LEARNING COMMUNITIES

FOR UNIVERSITY STUDENTS AT-RISK OF SCHOOL FAILURE:

CAN THEY MAKE A DIFFERENCE?

A Dissertation

Submitted to the Department of Teaching and Learning

of

Tennessee State University

in

Partial Fulfillment of the Requirements

for the Degree of

Doctor of Education

Graduate Research Series No. _____________

Terri J. Tharp

December 2009
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December 2009
To the Graduate School:

We are submitting a dissertation by Terri J. Tharp entitled "Learning Communities for University Students at-risk of School Failure: Can They Make a Difference". We recommend that it be accepted in partial fulfillment of the requirements for the degree, Doctor of Education in Curriculum and Instruction with concentration in Reading.

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DEDICATION

This dissertation is dedicated to the memory of my dad, Bruce Wayne Guess, who became a father at the age of seventeen, and although he only had a high school education, was one of the wisest men I ever knew. Daddy, I promise to remember my roots.
ACKNOWLEDGMENTS

First and foremost, thank you to my Heavenly Father for all of your love, grace, and mercy. “In Him I live and move and have my being” (Acts 17:28).

A very, very special thanks to my family. To my husband, Mark, who has always encouraged me to follow my dreams and take my own path; to my daughters JoEllen and Jonna, who are the light of my life and who I hope I encourage each and every day to fly and reach for their dreams; to my Mom who has always been my cheerleader in whatever I attempt; to my sister, Tracy, and her family who keep me smiling; to my extended family who have greatly influenced the person I am today. My life is richer and fuller because I am blessed with such a wonderful and loving family.

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I would also like to say a special thanks to my colleagues and friends in the Elementary and Special Education Department and the Academic Enrichment Department at Middle Tennessee State University who have cheered me on throughout this process. Your support and encouragement were invaluable, and I am blessed to work with such a great group of people.

All of you have made this journey possible, and I am so thankful that each of you were placed in my life. Best wishes always!
ABSTRACT

TERRI J. THARP. Learning Communities for University Students At-risk of School Failure: Can They Make a Difference. (Under the direction of DR. CAROLE STICE.)

This study investigated the impact of learning communities on the academic success of university students at-risk of academic failure. The effects of learning communities (LC) at Middle Tennessee State University (MTSU) on cumulative GPAs, retention rates, and earned cumulative hours of students with ACT sub-scores of 17 or 18 in math who were enrolled in the developmental studies program were evaluated. Year to year retention rates, year to year cumulative GPAs, and year to year earned cumulative hours were the variables used to measure academic success. The results of the study were used to determine if learning communities were an effective intervention for students at-risk of academic failure and therefore warranted additional funding and program development at Middle Tennessee State University (MTSU) and other Tennessee Board of Regents (TBR) institutions that have developmental studies programs.

The sample (N=261) was selected from MTSU's first time freshmen fall cohorts from fall 2004 and fall 2005. The sample was divided into three groups for each semester: group 1 - first time freshmen enrolled in the Intermediate Algebra/University Seminar learning communities (LC), group 2 - first time
freshmen enrolled in traditional stand alone Intermediate Algebra and University Seminar classes (Non-LC), and group 3 -first time freshmen enrolled in University Seminar who were not required to take Intermediate Algebra, but had a Math ACT sub-score of 19 (REG). A matching procedure was used to control for gender, ethnicity and age.

The findings from this study did not support the implementation of a learning communities approach as an effective intervention to promote the academic success of university students at-risk of academic failure and enrolled in a developmental studies program. More comprehensive research is needed to determine what conditions and components are present in successful learning communities for developmental studies programs as well as exploring other approaches that might be more effective in promoting active learning for students at-risk of academic failure.
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CHAPTER I

Introduction

Overview

From syntheses of a variety of sources on higher education, three repeating themes emerge; these are: the lack of integrated learning opportunities on college campuses, student retention and success, and the increasing number of academically underprepared students entering postsecondary education (Greater Expectations: A New Vision for Learning as a Nation Goes to College, 2002). Given this reality it is imperative that colleges and universities find effective ways of addressing these three issues. The constantly changing twenty-first century calls for more developed and advanced learners (McCabe, 2000). To promote societal needs and to better protect themselves, an educated citizenry is a must for success in the global economy of a multicultural world. Basic to an educated citizenry in a technologically advanced society is a large number of persons who are college graduates.

