year Explorers Clubs

Explorers Clubs were established in all LA GEAR UP schools during AY 2004-05. Students who participated in SLCs were eligible for membership in the clubs. Students developed an action plan with activities supporting progress in academics, behavior and leadership, college preparation and career exploration, and service to school and community. As emerging school leaders, Explorers Club members have a dual responsibility. First, as a club member, students are expected to create and follow a personal action plan addressing the following domains: (a) academics; (b) behavior/leadership; (c) college preparation and career exploration; and (d) service to school and community. These domains are collectively referred to as the ABCs. Progress in each of these domains was documented using the *Individual Career Portfolio* which is created for each member as a club activity and a required component of the application for further participation in SLCs. Second, club members have a responsibility to encourage and support the post secondary aspirations of other LA GEAR UP students at their school site. Club activities and projects were intended to promote school-wide initiatives that are aligned with the school improvement plan and the goals and objectives of LA GEAR UP. Officers and club sponsors were invited to present the results of

Explorers Club activities at an annual state conference held in the spring of each year beginning in 2005.

Connecting Themes

In order to maximize the impact of all LA GEAR UP initiatives, the 2005-06 Summer/Academic-Year Learning Projects included establishing a clear connection between SLCs, the PDPC, and the academic year Explorers Clubs around four central themes. These themes, shown in Figure 5, include: (a) Academics; (b) Behavior and Leadership; (c) College Preparation and Career Exploration; and (d) Service to School and Community. The themes became the common threads connecting and strengthening each component of the Summer/Academic-Year Learning Projects.

Critical Elements: EPAS and Positive Behavior Support

To better prepare Louisiana students for the ACT, the Louisiana Board of Regents invested significant resources in providing all Louisiana schools access to EPAS testing which consists of two pre-ACT tests. The Explore is administered to all eighth grade students and the Plan to all 10th grade students. These tests provide schools with Pathway strategies identified by EPAS to assist schools in providing focused instructional support to students. Since the EPAS tests are administered in the fall and because of their alignment with the LEAP and GEE, these tests are valuable tools for schools to use to better prepare students for success on those tests as well. For these reasons, LA GEAR UP, in collaboration with the Louisiana Board of Regents, included EPAS as a critical element that was incorporated into all Summer/Academic Year Learning Projects.

The Positive Behavior Support (PBS) Program proposes school-wide implementation of behavior principles and prepares teachers to address behavior

problems of students. The emphasis of this program is on prevention of inappropriate behavior and implementation of effective approaches to address undesirable behavior when it occurs. Positive Behavior Support is supported by the U.S. Department of Education and the Louisiana Department of Education. Recognizing the impact that PBS has on academic performance, LA GEAR UP has also included PBS as a critical element that was incorporated into all Summer/Academic Year Learning Projects.

Academics and SLCs

Immediately upon arrival at camp, all students were pre-tested using an abbreviated version of the ACT Explore test for rising seventh and eighth grade students or the Plan for rising ninth and 10th grade students. The results of these tests were analyzed and individual tutoring plans were created using Pathway strategies identified by the EPAS system for each participant. Seventy-five minute tutoring sessions were planned for three days of each camp. During the individual or small group tutoring sessions, participating universities enlisted support from a variety of resources such as camp counselors, project staff, and teacher candidates from the College of Education to provide tutoring in areas of need as indicated on the pre-test. Post-testing occurred during the final day of the camp. Results of the post-test were scored and statistically analyzed for comparison to the pre-test as part of the evaluation plan for the SLCs.

Another important academic component includes stimulating learning opportunities in standards-based mathematics, science, technology, and/or English/language arts during four half days of the camp. Universities selected topic(s) and designed lessons and activities to teach these topics.

Academics and the Professional Development Project for Counselors

Summer professional development (PD) for guidance counselors and/or LA GEAR UP coordinators provided instruction on the use of EPAS data to counsel students in planning academic careers that support their postsecondary education aspirations. During the summer PDPC, participants collaborated with college faculty and ACT representatives to analyze school EPAS data and its relation to and alignment with LEAP assessments and GLEs, to assist school faculty in identifying and addressing specific needs of individual students. Participants were encouraged to conduct workshops or study groups at their respective schools to share EPAS information. Project participants explored how EPAS can be used to assist students in ACT preparation and in identifying potential career interests for further exploration. Participants were shown the utility of EPAS as an ACT test preparation aid, a guide to curriculum and tutoring planning, and as an essential component of comprehensive career planning.

Academics and the Academic Year Explorers Clubs

Club activities were planned to enable members to participate in additional academically enriching activities such as field trips to various learning centers, museums, and colleges. Additionally, club members were encouraged to assume leadership roles in creating peer tutoring programs, test preparation and study skills workshops, and other initiatives designed to assist all LA GEAR UP students to succeed academically. Clubs were intended to contribute to the enhancement of a school environment where academic achievement is valued and celebrated. *Individual Career Portfolios* were used to document both academic progress and a plan for courses needed through graduation to meet the requirements of the members' postsecondary educational goals.

Explorers Club members use their own EPAS data to identify content areas on which to focus. In addition, the career planning information provided by the EPAS system assisted them in exploring career options. Club activities included ACT test preparation organized by members for the benefit of all LA GEAR UP students.

Individual Career Portfolios were used to document members' career exploration and ACT test preparation activities.

Participants incorporated a peer-tutoring plan into the Explorers Club action plan developed through the project. Tutoring was to be designed and driven by EPAS data. These peer-tutoring programs were to be sponsored by the Explorers Club as a service to all LA GEAR UP students

Behavior and Leadership and the SLCs

Leadership training is an integral component of all aspects of the LA GEAR UP Summer/Academic-Year Learning Projects. The SLCs offer a five-year leadership plan for participating LA GEAR UP students. Students receive four hours of leadership training as part of the SLC curriculum with a different focus each year. These leadership training units were developed in collaboration with the Psychology and Behavioral Sciences department at Louisiana Tech University and were provided to SLC project directors for inclusion in their camp curriculum. Students who had attended SLCs for three years were eligible to serve as volunteer junior counselors at an Explorers Camp during the fourth year. In the fifth year of participation, students who had served as junior counselors were eligible to apply as paid counselors. Principles of PBS were used in designing the SLC behavior management plan.

Behavior and Leadership and the PDPC

Participants were provided with and created club activities designed to provide ongoing leadership training for club members. In addition, action plans developed through the project were to describe ways in which club members would be given opportunities to assume leadership roles in the club, either as club officers or as chairs of various club initiatives. In addition, PBS principles were to be discussed and incorporated into project developed action plans. Principles presented were applied at the schools in support and with the assistance of the Explorers Clubs.

Behavior and Leadership and the Explorers Clubs

Explorers Clubs provide a vehicle by which LA GEAR UP students begin to exercise and hone leadership skills developed through these projects. Club members, through service as a club officer or as a chair of various club projects, gained confidence to build the self-esteem needed to succeed in achieving academic and career goals. As school leaders, club members recognized a responsibility to serve their school and community and provide the leadership necessary to carry out club service projects. These developing leaders were to become role models and mentors for younger students in LA GEAR UP schools. *Individual Career Portfolios* (ICPs) were used to document member leadership roles in various extracurricular activities as well as their active participation in all Explorers Club activities. Documentation of school and community service projects were also to be included in the *Individual Career Portfolios*.

College Preparation and Career Exploration and the SLCs

Financial planning was provided through SLCs during a four-hour block by the LA GEAR UP staff and the Louisiana Office of Student Financial Assistance (LOSFA)

to present their respective scholarship programs. Each university, in collaboration with university admissions and the financial aid departments, provided two additional presentations related to college preparation, admissions standards, and other types of financial aid available. Campus tours were also included in this segment.

College Preparation and Career Exploration and the PDPC

Participants received information/updates regarding: (a) the Tuition Opportunity Program for Students (TOPS); (b) Rewards for Success scholarships, and; (c) other potential financial assistance available to LA GEAR UP students. Action plans included strategies for disseminating information to all LA GEAR UP students through College Connection nights sponsored by the Explorers Clubs. Special attention was placed on continuing education relating to TOPS and Rewards for Success requirements to ensure that LA GEAR UP students were adequately informed of the opportunities available and the requirements associated with those opportunities.

Career exploration was facilitated through the use of the *Individual Career Portfolio*, the *Career and Life Explorer* and the *Pathfinder* workbook, all of which were introduced to participants during the summer PDPC. College and career exploration activities for the Explorers Clubs were incorporated into the action plan developed through this project.

College Preparation and Career Exploration and the Explorers Clubs

Club members worked with the club sponsor to design and implement a peer-tutoring program at their school driven by student EPAS data. In addition, club members

promoted all tutoring programs offered through the school and were expected to assume personal responsibility for seeking the help they needed as indicated by their own EPAS test results and other available data. The ICPs were used to document member participation in and leadership of tutoring activities. Club members were responsible for organizing and promoting a College Connection night at their school. Members worked with the club sponsor and LA GEAR UP staff to develop the program presented.

Service to School and Community and the SLCs

Explorers Club meetings held during the SLCs were designed to encourage participants to assume leadership roles at their individual schools in a variety of service projects. They were reminded that, as club members, they were required to complete one school service project and one community service project each year. The SLCs gave students the opportunity to brainstorm ideas with other Explorers from across the state.

Service to School and Community and the PDPC

Project participants were required to develop an action plan during the summer session. It was a requirement that this action plan contain a school service project and a community service project component. As club sponsors, participants were responsible for assisting club members in completing these projects during the academic year. Club activities would be presented at the state conference held in the spring.

Service to School and Community and the Explorers Clubs

Club members worked with their sponsor to conceive and implement two service projects each year; one project to benefit the school and one to benefit the community.

Each member documented in their ICP their contribution to the success of each of the projects. In addition, the club officers presented their work at the state conference held in the spring of each year.

Ensuring Program Consistency

In order to ensure that all students attending SLCs that would receive a similar experience regardless of the camp attended, and that all participating university camps included all of the essential elements of the program, the statewide management of the SLCs was implemented and coordinated by Louisiana Tech University. Program management provided project directors from participating university campuses with training and curriculum support materials. In addition, all camp counselors attended a two-day statewide training program offered through Louisiana Tech University.

The materials provided to the various campuses included: (a) tutoring support curriculum; (b) pre- and post-tests; (c) a leadership training manual; (d) a template for camp scheduling, and; (e) camp shirts, duffle bags, and document templates that created a branding for all of the camps. These efforts contributed to camper understanding that, regardless of the university camp attended, all camps were affiliated with the LA GEAR UP program. This consolidated plan ensured that each camper heard a consistent message throughout the program.