More students than ever are entering postsecondary education in the United States, but they are increasingly diverse and bring a host of academic and social issues with them. This places the retention and eventual graduation of these students increasingly in jeopardy. The disconnects that exist among the facets of the academic culture and the mismatched expectations of students and faculty with regards to what an undergraduate education should be have led to discouraging retention and graduation
rates across the country (Hill, 1985; Palmer, 1999). New approaches are needed at the undergraduate level to ameliorate these disconnects and mismatched expectations.

One recent educational trend to address issues such as lack of integrated learning opportunities and student retention is the creation of learning communities specifically designed for students at-risk of academic failure. Research shows that first-year learning communities increase freshmen to sophomore retention rates, improve grades, increase engagement in learning, and increase student satisfaction (Astin, 1993; Crissman, 2001; Matthews, 1993; Pike, 1997; Shapiro & Levine, 1999; Smith, MacGregor, Matthews, & Gabelnick, 2004; Tinto, 1998a; Tinto & Love, 1995; Upcraft & Kramer, 1995; Zhao & Kuh, 2003). Results from the 2002 *National Survey of Student Engagement* found that participation in learning communities was positively correlated with all five of its benchmarks: diversity experiences, student gains in personal and social development, practical competence, general education, and overall satisfaction with the undergraduate college experience (Smith et al., 2004). However, there is a need for more research on the long term effects (persistence towards graduation) of learning communities as well as the impact of learning communities on struggling learners at the college level, particularly in these times of financial constraints in higher education. Engstrom (2008) reported that research on learning communities and their impact on student success historically addresses general collegiate populations, leaving a real need for research on specific populations among university students.
Statement of the Problem

In Responding to the Challenges of Developmental Education, Kozeracki (2005) issued a call for systematic assessments of existing developmental education programs. The Tennessee Board of Regents (TBR) is currently in the process of redesigning developmental studies programs across the state, and more studies are needed to assess what works and what does not to create, improve or maintain effective programs in the state of Tennessee. The TBR, which governs six state universities (Austin Peay State University, East Tennessee State University, Middle Tennessee State University, Tennessee Technological University, Tennessee State University, and The University of Memphis), thirteen community colleges, and twenty-six technology centers, has expressed an interest in learning communities for students at-risk of academic failure.

Data support the development and inclusion of learning communities for regular and high achieving students, but little data exist on their effect in postsecondary education with students at the lower end of the academic achievement continuum. One way to examine the effect of learning communities on students at-risk of academic failure is to track retention rates, grade point averages (GPAs), and earned cumulative hours for students in developmental studies programs who are, or have been, part of such an endeavor.

Purpose of the Study

The purpose of this study was to evaluate the effects of Learning Communities (LC) at Middle Tennessee State University (MTSU) on cumulative GPAs, retention rates, and earned cumulative hours of students with ACT sub-scores of 17 or 18 in math who are enrolled in the developmental studies program. Students with ACT sub-scores of 17
or 18 in math are considered at-risk of academic failure in math and are required to enroll in the three hour developmental studies math course entitled Intermediate Algebra.

*Significance of the Study*

Results of this study provided information to MTSU and the TBR on a learning communities model for the Developmental Studies Program at MTSU and served as an initial evaluation tool. Although LC had existed at MTSU for several years, there had been no further development of LC specifically designed for students at-risk of academic failure. Before significant resources (financial, human resources, etc.) were considered for developing learning communities among the initiatives for Developmental Studies programs in the TBR system, evidence needed to be gathered showing the effects of such programs that currently existed. Based on the evidence, the TBR and MTSU might (or might not) consider the further development of LC rather than stand alone courses for students at-risk of academic failure in other developmental studies courses such as Developmental Reading and Developmental Writing and could also consider adding a social component to LC courses. Also, this study contributed to the general knowledge base of learning communities for students at-risk of academic failure in postsecondary education.

*Research Questions*

1. For the fall 2004 cohort and the fall 2005 cohort, are there differences among the year-to-year retention rates of the first time freshmen enrolled in the Intermediate Algebra/University Seminar LC, the first time freshmen enrolled in the non-LC sections of Intermediate Algebra and University Seminar, and the first time
freshmen enrolled in University Seminar with an ACT Math sub-score of 19 who were not required to take Intermediate Algebra?

2. For the fall 2004 cohort and the fall 2005 cohort, are there differences among the year-to-year cumulative GPAs of the first time freshmen enrolled in the Intermediate Algebra/University Seminar LC, the first time freshmen enrolled in the non-LC sections of Intermediate Algebra and University Seminar, and the first time freshmen enrolled in University Seminar with an ACT Math sub-score of 19 who were not required to take Intermediate Algebra?

3. For the fall 2004 cohort and the fall 2005 cohort, are there differences among the year-to-year earned cumulative hours of the first time freshmen enrolled in the Intermediate Algebra/University Seminar LC, the first time freshmen enrolled in the non-LC sections of Intermediate Algebra and University Seminar, and the first time freshmen enrolled in University Seminar with an ACT Math sub-score of 19 who were not required to take Intermediate Algebra?

4. Are there differences between the year-to-year retention rates, year-to-year cumulative GPAs, and year-to-year earned cumulative hours of the first time freshmen enrolled in the fall 2004 Intermediate Algebra/University Seminar LC and the first time freshmen enrolled in the fall 2005 Intermediate Algebra/University Seminar LC?

Limitations of the Study

There were limitations to the study.
• The study was conducted at a single institution which limits generalizing the data to other institutions.

• A matching procedure was used to control for gender, ethnicity, and age for the three groups in the fall 2004 cohort and the three groups in the fall 2005 cohort. However, although a matching procedure was used to control for age between the fall 2004 Intermediate Algebra/University Seminar LC and the fall 2005 Intermediate Algebra/University Seminar LC, a matching procedure could not be used to control for gender and ethnicity due to the small group size.

• Students self-selected into the LC. The intentions and commitments of students who self-select into learning communities could be considered different from those who do not (Beckett, 2006).

Definition of Terms

The following definitions of terms are provided for clarity as they were used in this study.

Active Learning – students are directly involved in creating their own learning rather than being passive recipients of instruction (Boylan, 2002)

Developmental Education – a field of practice and research within higher education with a theoretical foundation in developmental psychology and learning theory that promotes the cognitive and affective growth of all postsecondary learners, is sensitive and responsive to individual differences and special needs among learners, and addresses academic preparedness (National Association for Developmental Education, n.d.)
*Earned Cumulative Hours* – the overall number of earned college credit hours which excludes remedial/developmental hours (Middle Tennessee State University, n.d.c)

*Cumulative Grade Point Average* – the undergraduate college credit GPA which excludes the remedial/developmental GPA (Middle Tennessee State University, n.d.a)

*Intermediate Algebra* – a three credit hour developmental studies math course with intensive study of factoring of polynomials, rational equations and functions, systems of equations with applications, radical functions, and quadratic functions and equations (Middle Tennessee State University, n.d.c)

*Learning Community* – a purposefully restructured curriculum where courses or course work are linked together so that students find greater coherence in what they are learning as well as increased interactions with faculty and fellow students (Gabelnick, MacGregor, Matthews, & Smith, 1990)