The Treatment Group

All students attending a LA GEAR UP school were eligible to participate in the Summer/Academic Year Learning Project (SAYLP). Applications were sent to all

schools in the spring of each year and offered to all students. In 2008, over 1,800 students applied to attend a summer learning camp. The total LA GEAR UP student population (all students attending a school participating in the LA GEAR UP project), as depicted in Figure 5, started with approximately 2,500 students in the seventh grade in 2002-03. The initial cohort remained with the program for the entire six years and additional cohorts were added in subsequent years. As a result, in Year 6, LA GEAR UP served over 15,000 students in seventh through 12th grades. This number includes all students who attended summer learning camps as well as those students who did not participate in SLCs, although all students were eligible to participate.

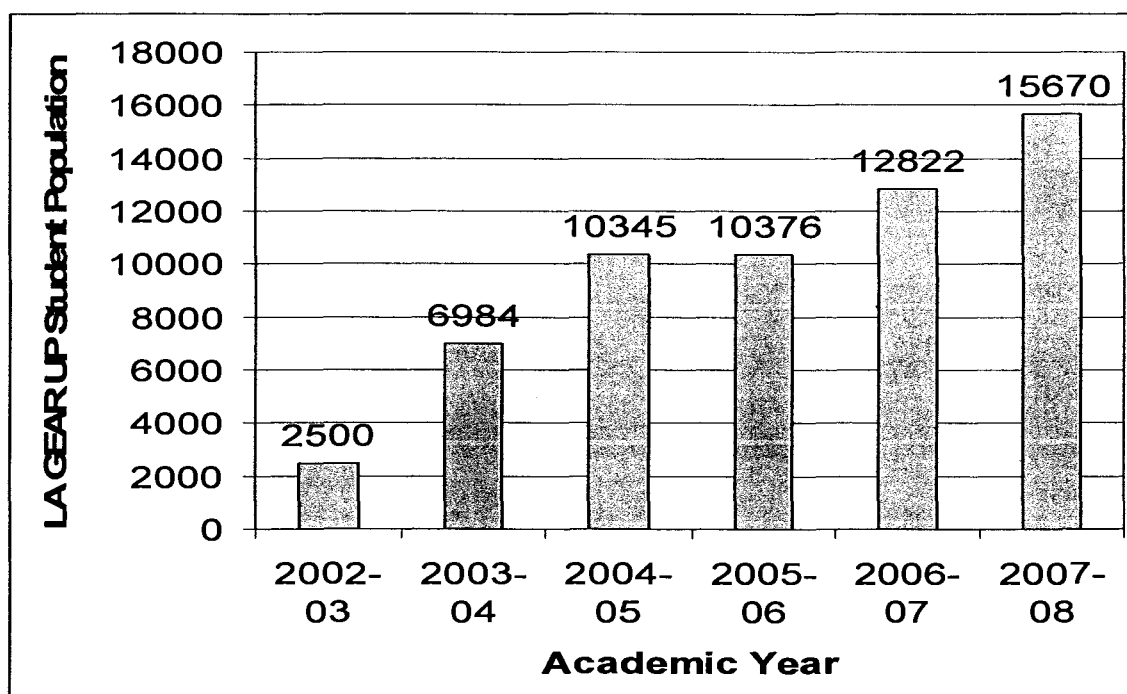


Figure 6. LA GEAR UP Student Population 2002-2008.

Students selected for inclusion in this study attended a summer learning camp at least four times during the period 2003-2008. There are a total of 188 students that meet the criteria for inclusion. These students had completed either grade six, seven, eight, or

nine prior to attending camp for the first time. In order to establish baseline academic performance measures, only those students who completed grade six or seven immediately prior to attending camp for the first time were included in the final treatment group ($n=140$).

The Comparison Group

Students selected for inclusion in the comparison group were also chosen from among the total LA GEAR UP student population, but were chosen through a matching pairs technique. In order to assign students to the comparison group, the researcher first defined the matching variables for the treatment groups. Each participant in the treatment group was categorized by: (a) age; (b) race; (c) gender; (d) eligibility for free or reduced-price lunch; (e) grade completed prior to attending camp for the first time; (f) school attended, and; (g) year in which participant attended camp for the first time.

For participants in the treatment group, a baseline academic performance measure was needed. The variable used to categorize these students was the standard composite score on the ITBS taken in the spring prior to attending camp for the first time. Table 9 depicts the variables that were used to match each student in the treatment group to a student who did not participate in a summer learning camp and would be assigned to the comparison group.

Table 9.
Matching Variables Used to Match Treatment Group to Comparison Group

Matching Variable	Measure
Gender	Male or Female
Race	Black, White, Other
Free/Reduced Lunch Status	Yes or No
School Attended in 2002-03	School Site Code
Grade Level in 2002-03	6 or 7
Age	Date of Birth Year
Sixth Grade ITBS Score	Standard Composite

Dependent academic performance variables included standard scores on the English/language arts (ELA), mathematics, science, and social studies components of the GEE, and the reported cumulative GPA in the 10th, 11th, and 12th grades.

Data Analysis

Each of the hypotheses was tested at the $\alpha = .05$ level of significance. In order to ensure that the treatment group and the comparison group were statistically equivalent prior to treatment, two methods of control were used. The first form of control was matching pairs of subjects; one from the treatment group with one from the control group on the previously described potentially confounding variables.

In addition, to ensure the treatment and control groups were statistically equivalent prior to treatment in academic ability, the sixth grade ITBS composite score was used as covariate. Accordingly, pairs of respondents in the treatment group and the control group were individually matched on the sixth grade ITBS composite score. Then,

to determine the effectiveness of matching in the sixth grade ITBS composite score, a matched pairs *t*-test for correlated groups was used as a preliminary baseline academic indicator. For even greater statistical control, the sixth grade IOWA test composite score was employed as a covariate in all basic analyses.

Statistical analyses of dependent variables consisted of matched pairs one-factor MANCOVAs. The single independent variable (i.e., factor) is membership in either the treatment or comparison group. Two sets of dependent variable measures of academic performance were used. The first set of dependent variables consisted of 10th grade GPA, 11th grade GPA, and 12th grade GPA. The second set of dependent variables consisted of standard scores on the English/language arts (ELA), mathematics, science, and social studies tests that comprise the Graduate Exit Exam (GEE). The covariate was the Iowa Test of Basic Skills score.

Since MANCOVA results warranted, follow-up univariate ANCOVAs were conducted for each dependent variable. Table 15 depicts the dependent variables, time of measurement and the statistical analysis that was used for each variable.

Table 10.
Dependent Variables, Time of Measurement, and Statistical Analysis Employed

Dependent Variable	When Measured	Statistical Method
GEE Math, ELA Composite	Spring 10th Grade	MANCOVA
GEE Science, Social Studies Composite	Spring, 11th Grade	MANCOVA
Grade Point Average (GPA)	End of 10th, 11th, and 12th grade	MANCOVA

Limitations

Since participants for this study attended schools that were eligible for inclusion in the LA GEAR UP program based on evidence of a high need for intervention (poor academic performance, etc.), generalizability of the findings from this study may be limited to students who attend schools with similar characteristics. In addition, there may be some concern about the existence of unmeasured differences between students who participated in the summer learning camp program and those who did not. Although statistical techniques and matching were employed to control for this potential limitation, some readers may point to that as a rival explanation for group differences.

CHAPTER FOUR

Data Analysis

The purpose of this study was to determine whether there were significant positive changes in the academic achievement of students who participated in the LA GEAR UP Summer/Academic Year Learning Project. To determine this, two groups of students were compared on two sets of measures of academic achievement. The treatment group consisted of students who attended at least four LA GEAR UP summer learning camps during the period 2003-2008. For the purposes of this study, participation in Summer/Academic Year Learning projects was defined as attending at least four LA GEAR UP summer learning camps. The comparison group, consisted of students who did not attend a LA GEAR UP summer learning camp, but who were each individually matched on seven selected variables with a student in the treatment group. The purpose of this matching was to make the treatment and comparison group students as similar as possible (in most cases equivalent) on potential confounding variables such as: (a) gender; (b) ethnicity; (c) socioeconomic status (SES); (d) school attended, and; (e) sixth grade academic achievement assessed by the Iowa Test of Basic Skills (ITBS). Such matching maximizes the likelihood that, if a difference between the treatment and comparison group is found, the difference is due to the independent variable (i.e., attending LA GEAR UP summer learning camps). Specifically, the researcher studied the

impact of participation on two sets of measures of academic achievement: (a) grade point averages in the 10th, 11th, and 12th grades, and (b) student scores on all four components of the Graduate Exit Exam (GEE), the state criterion-referenced test required for graduation.

Data Collection

Sampling and matching procedures are described in detail because these procedures are critical for making valid inferences about the effect of participation in the LA GEAR UP summer learning camps on the two dependent variable measures of academic achievement. The sample for this study initially consisted of 188 students who attended schools participating in the LA GEAR UP program and who had attended a summer learning camp at least four times during the period from 2003 to 2008. These students were identified by examining the database maintained by the researcher for the LA GEAR UP program that contains student information related to summer camp attendance for each year for the same period.

Once these students had been identified, and approval from the Human Use Committee at Louisiana Tech University had been obtained (Appendix A), a request for student data was submitted to the Louisiana Board of Regents (Appendix B). Subsequently, the Board of Regents arranged a meeting between the researcher, personnel from the Strategic Research and Analysis Division of the Louisiana Department of Education (LDE) and the Associate Commissioner for Information Services and Data Management for the Louisiana Board of Regents. At the conclusion of that meeting, it was determined that the LDE would provide the requested student records to the Board of Regents. It would be the responsibility of the Board of Regents to de-

identify those student records and to transmit the requested data to the researcher using secure electronic means.

The researcher submitted a list of all students identified by social security number, who had ever attended a summer learning camp to the Louisiana Board of Regents by uploading a password-protected file to the Board of Regents secured server using a password provided by the Board of Regents. A second file, containing the student information for the 188 students who had attended camp at least four times and identified by social security number was transmitted to the Board of Regents using a similar protocol.