*Retention Rate* – the year to year return rate of currently enrolled students (Middle Tennessee State University, n.d.c)

*University Seminar* – seminars which are designed to foster better understanding of perspective institutions, enhance academic interest and integration, and provide opportunities for social integration for first year college freshmen (Upcraft, Gardner, & Barefoot, 2005)

*University Students At-Risk of Academic Failure* – students who need to develop their cognitive or affective abilities in order to succeed in a postsecondary educational experience (Boylan, 2002)
CHAPTER II

Review of the Related Literature

Introduction

"Knowledge emerges only through invention and re-invention, through the restless, impatient, continuing, hopeful inquiry human beings pursue in the world, with the world, and each other" (Freire, 2000, p. 72). Learning is a contextualized, social activity intimately associated with the connections made with others, and it is a continual and ongoing process. Vygotsky reiterates that learning is firmly rooted in, and influenced by, society and culture, and Bruner suggests that students effectively scaffold one another's learning (Nieto, 1999).

This century continues to bring major changes to the world as a result of a global economy, the rapid and often overwhelming changes in communication and technology, and a much smaller world with highly diverse populations who often hold decidedly different if not diametrically opposed outlooks on life and the world. These differences and changes provide new and unprecedented challenges for American society (Friedman, 2006). It is a turbulent time with an almost complete transformation from an industrial to a technological and information-based society (Greater Expectations, 2002).

In the Reading for Understanding Rand Report, Snow (2002) noted that the demand for literacy skills is steadily increasing, and the U.S. economy today requires a universally higher level of literacy achievement than in prior years. Literacy skills involve much more than just the reading of traditional printed text; it includes reasoning,
writing, calculating, solving problems, effectively communicating, and using all different kinds of technology such as podcasts, video productions, etc. For individuals to survive and prosper in the twenty-first century, a college education is an ever increasing essential life need. “Securing a post-secondary education is an important component to securing the American dream at both the economic and social level” (Engstrom, 2008, p. 2).

Sadly, although more students than ever are attending college, many are neither engaged or excited about learning, and there is often a disconnect between students and the universities they attend which has led to uninvolved students, disgruntled faculty, and discouraging persistence rates at many schools. Tinto (2005b) noted that the experience of higher education has become much more accessible to a wider range of citizens, but emphasized that many leave the institutional system prior to completing a degree or achieving their academic and social goals. This situation then is not what the country and its citizens need for their futures.

_Evolution of Higher Education in the United States_

Higher education in the United States has evolved over the years due to the influences of various social and political movements affecting the country (Snyder, 2008). Cross (1971) noted three philosophies that have dominated the admission to higher education in America: 1) the aristocratic where only white males from the upper socioeconomic class had access, 2) the meritocratic where academic ability determined access, and 3) the egalitarian which is interpreted as equal access to everyone regardless of gender, socioeconomic background, race, or academic ability.
In colonial times when only white wealthy young men attended college, the goal of higher education was to educate clergy and leaders (Brubacher & Rudy, 1997). Not everyone went to college nor did the general population expect to attend college.

In the following years, several events occurred that began to open up the doors of higher education to the masses. The Morrill Acts of 1862 and 1890 created land-grant colleges and historically black colleges, and the Serviceman’s Readjustment Act of 1944 (GI bill) provided postsecondary opportunities for returning World War II (WWII) veterans (Smith et al., 2004). Also, due to WWII, many more women began entering college and the work force. “The idea of universal higher education for all those interested has dominated American higher education since World War II” (Humphrey, 2004, p. 15).

In 1958, the National Defense Education Act (NDEA) was passed in response to the launching of Sputnik and was the first piece of federal legislation to provide funding directly to students, and the Higher Education Act of 1965 encouraged low-income students who would not otherwise have been able to attend college to be able to do so (Snyder, 2008). The value of a college education was becoming more and more apparent in terms of financial success for the American family, and the hope and dream of many American parents was for their children to be able to attend and graduate from college so that they could have a “better life.”

Particularly since the 1960s, higher education has engaged in a massive social experiment of providing access to higher education to meet the unfulfilled potential of American democracy and the needs of the American economy for a college-educated
workforce (Upcraft, Gardner, & Barefoot, 2005). Between 1960 and 2001, college enrollments expanded from 4.1 million to 14.8 million due to the following factors: a 57 percent increase in the U.S. population, a large growth of state college and university systems, the GI bills after the Korean and Vietnam wars that enabled 6.3 million veterans to attend college, the 1964 civil rights legislation and Affirmative Action that helped expand minority student enrollment, the Economic Opportunity Act of 1964, the 1965 Higher Education Act (HEA) which created the organized federal financial aid system, attention to women’s rights and Title IX legislation, new opportunities for adult education including distance learning, and pressure from the job market with newly invented jobs requiring a higher level of education to use technology and information (Greater Expectations, 2002; Snyder, 2008). Other important federal legislation which further opened the doors of higher education was Section 504 of the Rehabilitation Act of 1973 and the 1990 Americans with Disabilities Act which lead to the inclusion of more students with disabilities and exceptionalities. Students who qualify under this legislation absolutely have the right to participate in postsecondary education, but they do bring different circumstances and issues to colleges that require different approaches in curriculum and instruction (Humphrey, 2004). Most recently, and not without controversy, there are many more students beginning college who have below a C average in high school as well as poor scores on standardized achievement tests such as the ACT or SAT (Johnson, 1995).

Times have definitely changed, and educational practices invented when higher education served only a few are increasingly disconnected from the needs of
contemporary students who are increasingly diverse with different national, racial/ethnic, and socio-economic backgrounds (Greater Expectations, 2002). Unfortunately, many universities are not adequately prepared for the changing diversity of their student bodies and as a consequence fail to meet the needs of students which in turn has led to discouraging retention rates (Engstrom, 2008). At the heart of the 2002 Greater Expectations National Panel Report by the Association of American Colleges and Universities is the belief that everyone is entitled to an education of quality. Whether this can be accomplished remains a question.

University Students At-risk of School Failure

More than one-third of all new students entering colleges and universities are defined as being students at-risk of academic failure (Roueche and Roueche, 1993). Forty percent of students in four-year colleges and fifty-three percent of all college students take remedial courses (Greater Expectations, 2002). A December 2005 policy brief by the Tennessee Board of Regents (TBR) found that 60% of all TBR students required at least one developmental studies course with 74% of TBR community college students requiring some level of developmental education (Tennessee Developmental Studies Redesign, n.d.). Adelman (1999) warned that the more students are underprepared, the less likely that they will stay in school, persist, and graduate.

Exactly which students are at-risk of academic failure? When using this description, the most immediate picture that comes to mind is academically underprepared students. However, it is important to note that this is a general umbrella term which covers a wide range of often very different students who certainly do not fit
into one neat little category. “The promise of equitable educational opportunity for all confronts an undeniable reality: many entering students will not be ready for college because of a variety of external barriers that reduce their chances for academic success even before they attend their first class” (Malnarich, 2005, p. 52). Kelly (2008) emphasized that various new sub-groups of students often face barriers to college that are very different from the experiences of the middle-class, white students who traditionally comprised the majority of college students in the 1950s.