The LDE provided a complete set of data for all students enrolled in the 18 high schools identified in this study for each academic year beginning with the 2002-03 academic year and including each year through 2007-2008 and the first semester of the 2008-2009 school year. Combining those records with the information provided by the researcher, the Board of Regents was able to de-identify students by replacing the social security number for each participant with a unique identification number. A crosswalk table was created matching the social security numbers of students in the proposed treatment group so the researcher would be able to identify those students using the unique identification number provided. A similar table was provided identifying all students who had attended at least one LA GEAR UP summer learning camp. A final Access database file containing the de-identified student records was then uploaded to the secure server and the password needed to access that file provided to the researcher. The Access database file that was then downloaded by the researcher was also password protected and contained the following tables: (a) enrollment records from selected high

schools; (b) test data for selected students; (c) discipline records for selected students; (d) early enrollment (pre-high school) records for all students; (e) high school transcripts for all students; (f) EPAS Explore test scores for all students; (g) EPAS Plan scores for all students; (h) GBcohort (identification number crosswalk for all students who had attended at least one summer learning camp), and; (i) original cohort (identification number crosswalk for the treatment group). In addition to these tables, two preliminary queries were run by the Board of Regents resulting in the creation of two additional tables: (a) all students who had attended at least one camp and (b) all students from selected high schools who had never attended a summer learning camp.

In order to create the final sample, the researcher first identified those students in the proposed treatment group that attended camp for the first time in the year after completing the sixth or seventh grade. It was determined that it was preferable to use only these students since the sixth grade ITBS composite score was selected as a baseline academic measure (i.e., covariate) and these students would begin attending camp almost immediately following the administration of that test. Students who attended camp for the first time after completing the eighth or ninth grade would be two or three years removed from the baseline academic measure. This resulted in a final potential pool for the treatment group consisting of 140 students.

Matching Technique

The matching procedure used to create the comparison group required first that the values for the matching variables be identified for the treatment group. To do this, a new table was created in Access that included the identification numbers of the 140 students in the treatment group. That table was then related to the Test Data file by

identification number and all student records for the treatment group were extracted. The table was then configured to display only the complete student records for the sixth grade. From that file, the values for the following matching variables were obtained; (a) age by date of birth year, (b) gender, (c) ethnicity, (d) year in sixth grade, (e) eligibility for free or reduced priced lunch, (f) school attended, and (f) sixth grade ITBS composite score. All of this information was then entered into an Excel spreadsheet by student identification number.

The comparison group was created using the filtering function of Access. First, the test data were related to the preliminary query table that identified all students who had never attended a summer learning camp, but attended the same 18 schools that the students in the treatment group attended. Then, for each student in the treatment group, the resulting table was filtered to provide all records that matched on the variables of interest. The first filter displayed all of the sixth grade records for these students, a second filter displayed only those records that matched by school attended. From the resulting list, subsequent filters were applied for each of the remaining variables; (a) date of birth year, (b) gender, (c) ethnicity, (d) free or reduced price lunch eligibility, (e) school attended and finally, to ensure that these students were in the same grade at the same time, the table was filtered to show only those students who took the sixth grade ITBS at the same time as the students in the treatment group.

The final variable used in matching was the sixth grade ITBS composite score. In order to determine the criterion that should be used during the matching process, the mean and standard deviation of the sixth grade ITBS composite scores for students in the proposed treatment group was computed. A mean of 224.62 was found with a standard

deviation of 22.43. In matching sixth grade ITBS composite scores, then, the goal was to find students who, when matched on all of the other variables, had a sixth grade IOWA test composite score as close as possible to the sixth grade ITBS composite score of the student in the treatment group. If the closest matching score in the comparison group was more than one standard deviation above or below the score of the treatment group score, then the conclusion was that no match was found and that treatment group case was discarded from the sample. Repeating this matching process for each student in the treatment group yielded a total of 111 usable matches for a final total sample size of 222. Another table was created in Access consisting of all the students in the comparison group ($n=111$).

In order to collect data on the dependent variables for each group, the treatment group table in Access was related to the test data table by identification number and all test data for each student in the treatment group were displayed. Student scores for the GEE ELA test, GEE mathematics test, GEE science test, and the GEE social studies test were displayed and the information entered into the Excel spreadsheet. The same data were collected for the comparison group by relating the comparison group table to the test data table.

The grade point averages for the 10th, 11th, and 12th grade for students in the treatment group were obtained by relating the treatment group table to the high school transcript table by identification number. These data were entered into the Excel spreadsheet. The same data were collected for the comparison group by relating the comparison group table to the high school transcript table by identification number. These data were also entered into the excel spreadsheet.

When all data were entered into the Excel spreadsheet, the researcher noted that there were missing data elements for many of the student records in the database. This was a function of the fact that camps were offered every summer during the years 2003-2008. Students in the treatment group may have attended camp four or more times if they attended their first camp in 2003, 2004, or 2005. As a result, students may have completed the sixth grade as late as 2005 and still been included in the treatment group. Those students, along with their matching counterpart in the comparison group would only have reached the 9th grade by the end of the 2007-08 academic year. For those cases, there would be no data for GPA or GEE tests yet available. Complete data would only be available for those students who were in the seventh grade during the 2002-2003 school year. Table 11 summarizes the impact of this factor for each of the variables considered. As a result of this phenomenon, some degree of variability in group size resulted across the statistical analyses. As an example, two components of the GEE are administered to students in the spring of the 10th grade, and the remaining two are not administered until the spring of the 11th grade year.

Accordingly, when using a MANCOVA to examine group differences for the combined GEE, list wise deletion of missing data resulted in the sample only containing students who had completed the 11th grade by the end of the 2007-08 academic year. Students with missing data were removed from the sample before the analysis. It should be noted that if a student in the treatment group was missing a necessary data element for a particular analysis, the student in the comparison group matched to the student in the comparison group was also deleted, thus maintaining the integrity of the matched pairs in

the resulting data set. The same procedure was followed if data were missing for a student in the comparison group.

Table 11.
Grade Levels of Treatment and Comparison Group Students Included in Sample

Academic Year	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Camp Year	2003	2004	2005	2006	2007	2008
	6	7	8	9	10	11***
	7	8	9	10	11	12****
Student Grade Level		6	7	8	9	10**
		7	8	9	10	11***
			6	7	8	9*
			7	8	9	10**

* No data available for dependent variables

** No data available for GPA 11, GPA 12, or GEE science and GEE social studies

*** No data available for GPA 12

**** All data available for dependent variables

In subsequent univariate ANCOVAs, all pairs for which complete data were available were included resulting in a larger sample for many of those analyses. It follows, for example, that the sample size for the ANCOVA examining group differences for each of the GEE tests administered in the 10th grade would be larger than the available sample for each of the tests administered in the 11th grade. This variation in group size did not violate any statistical assumptions affecting the validity and utility of the results.

Descriptive Data Analysis

Data were collected as described from a database provided by the Louisiana Department of Education through the Board of Regents. Following the matching process, two equivalent groups, treatment group and comparison group, were developed. Tables 12 and 13 report the final composition of the treatment and comparison groups in terms of gender and ethnicity. As a result of the matching process, and as depicted in Table 12 and 13, both the treatment and comparison groups are composed of an equal number of males and females as well as equal numbers of minority and white students.

Table 12.

Composition of Treatment and Comparison Groups by Gender

Group	<i>n</i>	Male	Percent	Female	Percent
Treatment	111	34	30.6	77	69.4
Comparison	111	34	30.6	77	69.4
Total	222	68	30.6	154	69.4

Table 13.

Composition of Treatment and Comparison Groups by Ethnicity

Group	<i>n</i>	Minority	Percent	White	Percent
Treatment	111	103	92.8	8	7.2
Comparison	111	103	92.8	8	7.2
Total	222	206	92.8	16	7.2

Student eligibility for free or reduced price lunch under the National School Lunch Program was used as an indicator of student socioeconomic status. Eligibility for

free or reduced price school lunch indicates lower socioeconomic status. The number and percent of students in the treatment and comparison groups who were eligible for free or reduced price lunch is reported in Table 14. As depicted in the table, both the treatment and comparison groups are composed of an equal number of students of low socioeconomic status (SES).

Table 14.

Composition of Treatment and Comparison Groups by Socioeconomic Status

Group	<i>n</i>	Eligible for Free or Reduced Price Lunch	Percent
Treatment	111	89	80.2
Comparison	111	89	80.2
Total	222	178	80.2

Statistical Analysis

Students included in the treatment group had attended a summer learning camp for the first time in the summer immediately following completion of either grade six or grade seven. Since all students in grade six in Louisiana are administered the IOWA Test of Basic Skills (ITBS), the standard composite score on this nationally normed test was used as a measure of student academic ability prior to attending a summer learning camp. Table 15 reports the mean and standard deviation of student scores for both the treatment and comparison groups.

Table 15.
Descriptive Analysis of Standard Composite Scores on the ITBS

Group	<i>n</i>	Mean	SD	Min	Max	Skewness	Kurtosis
Treatment	111	219.81	19.11	185	274	.654	.095
Comparison	111	216.75	17.59	186	275	.888	.455

Rationale for ANCOVAs with ITBS Composite as Covariate

Due to the fact that students included in the comparison group were individually matched by the sixth grade ITBS composite score, the resulting means of the two groups were very close. The difference between the means was only 3.06. However, to further ensure statistical equivalency of both groups prior to treatment, the sixth grade ITBS composite scores were statistically analyzed using the paired samples *t*-test. The results are reported in Table 16.

Table 16.
*Results of the Matched Pairs *t*-Test for the ITBS Sixth Grade Composite Scores*

Pair	<i>n</i>	Mean	SD	SE	<i>t</i>	<i>df</i>	<i>p</i>
Treatment-Comparison	111	-3.063	8.800	0.835	-3.667	110	.000

Although the difference between the group means appeared to be minimal at 3.063, the matched pairs *t*-test revealed that the difference was significant at the $p < .05$ level. In order to correct for this initial difference between groups, ensuring equivalency of groups on the sixth grade ITBS composite score prior to treatment, the researcher included the sixth grade ITBS composite score as a covariate in all subsequent analyses.

Hypothesis Testing

All research hypotheses were tested at the $p < .05$ level. Hypothesis testing for the nine non-directional hypotheses of this study was conducted, and the results will be presented, in two stages. First, hypotheses one, two, three, and four relate to student academic performance as measured by grade point averages in grades 10, 11, and 12. Results of the analyses for these hypotheses will be presented first. Hypotheses five, six, seven, eight, and nine relate to student academic performance as measured by scores on each of the four tests that comprise the GEE: (a) English/language arts (ELA); (b) mathematics; (c) science, and; (d) social studies. Results of the analyses for these hypotheses will be presented next.

For all of the analyses, the independent variable (group) indicates whether or not students are in the treatment group (i.e., attended a summer learning camp at least four times) or in the comparison group (i.e., never attended a summer learning camp). The covariate referred to in all of the following analyses is the student composite score on the sixth grade ITBS.