In the 21st century, there is an increasingly diverse student population. Today’s college population includes first-generation students, English language learners, students with exceptional needs, students of color, low-income students, more students who commute, adult students with family obligations, students who work, students from different cultural and socio-economic backgrounds, students with alternative lifestyles, students of different religious faiths, etc. who have varying experiences, needs, and abilities. Hardin (1998) described some students needing academic assistance as “poor choosers” who simply made poor decisions between ages fourteen and eighteen that adversely affected their education and employment possibilities for a long period of time after their high school years, the adult student, the student with a disability, “the ignored student,” and the student with limited English proficiency. Boylan (2002) defined underprepared students as any students who need to develop their cognitive or affective abilities in order to succeed in a postsecondary educational experience. For many of these students, there is a lack of a schema for attending college, and it is often a new and frightening experience where they feel alone and isolated (Flores, 2003).
The *Measuring Up 2008* report released by the National Center for Public Policy and Higher Education raised concerns about persistent disparities in both access and completion for low-income students and under-represented minorities (Marklein, 2008). Renner (2003) soberly pointed out that numerically, minority students are less equal now than they were thirty years when looking at college graduation rates. Engstrom (2008) reported that the Latino population falls behind other U.S. population groups in persisting at the higher education level, and campus climate plays a role in their departure decisions. Low-income students are more likely to begin higher education academically underprepared than those from more affluent backgrounds and are less likely to complete their degree programs (Engle & Tinto, 2008; Engstrom & Tinto, 2008). Tinto (2005a) reported that only 48 percent of low-income students who begin in a public four-year college or university earn their four-year degree within six years while 67 percent of high-income students do so. McCabe (2000) reported that poverty has the highest correlation with educational underpreparedness at every level from preschool to graduate school. The 2008 *Coming to Our Senses: Education and the American Future* warned that America must pay greater attention to the educational success of low-income and underrepresented minority students to advance national interests or face grave consequences (CollegeBoard Advocacy, 2008).

*Explorations in New Postsecondary Approaches*

Some postsecondary institutions explore new approaches in an effort to foster an atmosphere of collaborative and active learning which addresses the needs of their diverse incoming students—attempting thereby to keep students enrolled to
matriculation. But meaningful reform in higher education that focuses on the kinds of learning students need for a complex world is long overdue (*Greater Expectations*, 2002). Active learning, one of the most effective teaching techniques available to college instructors, is an example of one of the new approaches being explored (McKeachie, 2002), and it can be found in some of the newer instructional practices in undergraduate education including inquiry-based learning, freshmen seminar courses, supplemental instruction, mastery learning, self-paced instruction, cooperative learning, capstone courses, diversity awareness initiatives, new authentic assessment instruments such as portfolios, web-based instruction, service-learning, and learning communities (Boylan, 2002; Lardner et al., 2005; MacGregor, 2003; Shaprio, 2004; Taylor, Moore, MacGregor, & Lindblad, 2003).

The basic concept of active learning is that students are directly involved in creating their own learning rather than being passive recipients of instruction (Boylan, 2002). Nieto (1999) detailed five principles of learning: learning is actively constructed; learning emerges from and builds on experience; learning is influenced by cultural differences; learning is influenced by the context in which it occurs; and learning is socially mediated and develops with a culture and community. Paulo Freire (2000) argued for active learning rather than “banking” education because he felt traditional learning techniques tended to disenfranchise students from lower class, non-traditional, or minority backgrounds.

Chickering & Gamson (1987) described seven principles for good practice in undergraduate education, and the third principle was “good practice encourages active
learning.” Student development and retention theorists such as Astin, Pascarella, Terenzini, and Tinto suggest a positive correlation between student learning and a student’s involvement and engagement in the learning process (Upcraft, Gardner, & Barefoot, 2005). Active learning is generally thought of as an effective approach to improve the undergraduate education of a diverse student population.

In addition, cognitive development theorists such as Magolda, Perry, Kohlberg, and Gilligan clearly acknowledge the role played by social context and interpersonal relationships (Cove & Love, 1996). Ewell (1997) described interpersonal collaboration, the application of concepts to real situations, rich and frequent feedback on performance, and a curriculum that emphasizes experience and cross-disciplinary learning as characteristics of effective approaches to learning.

Active learning as a new postsecondary approach seems to hold a lot of promise for university students at-risk of academic failure, but frankly, it is not always fully accepted or implemented on some college campuses. “The landscape of innovation in higher education is littered with initiatives and programs that have begun, often with great fanfare, only to flounder and eventually fail in the face of institutional resistance to changes in established practice” (Taylor et al., 2003, i). In order to sustain and improve new instructional practices that embrace active learning, thoughtful and thorough assessments need to occur (MacGregor, 2003).