Null hypothesis one stated that there would be no significant difference in combined grade point averages for the 10th, 11th, and 12th grades between students who participate in Summer/Academic Year Learning Projects and those who do not participate in Summer/Academic Year Learning Projects. To test that hypothesis, a multivariate analysis of covariance (MANCOVA) on the combined GPA for grades 10, 11, and 12 was conducted, with sixth grade ITBS scores as covariate.

Tests of MANCOVA Assumptions

A preliminary MANCOVA was conducted to test two assumptions necessary for the valid use of MANCOVA to test hypotheses. First, the assumption of homogeneity of variance-covariance matrices for the treatment and the comparison groups was assessed by Box's test. Second, the assumption of homogeneity of regression slopes for the treatment and comparison groups was assessed by testing whether the interaction between the independent variable (group) and the covariate (sixth grade ITBS composite score) was significant. Although Box's test of homogeneity of variance-covariance matrices was significant, [Box's $M = 22.31$, $F(6, 35501) = 3.54$, $p < .002$], it was concluded that the final MANCOVA could be validly conducted because the significance level of the Box's test did not reach the criterion of $p < .001$ and the sample sizes of the two groups were equal (Mertler & Vannatta, 2005). The assumption of homogeneity of regression slopes was assessed by the test for interaction between the independent variable (group) and the covariate (sixth grade ITBS composite score) in the preliminary MANCOVA. The F-test for the interaction between the independent variable (group) and the covariate was not significant [$F(1, 117) = 0.82$, ns]. Therefore, the hypothesis testing MANCOVA was performed with the combined GPA variate as the dependent variable.

MANCOVA for the Combined GPA Variate

A one way MANCOVA was conducted to test the effect of the independent variable (group) on the combined dependent variable (GPA 10th, 11th, and 12th grade combined), controlling for the covariate. Because any students with any missing data for GPA 10th grade, GPA 11th grade, or GPA 12th grade were deleted from analysis, along with the corresponding matched pair, the sample size for this MANCOVA was 72 (36

students in the treatment group and 36 in the comparison group). The MANCOVA revealed a significant effect for the independent variable (group) on the combined GPA dependent variable [Wilk's lambda (Λ) = 0.847, $F(3, 67) = 6.02$, $p < .011$]. Therefore, null hypothesis one is rejected. These findings support the conceptual hypothesis that participation in Summer/Academic Year Learning Projects would have a significant positive impact on student achievement as measured by the combined GPA for grades 10, 11, and 12.

As expected, the covariate, sixth grade ITBS composite score, significantly influenced the combined GPA dependent variable [Wilk's $\Lambda = 0.788$, $F(3, 67) = 6.02$, $p < .001$]. Table 17 provides a listing of the results for this one way MANCOVA. As indicated by the Partial Eta Squared statistics in Table 17, the covariate accounted for about 21.2% of the variance in the combined GPA scores, whereas the independent variable (Group) accounted for about 15.3% of the variance in the combined GPA score variable—both proportions being statistically significant. Table 18 provides a listing of means, marginal means, F-tests and significance levels for univariate F-tests for the treatment group and the comparison group.

Table 17.

Results of MANCOVA on the Combined GPA Dependent Variable

SOURCE	Wilk's Λ	F Statistic	Hypothesis <i>df</i>	Error <i>df</i>	Significance	Partial Eta Squared
Intercept	0.97	0.55	3	67	ns	0.24
Covariate	0.78	6.02	3	67	$p < .001$	.212
Group	0.84	4.04	3	67	$p < .01$	.153

$N = 72$; $n_{\text{treatment}} = 36$, $n_{\text{comparison}} = 36$

Following the statistically significant MANCOVA, the accompanying univariate analyses, indicated that each of the three GPA dependent variables (i.e., 10th grade GPA, 11th grade GPA, 12th grade GPA) was significantly affected by the independent variable group (i.e., whether or not the respondent attended LA GEAR UP summer camps). For 10th grade GPA, those who attended GEAR UP camps showed a significantly greater GPA than those who did not attend (Adjusted means = 2.97 & 2.49 respectively), with $F(1, 71) = 11.48, p < .001$. For 11th grade GPA, those who attended GEAR UP camps showed a significantly greater GPA than those who did not attend (Adjusted means = 3.01 & 2.53 respectively), with $F(1, 71) = 11.96, p < .001$. For 12th grade GPA, those who attended GEAR UP camps showed a significantly greater GPA than those who did not attend (Adjusted means = 3.08 & 2.61), with $F(1, 71) = 11.90, p < .001$. Thus, as hypothesized those students attending LA GEAR UP summer learning camps showed significantly higher GPAs than the matched comparison group of non-attenders in each of the 10th, 11th and 12th grades.

Separate ANCOVAs for the 10th, 11th, and 12th Grade GPA Variates

Three separate ANCOVAs were performed; one each for the 10th, 11th, and 12th grade GPA dependent variables. The rationale for these three separate ANCOVAs follows. Because any respondents with any missing data for either GPA 10th grade, GPA 11th grade, or GPA 12th grade were deleted from the MANCOVA analysis on the combined GPA variate, the sample size for that MANCOVA was 72 (36 students in both the treatment and comparison groups). The three separate ANCOVA analyses will allow separate analyses for all students who have no missing data for each of the three GPA

dependent variables, allowing for significance tests of the independent variable with greater sample sizes, and therefore greater power and precision.

Table 18.
Means, Marginal Means, F-tests and Significance Levels for Combined GPA Variate

	Means	Marginal Means (Adjusted for covariate)	F	Significance
GPA 10th				
Treatment	2.99	2.97	11.48	$p < .001$
Comparison	2.45	2.47	11.96	$p < .001$
GPA 11th				
Treatment	3.03	3.01	11.96	$p < .001$
Comparison	2.51	2.53	11.96	$p < .001$
GPA 12th				
Treatment	3.10	3.08	11.90	$p < .001$
Comparison	2.59	2.61		

$N = 72$; $n_{\text{treatment}} = 36$, $n_{\text{comparison}} = 36$

Tests of ANCOVA Assumptions for 10th Grade GPA

The sample size of the ANCOVA performed on 10th grade GPA was $n = 76$ in each group for a total sample size of 152. The assumption of homogeneity of regression slopes was assessed by the test for interaction between the independent variable (group) and the covariate (sixth grade ITBS composite score). The results of this F-test were not significant [$F(1, 151) = 0.57$], indicating that this assumption was not violated and that the ANCOVA could be validly performed. Levine's test was used to test the assumption about equality of error variances for the treatment and comparison groups. Levene's test

results were not significant [$F(1, 150) = 3.27, p < .07$] indicating that this assumption was not violated and that the ANCOVA could be validly performed (Mertler & Vannatta, 2005).

ANCOVA for 10th Grade GPA

A one-way ANCOVA was conducted to the effect of the independent variable group (i.e., whether or not the student attended LA GEAR UP summer learning camps) on the 10th grade GPA dependent variable, controlling for the covariate (sixth grade ITBS composite scores). The ANCOVA revealed a significant effect for the independent variable (Group) on the dependent variable (10th grade GPA) [$F(1, 151) = 21.73, p < .001$]. As expected, the covariate, sixth grade ITBS composite score, significantly influenced the 10th grade GPA dependent variable [$F(1, 151) = 47.55, p < .001$]. Table 19 provides a listing of the results for this one way ANCOVA. For 10th grade GPA, those who attended LA GEAR UP summer learning camps, the treatment group, showed a significantly greater GPA than the comparison group, those who did not attend (Adjusted means = 2.86 & 2.41 respectively), with $F(1, 151) = 21.73, p < .001$.

Null hypothesis two, that there would be no significant difference between the 10th grade GPA of students who participated in LA GEAR UP Summer/Academic Year Learning Projects compared to the 10th grade GPA of non-participants was rejected based on the ANCOVA results summarized in Table 19. These findings support the conceptual hypothesis that there would be a significant positive difference between the 10th grade GPA of those students who attended summer learning camps and those students who did not attend.

Tests of ANCOVA Assumptions for 11th Grade GPA

The sample size of the ANCOVA performed on 11th grade GPA was $n = 59$ in each group for a total sample size of 118. The assumption of homogeneity of regression slopes was assessed by the test for interaction between the independent variable (group) and the covariate (sixth grade ITBS composite score). The result of this F-test was not significant [$F(1, 117) = 0.82$], indicating that this assumption was not violated and that the ANCOVA could be validly performed. Levine's test was used to test the assumption about equality of error variances for the treatment and comparison groups. Levine's test results were not significant [$F(1, 116) = 0.19, ns$] indicating that this assumption was not violated and that the ANCOVA could be validly performed.

Table 19.
Results for ANCOVA on 10th Grade GPA

Source	<i>df</i>	Mean Square	F	Significance	Partial eta Square
Corrected Model	2	12.83	36.43	$p < .001$	.328
Intercept	1	1.6	4.56	$p < .03$	.030
Covariate	1	16.74	47.55	$p < .001$	.242
Group	1	7.65	21.73	$p < .001$	.127
Error	149	.35			
Total	152				
Corrected Total	151				

ANCOVA for 11th Grade GPA

A one-way ANCOVA was conducted to test the effect of the independent variable Group (i.e., whether or not the student attended LA GEAR UP camps) on the 11th grade GPA dependent variable, controlling for the covariate (sixth grade ITBS composite scores). The ANCOVA revealed a significant effect for the independent variable (group) on the dependent variable (11th grade GPA) [$F(1, 117) = 13.17, p < .001$]. As expected, the covariate, sixth grade ITBS composite score, significantly influenced the 11th grade GPA dependent variable [$F(1, 117) = 36.72, p < .001$]. Table 20 provides a listing of the results for this one-way ANCOVA. For 11th grade GPA, those who attended GEAR UP camps showed a significantly greater GPA than those who did not attend (Adjusted means = 2.93 & 2.56 respectively), with $F(1, 117) = 13.17, p < .001$.

Table 20.
Results for ANCOVA on 11th Grade GPA

Source	<i>df</i>	Mean Square	F	Significance	Partial eta Square
Corrected Model	2	7.71	25.49	$p < .001$	.307
Intercept	1	.42	1.41	ns	.012
Covariate	1	11.11	36.72	$p < .001$	.242
Group	1	3.98	13.17	$p < .00^*$	.103
Error	115				
Total	118				
Corrected Total	117				

Null hypothesis three, that there would be no significant difference between the mean 11th grade GPA of students who participated in LA GEAR UP Summer/Academic Year Learning Projects compared with the mean 11th grade GPA of non-participants, was rejected based on the ANCOVA results summarized in Table 20. These findings support the conceptual hypothesis that there would be a significant positive difference between the 11th grade GPA of those students who attended summer learning camps and those students who did not attend.

Tests of ANCOVA Assumptions for 12th Grade GPA

The sample size of the ANCOVA performed on 12th grade GPA was $n = 40$ in each group for a total sample size of 80. The assumption of homogeneity of regression slopes was assessed by the test for interaction between the independent variable (group) and the covariate (sixth grade ITBS composite score). The result of this F test was not significant [$F(1, 79) = 0.02$], indicating that this assumption was not violated and that the ANCOVA could be validly performed. Levine's test was used to test the assumption about equality of error variances for the treatment and comparison groups. Levene's test results were not significant [$F(1, 78) = 0.01, ns$] indicating that this assumption was not violated and that the ANCOVA could be validly performed.

ANCOVA for 12th Grade GPA

A one-way ANCOVA was conducted to test the effect of the independent variable group (i.e., whether or not the student attended LA GEAR UP summer learning camps) on the 12th grade GPA dependent variable, controlling for the covariate (sixth grade ITBS composite scores). The ANCOVA revealed a significant effect for the independent variable (group) on the dependent variable (12th grade GPA) [$F(1, 79) = 12.20, p <$

.001)]. As expected, the covariate, sixth grade ITBS composite score, significantly influenced the combined GPA dependent variable [$F(1, 79) = 20.16, p < .001$]. Table 21 provides a listing of the results for this one-way ANCOVA. For 12th grade GPA, those who attended GEAR UP camps showed a significantly greater mean GPA than those who did not attend (Adjusted means = 3.03 & 2.58 respectively), with $F(1, 79) = 12.20, p < .001$.

Null hypothesis four, that there would be no significant difference between the 12th grade GPA of students who participated in LA GEAR UP Summer/Academic Year Learning Projects and the 12th grade GPA of non-participants, was rejected based on the ANCOVA results summarized in Table 21. These findings support the conceptual hypothesis that there would be a significant positive difference between the mean 12th grade GPA of those students who attended summer learning camps and the mean 12th grade GPA of those students who did not attend.

Table 21.
Results for ANCOVA on 12th Grade GPA

Source	<i>df</i>	Mean Square	F	Significance	Partial eta Square
Corrected Model	2	5.57	17.22	$p < .000$	0.309
Intercept	1	0.359	1.10	ns	0.014
Covariate	1	6.525	20.16	$p < .000$	0.207
Group	1	3.951	12.20	$p < .001$	0.137
Error	77	0.324			
Total	80				
Corrected Total	59				

Statistical Analyses for the Graduate Exit Exam

Null hypothesis five stated that there would be no significant difference in overall academic achievement on the Graduate Exit Exam (GEE) between students who participate in Summer/Academic Year Learning Projects (SAYLPs) and those who do not participate in SAYLPs. To test that hypothesis, a multivariate analysis of covariance (MANCOVA) was conducted on the combined scores for the four tests, English/language arts, mathematics, science, and social studies, that comprise the Graduate Exit Exam.

Tests of MANCOVA Assumptions

A preliminary MANCOVA was conducted to test two assumptions necessary for the valid use of MANCOVA to test hypotheses. First, the assumption homogeneity of variance-covariance matrices for the treatment and the comparison groups was assessed by Box's test. Second, the assumption of homogeneity of regression slopes for the treatment and control groups was assessed by testing whether the interaction between the independent variable (group) and the covariate (sixth grade ITBS composite score) was significant. Box's test of homogeneity of variance-covariance matrices was not significant, [Box's $M = 13.21$, $F(10, 38725) = 0.24$, ns]. Therefore, it was concluded that the final MANCOVA could be validly conducted because there was no evidence for violation of the homogeneity of regression slope assumption. The assumption of homogeneity of regression slopes was assessed by the test for interaction between the independent variable (group) and the covariate (sixth grade ITBS composite score) in the preliminary MANCOVA. The F test for the interaction between the independent variable (group) and the covariate (sixth grade ITBS composite score) was not significant [F (4,

85) = 0.96, ns]. Therefore, the final MANCOVA was performed with the combined GEE test variable as the dependent variable.

MANCOVA for the Combined GEE Variate

A one-way MANCOVA was conducted to test the effect of the independent variable, Group (i.e., whether or not the student attended LA GEAR UP summer learning camps) on the combined GEE dependent variate that was constructed by combining the scores on the English/language arts, social studies, mathematics, and science GEE tests), controlling for the covariate (sixth grade ITBS composite scores). Because any students with any missing data for GEE tests were deleted from analysis, the sample size for this MANCOVA was 92 (46 students in the treatment group and 46 in the comparison group). The MANCOVA revealed no statistical significance ($p < .06$) for the independent variable (group) on the combined GEE variate [Wilk's $\Lambda = 0.902$, $F(4, 86) = 2.33$, $p < .06$]. As expected, the covariate, sixth grade Iowa Test composite score, significantly influenced the combined GEE dependent variable [Wilk's $\Lambda = 0.419$, $F(4, 86) = 29.75$, $p < .000$]. Table 22 provides a listing of the results for this one way MANCOVA. As indicated by the Partial Eta Squared statistics in Table 22, the covariate (ITBS composite score) accounted for about 58.1% of the variance in the combined GEE scores, whereas the independent variable (group) accounted for about 9.8% of the variance in the combined GEE score. The variance accounted for by the covariate was statistically significant ($p < .000$), whereas the variance accounted for by the independent variable (group) showed no statistical significance ($p < .06$). Table 23 provides a listing of means, marginal means, F-tests and significance levels for univariate F-tests for the treatment group and the comparison group. Because the independent variable accounted for

sufficient dependent variable score variation to approach statistical significance ($p < .06$), and because the group size for each of the separate tests that comprise the GEE varied, univariate ANCOVA analyses were examined.

Table 22.

Results of MANCOVA on the Combined GEE Dependent Variable

SOURCE	Wilk's Λ	F Statistic	Hypothesis <i>df</i>	Error <i>df</i>	Significance	Partial Eta Squared
Intercept	0.537	18.57	4	86	$p < .000$	0.463
Covariate	0.419	29.75	4	86	$p < .001$	0.581
Group	0.902	2.33	4	86	ns	0.098

$N = 92$; $n_{\text{treatment}} = 46$, $n_{\text{comparison}} = 46$

The accompanying univariate ANCOVA analyses, indicated that two of the four GEE dependent variables (English/language arts and social studies) were significantly affected by the independent variable Group (i.e., whether or not the student attended GEAR UP summer camps). For GEE English/Language, those who attended LA GEAR UP camps showed a significantly greater mean score than those who did not attend (Adjusted means = 312.6 & 302.6 respectively), with $F(1, 91) = 6.78$, $p < .001$. For GEE Social Studies, those who attended LA GEAR UP camps showed a significantly greater mean score than those who did not attend (Adjusted means = 302.6 & 293.9 respectively), with $F(1, 91) = 4.96$, $p < .03$. Thus, those students attending LA GEAR UP Camps showed significantly higher mean scores on the GEE English/Language and Social Studies tests than the matched comparison group of non-attenders.

Null hypothesis five cannot be rejected because the MANCOVA was not significant at the $p < .05$ level. However, since the MANCOVA showed $p < .06$, it can be

asserted that the results indicate a trend approaching statistical significance. This provides some support for the conceptual hypothesis that there would be a significant positive difference in academic achievement for the combined scores on the GEE between students in the treatment group and those in the comparison group. This observation indicated that further analyses were warranted.

Table 23.

Means, Marginal Means, F-tests and Significance Levels for Combined GEE Variate

	Means	Marginal Means (Adjusted for covariate)	F	Significance
GEE ELA				
Treatment	313.5	312.6	6.78	$p < .01$
Comparison	301.5	302.6		
GEE Social Studies				
Treatment	303.8	302.6	4.96	$p < .03$
Comparison	292.7	293.9		
GEE Mathematics				
Treatment	318.6	317.5	0.83	ns
Comparison	312.6	313.8		
GEE Science				
Treatment	304.6	302.9	0.18	ns
Comparison	298.6	300.3		

$N = 92$; $n_{\text{treatment}} = 46$, $n_{\text{comparison}} = 46$

Separate ANCOVAs for Component Tests of the Graduate Exit Exam

Four separate ANCOVAs were performed; one each for the English/language arts, social studies, mathematics, and science GEE tests. The rationale for these four separate ANCOVAs is as follows. Students with any missing data for either of the four GEE tests were deleted from the MANCOVA analyses, resulting in a sample size for the MANCOVA of 92 (46 respondents in the treatment group and 46 in the comparison group). The separate ANCOVAs will allow separate analyses for all respondents who have data on each of the four GEE dependent variables, allowing for significance tests with greater sample sizes, and therefore greater power and precision.

Tests of ANCOVA Assumptions for Scores on the GEE ELA Test

The sample size of the ANCOVA performed on GEE ELA Exam was $n = 92$ in each group for a total sample size of 184. The assumption of homogeneity of regression slopes was assessed by the test for interaction between the independent variable (Group) and the covariate (sixth grade ITBS composite score). The result of this F test was not significant [$F(1, 183) = 0.44$], indicating that this assumption was not violated and that the ANCOVA could be validly performed. Levine's test was used to test the assumption about equality of error variances for the treatment and comparison groups. Levene's test results were not significant [$F(1, 182) = 0.2, ns$] indicating that this assumption was not violated and that the ANCOVA could be validly performed.

ANCOVA for Scores on the GEE ELA Test

A one-way ANCOVA was conducted to test the effect of the independent variable group (i.e., whether or not the student attended LA GEAR UP summer learning camps) on the GEE ELA dependent variable, controlling for the covariate (sixth grade ITBS

composite scores). The ANCOVA revealed a significant effect for the independent variable (group) on the dependent variable (GEE ELA) [$F(1, 183) = 11.17, p < .001$]. As expected, the covariate, sixth grade ITBS composite score, significantly influenced the GEE ELA dependent variable [$F(1, 183) = 104.16, p < .000$]. Table 24 provides a listing of the results for this one-way ANCOVA. For the GEE ELA Exam, those who attended GEAR UP camps showed a significantly higher scores than those who did not attend (Adjusted means = 311.90 & 299.15 respectively), with $F(1, 183) = 11.17, p < .001$. As indicated by the Partial Eta Squared statistics in Table 24, the covariate (ITBS composite score) accounted for about 36.5% of the variance of the GEE ELA test scores, whereas the independent variable (group) accounted for about 5.8% of the variance in the GEE ELA test score variable; both proportions being statistically significant.

Based on these results, null hypothesis six is rejected since it stated that there would be no significant difference in student achievement on the GEE ELA exam between students who attended LA GEAR UP summer learning camps and those who did not. The conceptual hypothesis that there would be a significant positive difference between the groups, with those attending the LA FEAR UP summer learning camps showing a significantly greater mean GEE ELA score than the non-attendees, is supported by these findings.

Table 24.
Results for ANCOVA on GEE ELA Test

Source	<i>df</i>	Mean Square	F	Significance	Partial eta Square
Corrected Model	2	40470.392	60.82	$p < .000$	.402
Intercept	1	6964.795	10.47	$p < .001$	.055
Covariate	1	69244.648	104.16	$p < .000$	.365
Group	1	7428.609	11.17	$p < .001$	.058
Error	181	664.735			
Total	184				
Corrected Total	183				

Tests of ANCOVA Assumptions on Scores on the GEE Social Studies Test

The sample size of the ANCOVA performed on the GEE social studies test was $n = 46$ in each group for a total sample size of 92. The assumption of homogeneity of regression slopes was assessed by the test for interaction between the independent variable (group) and the covariate (sixth grade ITBS composite score). The result of this F-test was not significant [$F(1, 91) = 2.31$], indicating that this assumption was not violated and that the ANCOVA could be validly performed. Levine's test was used to test the assumption about equality of error variances for the treatment and comparison groups. Levine's test results were not significant [$F(1, 90) = 0.45$] indicating that this assumption was not violated and that the ANCOVA could be validly performed.

ANCOVA for Scores on the GEE Social Studies Test

A one-way ANCOVA was conducted to test the effect of the independent variable group (i.e., whether or not the student attended LA GEAR UP summer learning camps)

on the dependent variable (GEE social studies test), controlling for the covariate (sixth grade ITBS composite scores). The ANCOVA revealed a significant effect for the independent variable (group) on the dependent variable (GEE Social Studies test) [$F(1, 91) = 4.96, p < .03$]. As expected, the covariate, sixth grade ITBS composite score, significantly influenced the dependent variable (GEE Social Studies test) [$F(1, 91) = 64.74, p < .001$]. Table 25 provides a listing of the results for this one way ANCOVA.

For the GEE social studies test, those who attended LA GEAR UP summer learning camps showed a significantly greater mean score than those who did not attend (Adjusted means = 302.6 & 293.9, respectively), with $F(1, 91) = 4.96, p < .03$. As indicated by the Partial Eta Squared statistics in Table 25, the covariate (ITBS composite score) accounted for about 42.1% of the variance of the GEE social studies test scores, whereas the independent variable (group) accounted for about 5.3% of the variance in the GEE social studies test score variable; both proportions being statistically significant.

Null hypothesis seven stated that there is no significant difference in academic achievement on the social studies component of the GEE test between those students who had attended LA GEAR UP summer learning camps and those who had not attended. Based on the results of the ANCOVA analysis, that null hypothesis was rejected. The findings support the conceptual hypothesis that there would be a significant positive impact on student achievement as measured by the social studies component of the GEE test.

Table 25.
Results for ANCOVA on GEE Social Studies Test

Source	<i>df</i>	Mean Square	F	Significance	Partial eta Square
Corrected Model	2	12837.28	36.39	$p < .001$	.450
Intercept	1	8450.13	23.95	$p < .001$	.212
Covariate	1	22836.29	64.74	$p < .001$	.421
Group	1	1750.38	4.96	$p < .03$	.053
Error	81	352.7			
Total	92				
Corrected Total	91				

Tests of ANCOVA Assumptions for the GEE Mathematics Test

The sample size of the ANCOVA performed on GEE mathematics test was $n = 92$ in each group for a total sample size of 184. The assumption of homogeneity of regression slopes was assessed by the test for interaction between the independent variable (group) and the covariate (sixth grade ITBS composite score). The result of this F-test was not significant [$F(1, 183) = 1.46$], indicating that this assumption was not violated and that the ANCOVA could be validly performed. Levine's test was used to test the assumption about equality of error variances for the treatment and comparison groups. Levine's test results were not significant [$F(1, 182) = 0.01$] indicating that this assumption was not violated and that the ANCOVA could be validly performed.

ANCOVA for the GEE Mathematics Test

A one-way ANCOVA was conducted to test the effect of the independent variable group (i.e., whether or not the student attended LA GEAR UP summer learning camps)

on the dependent variable (GEE mathematics test), controlling for the covariate (sixth grade ITBS composite scores). The ANCOVA revealed a trend approaching statistical significance ($p < .056$) indicating an effect for the independent variable (group) on the dependent variable (GEE mathematics test) [$F(1, 183) = 3.69, p < .056$]. As expected, the covariate, sixth grade Iowa Test composite score, significantly influenced the dependent variable (GEE mathematics test) [$F(1, 183) = 70.82, p < .001$]. Table 26 provides a listing of the results for this one-way ANCOVA. For the GEE mathematics test, those who attended LA GEAR UP summer learning camps showed a greater mean score than those who did not attend (Adjusted means = 317.4 & 309.8, respectively), with $F(1, 183) = 3.69, p < .056$. As indicated by the Partial Eta Squared statistics in Table 26, the covariate (ITBS composite score) accounted for about 28.1% of the variance of the GEE mathematics test scores, whereas the independent variable (Group) accounted for about 2.0% of the variance in the GEE mathematics test score variable. The proportions of variance accounted for were significant for the covariate whereas for the independent variable (group) the proportion of variance accounted for approached significance ($p < .056$).

Null hypothesis eight stated that there is no significant difference in academic achievement on the mathematics component of the GEE test. Based on the results of the ANCOVA analysis, that hypothesis cannot be rejected. The findings do not support the conceptual hypothesis that there would be a significant positive impact on student achievement as measure by the social studies component of the GEE test.

Table 26.
Results for ANCOVA on GEE Mathematics Test

Source	df	Mean Square	F	Significance	Partial eta Square
Corrected Model	2	27482.62	38.85	$p < .001$	.300
Intercept	1	17363.85	24.54	$p < .001$	.119
Covariate	1	50101.57	70.82	$p < .001$	.281
Group	1	2614.91	3.69	ns	.020
Error	181				
Total	184				
Corrected Total	183				

Tests of ANCOVA Assumptions for the GEE Science Test

The sample size of the ANCOVA performed on the GEE science test was $n = 46$ in each group for a total sample size of 92. The assumption of homogeneity of regression slopes was assessed by the test for interaction between the independent variable (Group) and the covariate (sixth grade ITBS composite score). The result of this F test was not significant [$F(1, 91) = 1.36$], indicating that this assumption was not violated and that the ANCOVA could be validly performed. Levine's test was used to test the assumption about equality of error variances for the treatment and comparison groups. Levene's test results were not significant [$F(1, 90) = 0.24$] indicating that this assumption was not violated and that the ANCOVA could be validly performed.

ANCOVA for the GEE Science Test

A one-way ANCOVA was conducted to test the effect of the independent variable group (i.e., whether or not the student attended LA GEAR UP summer learning camps)

on the dependent variable (GEE science test), controlling for the covariate (sixth grade ITBS composite scores). The ANCOVA revealed no significant effect for independent variable (group) on the dependent variable (GEE science test) [$F(1, 91) = 0.18, ns$]. As expected, the covariate, sixth grade Iowa test composite score, significantly influenced the dependent variable (GEE science test) [$F(1, 91) = 56.91, p < .001$]. Table 27 provides a listing of the results for this one way ANCOVA. The adjusted means for those who attended LA GEAR UP camps ($\bar{M} = 302.9$) did not significantly differ from the corresponding mean of those who did not attend LA GEAR UP camp ($\bar{M} = 300.3$). As indicated by the Partial Eta Squared statistics in Table 27, the covariate (ITBS composite score) accounted for a significant portion (39%) of the variance of the GEE science test scores, whereas the independent variable (group) accounted for a non significant proportion of the variance (<1%).

Based on the results of this ANCOVA, null hypothesis nine is not rejected at the $\alpha = .05$ level. Thus it was concluded that there is no significant difference in mean scores on the science component of the GEE between those students who participated in the Summer/Academic Year Learning Projects and those who did not. These findings do not support the conceptual hypothesis that participation would result in a significant positive difference in GEE science test scores between these two groups of students.

Table 27.
Results for ANCOVA on GEE Science Test

Source	<i>df</i>	Mean Square	F	Significance	Partial eta Square
Corrected Model	2	24225.52	28.95	$p < .001$	.394
Intercept	1	773.36	0.92	ns	.010
Covariate	1	47617.03	56.91	$p < .001$	.390
Group	1	156.18	0.18	Ns	.002
Error	89				
Total	92				
Corrected Total	91				

Summary

Chapter four presented the data collection and statistical analysis techniques employed by the researcher for this study. A precise matching procedure was used to ensure equivalence of the treatment and comparison groups prior to student attendance at a LA GEAR UP summer learning camp. Descriptive data related to the composition of both groups were presented, along with the results of the data analyses including tables and accompanying narratives.

The researcher utilized Access Database software to collect and organize the data collected. The query and filtering features of this software facilitated the matching process enabling treatment group students to be individually matched on seven variables to select students for inclusion in the comparison group.

Statistical analyses were conducted using the Statistical Pack for Windows 10.0. The statistical analyses were conducted in two stages corresponding to the two types of

academic measures that were used as dependent variables for this study. Namely grade point average as the first type, and student scores on the Graduate Exit Exam as the second type.

Multivariate analysis of covariance (MANCOVA) was used to analyze the effect of summer learning camp attendance on both dependent variable sets; combined grade point average for grades 10, 11, and 12, as well as the combined scores on the four tests (ELA, social studies, mathematics, and science) that make up the Graduate Exit Exam. Box's Test and Wilk's Λ were used to ensure that MANCOVA assumptions were not violated and that the MANCOVA procedure could be validly employed.

Analyses by MANCOVAs revealed a statistically significant and positive impact on the combined grade point averages for grades 10, 11, and 12. Null hypothesis one was rejected on the basis of that result. The accompanying univariate ANCOVAs indicated significant mean GPA differences in each of the grades 10, 11, and 12 with the treatment group showing the higher GPA in each case.

For hypotheses two, three, and four, ANCOVAs were used to analyze grade point averages for grades 10, 11, and 12, respectively. The results indicated a positive statistically significant result rejecting each of those hypotheses.

The MANCOVA for the combined student scores on the GEE, indicated no statistical significance with $p < .062$. This result yields a rejection of null hypothesis five, however, additional analysis by GEE subject area using ANCOVAs was warranted based on varying group sizes for those analyses. The accompanying univariate ANCOVAs indicated significance for the ELA and social studies components of the GEE.

Additional ANCOVAs were used to test hypotheses six, seven, eight, and nine which related to the individual tests that comprise the GEE. A statistically significant difference was found for both the ELA and social studies tests. The ANCOVA for the mathematics test indicated no statistical significance between the treatment and comparison groups. The ANCOVA for the science test indicated no statistically significant difference between the treatment and comparison groups. As a result, null hypotheses six and seven were rejected and hypotheses eight and nine were not rejected. The findings of statistical analyses used to test hypotheses comparing LA GEAR UP summer learning camp participants to non-participants are summarized in Table 28. The findings, conclusions, limitations of the study, and recommendations will be more fully discussed in Chapter Five.

Table 28.

Summary of All Tests of Statistical Significance on Independent Variable Group

	Sample Size	Significant at $p < .05$
MANCOVA on combined GPA variate	(N=72)	YES
1. 10th grade GPA ANCOVA	(N=72)	YES
2. 11th grade GPA ANCOVA	(N=72)	YES
3. 12th grade GPA ANCOVA	(N=72)	YES
Separate ANCOVAs on GPA		
1. 10th grade GPA ANCOVA	(N=152)	YES
2. 11th grade GPA ANCOVA	(N=118)	YES
3. 12th grade GPA ANCOVA	(N=80)	YES
MANCOVA on combined GEE test variate	(N=92)	NO
1. GEE English/Language Arts	(N=92)	YES
2. GEE Social Studies	(N=92)	YES
3. GEE Mathematics	(N=92)	NO
4. GEE Science	(N=92)	NO
Separate ANCOVAs on GEE tests		
1. GEE English/Language Arts	(N=184)	YES
2. GEE Social Studies	(N=92)	YES
3. GEE Mathematics	(N=184)	NO
4. GEE Science	(N=92)	NO

CHAPTER FIVE

Findings, Conclusions, and Recommendations

The purpose of this study was to examine whether there are changes in student academic achievement as a result of participation in the LA GEAR UP Summer/Academic Year Learning Projects (SAYLP). The central component of the SAYLP is the summer learning camps that were offered to all students at each of the schools participating in the LA GEAR UP program. Therefore, the researcher specifically examined whether or not there are changes in the academic achievement of students who had attended these camps.

One of the strengths of this study was the matching procedure employed in forming the study sample. The sample for the study consisted of 222 students who attended one of the 18 high schools participating in the LA GEAR UP program. Half of the students ($n = 111$) were assigned to the treatment group, and half ($n=111$) were assigned to the comparison group. Students were assigned to the treatment group if they had attended a summer learning camp at least four times during the period 2002-08 and attended a camp for the first time during the summer immediately following their completion of grade six or grade seven. Initially, 188 students were assigned to the treatment group before the matching process was initiated.

To ensure group equivalence prior to treatment, each student in the treatment group was individually matched to a student who also attended a school in the

LA GEAR UP program, but had never attended a summer learning camp. Seven potentially confounding variables were identified including: (a) student age; (b) race; (c) gender; (d) socioeconomic status; (e) school attended prior to treatment; (f) year attended sixth grade; and; (f) the student composite score on the sixth grade ITBS. Since the dependent variable of academic achievement was of interest, it was critical that the comparison group be as similar to the treatment group as possible on the baseline indicator of academic ability, the sixth grade ITBS composite score. To determine the criterion needed for matching, the mean and standard deviation of the composite scores for the treatment group were computed. In order for a student to be assigned to the comparison group, they were required to match on all of the variables noted and the sixth grade ITBS composite score must have been within one standard deviation above or below the matching student in the treatment group. If a potential comparison group student matched on all variables but scored more than one standard deviation above or below the student in the treatment group, it was determined that no match could be found and the student would be removed from the treatment group. As a result a final matched sample of 111 students was found for a total sample size of 222.

In order to further ensure equivalence of the groups prior to testing, a matched-pairs *t*-test was used. The result of that analysis revealed that, although the Iowa Test of Basic Skills (ITBS) group means were only 3.06 points apart, this difference was statistically significant. For this reason the sixth grade ITBS composite score was used as a covariate for all of the statistical analyses employed for hypothesis testing. This procedure statistically corrected for these ITBS group differences.

The dependent variables used to examine the changes in academic achievement were grade point averages for grades ten, eleven, and twelve and student scores on the Graduate Exit Exam (GEE). All hypotheses were tested at the $\alpha = .05$ level of significance. Two sets of null hypotheses, comprising nine individual hypotheses, were tested based on these dependent variables. The first set related to grade point average and the second to the GEE. A one-way MANCOVA was conducted to examine differences in academic achievement based on the combined grade point averages for all three grades, and one-way ANCOVAs were conducted to examine grade point averages for each of the three grade levels. A one-way MANCOVA was also used to examine changes in academic achievement on the combined student scores on the four component tests that comprise the GEE (ELA, social studies, mathematics, and science). Next, one-way ANCOVAs examined each of the four component tests individually. In all cases, the sixth grade ITBS composite score was the covariate.

Findings

Grade Point Average

Statistical analyses revealed statistically significant differences between the treatment and comparison groups for the combined grade point average for 10th, 11th, and 12th grades. Further, ANCOVAs for each grade level each indicated a statistically significant difference between groups. In all cases, the treatment group means for grade point average was significantly higher than the mean grade point average for the comparison group.

Graduate Exit Exam

The one-way MANCOVA examining the combined student scores on the GEE indicated no statistical significance between groups. However, the accompanying ANCOVAs showed significant differences for the ELA and social studies tests. Additional ANCOVAs were conducted to examine differences in academic achievement for each of the four GEE tests individually. These analyses revealed a statistically significant difference for the ELA and social studies components of the GEE. The GEE mathematics test analysis showed no statistical significance between groups ($p < .056$). There was also no statistically significant difference between the treatment and comparison group scores on the GEE science test.

Discussion

In this study, nine null hypotheses were tested in an effort to determine if participation in the LA GEAR UP summer learning camps resulted in a change in the academic achievement of the participating students. The first four hypotheses related to student academic achievement as measured by grade point average (GPA) in grade ten, eleven, and twelve. Five hypotheses related to academic achievement as measured by the Graduate Exit Exam.

The overarching mission of the LA GEAR UP program is to increase the number of low-income students who enter and succeed in postsecondary education. Most researchers agree that academic preparation is the most significant predictor of college attendance and success. Since increasing the number of low-income students who enter and succeed in postsecondary education is the stated mission of the federal GEAR UP program, the extent to which program participation improves students academic

performance should be a critical component of the program evaluation. Some researchers (Cabrera & La Nasa, 2000) argue that in order to get into college, students must accomplish such tasks as becoming academically prepared for college and graduating from high school.

There is little evidence in the research literature to suggest that early college intervention programs, such as the federal GEAR UP, have been successful in accomplishing their stated mission of increasing the number of low-income students who enter and succeed in postsecondary education. The gap between the college enrollment of low- and high-income students stands at 30 percentage points—essentially the same as it was in the 1960s when the Higher Education Act was enacted.

The design of the LA GEAR UP program demonstrates how the available research was considered. The resulting program plan demonstrated an understanding that accomplishing the challenging goal of increasing college access requires implementation of multifaceted initiatives including (a) professional development for teachers, (b) student financial assistance and advice, (c) strengthening parent support, and (d) collaboration with community and business partners. Further, the Summer/Academic Year Learning Projects concept incorporated much of what we understand about the role of social and cultural capital in student academic achievement and postsecondary participation. The theoretical framework for this study combines elements of human capital investment and sociological status attainment theory with the social constructs of social and cultural capital. A model such as that used as the theoretical framework for this study may be used to test the hypothesis that student habitus toward college enrollment influences

student decisions to become academically prepared for college and/or graduate from high school.

Although improving student academic achievement is one of the goals of the SAYLPs, summer learning camps, it could be argued, are designed to increase the amount of social and cultural capital that participating students possess. Just as human capital and physical capital are resources that may be invested to enhance productivity, social and cultural capital are resources that can be invested as a means of facilitating upward mobility. Those who lack the required cultural capital may: (a) lower their educational aspirations and self-select out of particular situation (such as choosing not to enroll in postsecondary education) because they do not know the particular cultural norms; (b) over perform to compensate for their less-valued cultural resources; or (c) receive fewer rewards for their educational investment.

This study, consistent with much of the research cited within this study, contributes significantly to our understanding of the complex nature of the college access and decision-making processes. In fact, these studies demonstrate that the student attitudes and behaviors necessary to promote academic achievement, college readiness, and subsequent college enrollment are impacted directly or indirectly by the context within which the student finds himself or herself. Attending a summer learning camp that occurs on a college campus places participating students into a new context to which they might not otherwise have had the opportunity to be exposed.

Students attending LA GEAR UP summer learning camps acquire social and cultural capital in a number of ways. Perhaps the most important conduit through which that capital passes is the college student counselor to whom each student is assigned. The

relationship between the camper and counselor is critically important and lasts long after the summer camp experience concludes. In addition to the planned camp activities that are designed to provide information and experiences that contribute to the stock of social and cultural capital the campers possess, the counselors expand the social network within which the student operates. To a lesser extent, the relationships with camp directors, staff, university faculty, and other campers also expand that network. The cultural norms and expectations of aspiring college students are transmitted directly and indirectly through the entire summer camp experience.

As noted in chapter two, several researchers have conducted studies (McDonough, 1997; Hossler, Schmit, & Vesper, 1999) confirming that student college aspirations are impacted by peer groups, and that students who have friends and interact with others who have postsecondary aspirations tend to also have or acquire similar aspirations. The summer learning camps promote postsecondary aspirations among participating students that are reinforced by the fact that several students from the same school are exposed to the opportunity. This creates a peer group at the school who share similar aspirations for postsecondary education. The postsecondary aspirations are reinforced and nurtured throughout the academic year through the Explorers Clubs established at participating schools so these aspirations do not wane in the months between summer learning camp experiences.

Conclusions

Much of the current research suggests that accomplishing the goal of increasing college access requires interventions to (a) be comprehensive, (b) begin early enough to make a difference, and; (c) address the various contexts within which students exist in

order to affect change in their attitudes and behaviors in such a way that student aspirations are elevated to the extent that postsecondary education becomes a viable option following high school graduation (Cabrera & La Nasa, 2000; Perna, 2002). Further, it has been suggested that appropriate interventions can cause changes in student behaviors (study habits, course choices, etc.) that lead to the improved academic performance required to be prepared for postsecondary education. The findings of this study suggest that the research-based design of the LA GEAR UP Summer/Academic Year Learning Projects, depicted in the theoretical framework for the study, have positively impacted the academic achievement of participating students when compared to non-participants from the same school.

The mean GPA of student participants in the LA GEAR UP summer learning camps was shown to be higher than the mean GPA of non-participants for combined 10th, 11th, and 12th grades. In addition, at each grade level, 10th, 11th, and 12th, treatment group mean GPAs were higher than the mean GPA of non-participants. All findings were statistically significant at $p < .05$.

The combined scores on the GEE test, although not statistically significant, showed a nonsignificant positive trend approximating significance for participating students when compared to non-participating students. For the component tests of the GEE, the treatment group mean scores for ELA and Social studies were higher than for the treatment group than for the comparison group, and the difference was significant at the $p < .05$ level. The scores on the GEE mathematics test, while not statistically significant, showed a nonsignificant positive trend approximating significance for

participating students when compared to non-participating students. There was no difference found between groups for the GEE science test.

One possible explanation for positive findings on all GEE dependent variables except for the GEE science test could be the graduation requirements in place at the time these tests were administered. In order to graduate from high school, students were required to pass both the ELA and mathematics portion of the GEE administered in the tenth grade. However, students were only required to pass one of the GEE social studies or the GEE science tests. It is possible that some students were more confident in their performance in the social studies test and put more effort into that test and therefore much less emphasis was placed on passing the science test.

Overall, the findings support the research that suggests that it is possible to positively impact student academic achievement, particularly among low-income students, through comprehensive interventions that start early, are sustained over time, and address the inequities that exist in the social and cultural capital of those students when compared to higher SES students. In addition, these interventions considered the individual context within which the student exists when developing the program to address the barriers to improved academic achievement and, ultimately, postsecondary aspirations and participation.

Limitations

There are some limitations to this study. Although a meticulous individual matching procedure was used in assigning students to the comparison group, and the sixth grade ITBS composite score was used as a covariate to ensure the statistical equivalence of the two groups prior to treatment, the initial decision of a student to attend

a LA GEAR UP summer learning camp suggests the possibility that some difference did exist between the two groups that may have not been assessed by this study. The LA GEAR UP summer learning camps were offered to all students attending a LA GEAR UP school, yet some students chose to apply and some students did not. This may have been due to an initial difference in motivation, parental encouragement, or encouragement from peers. Another possibility is the school context itself. The degree to which individual schools participating in the LA GEAR UP program encouraged individual students to attend may have had some effect on student decisions.

Another limitation of this study relates to the school context. Schools participating in the LA GEAR UP program shared some common characteristics such as: (a) percentage of students eligible for free or reduced priced lunch; (b) ACT scores below the state average, and; (c) first-time freshman percentage below the state average. The findings of this study may be generalizable only to schools with similar characteristics. In addition, the student participants were, by a large majority, from minority and low SES strata. Summer learning camps may be effective for improving the academic achievement of similar students, but it is not clear the extent to which similar programs would impact non-minority and high SES students.

Recommendations

Based on the results of this study, the following recommendations are presented to be considered for future practice:

1. Schools with a high percentage of low-income and minority students should incorporate activities and events designed to increase the social and cultural capital of their students. This should include field trips to museums, college

campuses, and other venues that expose them to experiences to which they might not otherwise have access.

2. Schools with high a percentage of low-income and minority students should work with local colleges and universities or local civic organizations to establish mentoring programs that connect students to a caring adult over an extended period of time.
3. Early college intervention programs should begin very early. Student composite scores on the sixth grade ITBS were shown to account for a large amount of variance in student GPA in 10th-12th grades. This would indicate that it is not too early to begin interventions as early as elementary school and increasing intensity through middle school and high school.
4. Early college intervention programs should be comprehensive and include components designed to change the culture of participating schools in such a way that the expectation that all students will be prepared to enter and succeed in postsecondary education is a commonly shared belief of all school personnel to the extent that the belief shapes instructional and organizational practice. Summer learning camps positively impacted the academic achievement of participating students, but this transformation of the school is necessary to ensure that all students are impacted.
5. The SAYLPs should be expanded and made available to more students. This study demonstrates the positive impact of the summer learning camps on student academic achievement, a strong predictor of postsecondary participation and success. These outcomes are as important for P-12 education as they are for

higher education, indicating that funding to support these programs should be a shared responsibility of P-12 and higher education. This would be in line with current efforts to establish seamless P-16 education programs in the state.

The following recommendations are presented to be considered for further research:

1. This study should be repeated each year that the summer learning camps continue to be offered to students to determine whether the impact of the program over time.
2. Additional research should be conducted to determine the extent to which summer learning camps impact student drop-out rates.
3. As more students from LA GEAR UP schools graduate from high school, additional studies should be conducted to determine the extent to which participation in summer learning camps improves enrollment in postsecondary education among participating students.
4. A follow-up study should be conducted to determine why students in the comparison group chose not to participate in the summer learning camp program.

APPENDIX A

HUMAN USE COMMITTEE APPROVAL FORM

LOUISIANA TECH
UNIVERSITY
MEMORANDUM

OFFICE OF UNIVERSITY RESEARCH

TO: Mr. Glenn Beer
FROM: Barbara Talbot, University Research
SUBJECT: HUMAN USE COMMITTEE REVIEW
DATE: February 17,2009

In order to facilitate your project, an EXPEDITED REVIEW has been done for your proposed study entitled:

“The Impact of Summer/Academic Year Learning Projects of the
Academic Achievement and College going Behaviors of
Participating Students”

HUC-632

The proposed study’s revised procedures were found to provide reasonable and adequate safeguards against possible risks involving human subjects. The information to be collected may be personal in nature or implication. Therefore, diligent care needs to be taken to protect the privacy of the participants and to assure that the data are kept confidential. Informed consent is a critical part of the research process. The subjects must be informed that their participation is voluntary. It is important that consent materials be presented in a language understandable to every participant. If you have participants in your study whose first language is not English, be sure that informed consent materials are adequately explained or translated. Since your reviewed project appears to do no damage to the participants, the Human Use Committee grants approval of the involvement of human subjects as outlined.

Projects should be renewed annually. *This approval was finalized on January 28, 2009 and this project will need to receive a continuation review by the IRB if the project, including data analysis, continues beyond January 28, 2010.* Any discrepancies in procedure or changes that have been made including approved changes should be noted in the review application. Projects involving NIH funds require annual education training to be documented. For more information regarding this, contact the Office of University Research.

You are requested to maintain written records of your procedures, data collected, and subjects involved. These records will need to be available upon request during the conduct of the study and retained by the university for three years after the conclusion of the study. If changes occur in recruiting of subjects, informed consent process or in your research protocol, or if unanticipated problems should arise it is the Researchers responsibility to notify the Office of Research or IRB in writing. The project should be discontinued until modifications can be reviewed and approved.

If you have any questions, please contact Dr. Mary Livingston at 257-4315.

APPENDIX B

RESEARCHER REQUEST FOR DATA

Data Needed for Glenn Beer Study

Purpose:

The purpose of this study is to examine the impact of student participation in the LA GEAR UP Summer Learning Camps on academic achievement and college-going behaviors.

Participating High Schools:

Demographic Data for Participating LA GEAR UP High Schools

High School	# of Students	% Eligible for Free/Reduced Price Lunch	% White	% Minority	% Male	% Female
Bunkie High School	399	68.1	43.9	56.1	49.4	50.6
Marksville High School	537	67.7	56.0	44.0	47.1	52.9
Avoyelles High School	441	72.8	59.0	41.0	48.8	51.2
Lake Providence Senior High School	307	85.7	0	100.0	46.3	53.7
Monticello High School	196	78.8	23.0	77.0	50.0	50.0
Clinton High School	323	100.0	5.0	95.0	50.8	49.2
Jackson High School	249	83.1	20.1	79.9	45.0	55.0
Franklin Parish High School	688	59.6	56.4	43.6	45.0	55.0
Pointe Coupee Central High School	563	86.8	1.2	98.8	50.8	49.2
Many High School	295	56.6	52.5	47.5	50.5	49.5
Zwolle High School	305	81.3	21.3	78.6	51.5	48.5
St. Helena Central High School	369	88.1	1.08	98.92	53.1	46.9
East St. John High School	1,452	76.4	18.9	81.1	48.8	51.2
Franklinton High School	774	65.1	67.7	32.3	48.7	51.3
Mt. Hermon School	486	65.0	67.1	32.9	52.7	47.3
Pine High School	589	89.5	78.1	21.9	51.6	48.4
Varnado High School	181	90.7	29.8	70.2	56.9	43.1
Madison High School	397	76.2	5.0	95.0	44.8	55.2

Sample:

Treatment Group: Students who have attended summer camp at least four times since 2003 ($n=186$).

Control Group: Students who have never attended a summer learning camp ($n=186$).

In order to complete the analysis, we will need to collect baseline data for all students attending participating high schools in 2007-08. Data for each student include the following (for matching/propensity scoring):

Gender

Race

F/R lunch status (2002-03)

Grade in 2002-03 (no data is needed for students prior to their entering the sixth grade)

School attended (2002-03—6th grade)

GPA 2002-03 (if student was not in 6th grade in 2002-03, then 6th grade GPA)

Number of unexcused absences 2002-03 (if student was not in 6th grade in 2002-03, then 6th grade)

Number of disciplinary referrals 2002-03 (if student was not in 6th grade in 2002-03, then 6th grade)

6th Grade IOWA Composite and national percentile rank

*other data that would be helpful if available—parents in home, educational level of parents

Using this information, the propensity scoring method will generate a composite number for each student, indicating for each the likelihood that they would participate in the program.

Match pairs will be made by removing students from the pool that have attended camp at least one time. Then, students in the treatment group will be matched with a student in the control group who has a propensity score equal, or closely equal to them.

Once the matching is complete, the following outcome measures will be analyzed for comparison:

8th grade Explore scores (composite)

8th grade LEAP (all content areas)

9th grade IOWA or iLEAP

10th grade Plan (composite)

GEE all content areas

ACT (composite)

unexcused absences for each year 2003-04 through 2007-08

Disciplinary referrals for each year 2003-04 through 2007-08

TOPS eligible?

High School GPA (broken out by seniors, juniors, sophomores, freshmen)

Note:

Some students in the treatment group attended their first camp after completing the sixth or seventh grade, and another group attended after completing grade 8 or 9. That is another reason why all data is needed for all students, because we may have to use a different baseline for the grade 6-7 beginners than we would use for the grade 8-9 beginners.

I have a master list of all students who have ever attended camps (with socials). I also have the list of students who have attended camp at least four times. The list includes the grade level the student was in when they attended their first camp.

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VITA

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