Current Climate in Higher Education

“The twenty-first century poses a paradox for higher education. At a time when students and parents consider a college education a necessity and getting into a “good”
college is more important and more competitive than ever before, legislators, accrediting agencies, the American public, and educators themselves are raising questions about what students are learning in college – and they are asking for evidence” (Barkley, Cross, & Major, 2005, p. xi). Since the 1983 A Nation at Risk Report, there have been many blue-ribbon commissions critical of both K-12 education and higher education (CollegeBoard Advocacy, 2008). Smith et al. (2004) described several major reports that call for undergraduate education reform that have been published in recent years: Greater Expectations: A New Vision for Learning as a Nation Goes to College (Association of American Colleges and Universities, 2002), Report on the Reports: Recommendations for Action in Support of Undergraduate Science, Technology, Engineering, and Mathematics (Project Kaleidoscope, 2002), Reinventing Undergraduate Education: Three Years After the Boyer Report (Reinvention Center, Stony Brook, 2001), The Knowledge Net: Connecting Communities, Learners, and Colleges (American Association of Community Colleges, 2000), Returning to Our Roots (Kellogg Commission on the Future of State and Land-Grant Universities, 1999-2000), and Reinventing Undergraduate Education: A Blueprint for America’s Research Universities (Boyer Commission on Educating Undergraduates in Researcher Universities, 1998).

Access to a college education is no longer enough because although more students than ever are coming to college, they simply are not graduating from college. According to the December 2008 Report of the Commission on Access, Admissions and Success in Higher Education Coming to Our Senses: Education and the American Future, America’s college completion rates have dropped from number two in the world for
younger workers (age 25-34) to number eleven in a ranking of 27 advanced economies in 2005 and is on the verge of losing the great global educational competitive edge it has long enjoyed. The 2008 PBS documentary Where We Stand: America's Schools in the 21st Century offered two sobering statistics: 1) in 1970, the average college graduate earned about 45% more than a high school graduate, while today it is 84% more, and 2) in 1995, the United States was number one in the world in college graduation rate; in 2005, it was 15th.

Research has shown that there is a significant disconnect between students and faculty in higher education which demonstrates a need to focus on holistic learning for college students, particularly first time freshmen (Astin, 1993; Boyer, 1987; Levine & Cureton, 1998; Tinto, 1993). More students than ever are coming to college, but for many, higher education is simply another activity in their lives and not necessarily a priority, and consumerism is at an all-time high (Levine & Cureton, 1998). “More students with differing degrees of preparation are enrolling in colleges and universities, and traditional models of higher education are no longer sufficient to respond to society’s needs” (Shapiro & Levine, 1999, p.14). Many view a typical course-by-course curriculum as failing to meet the needs of many students (Moore, 2000). “With more and more students spending less and less time on campus owing to jobs, part-time attendance, and other responsibilities, there is a growing distance between students and their campuses” (Levine & Cureton, 1998, p. 53). The idealized vision of students attending residential colleges has faded as more and more students commute, often attend two or three different institutions during the postsecondary experience, simultaneously hold full-
time or part-time jobs, and have family obligations (Smith et al. 2004). Today, only about 30 percent of undergraduates between the ages of eighteen and twenty-two are pursuing an exclusively parent- or student-financed education (Chronicle of Higher Education, 2003).

Hill (1985) described the mismatched expectations of students and faculty in regards to what an undergraduate education should be. While the expectations of many contemporary students have changed dramatically, many faculty members continue to operate within an outdated paradigm (Boyer, 1990; Chonko, 1999; Tagg, 2003). Palmer (1999) discussed the disconnection of the academic culture and urged everyone to challenge the current college climate for the good of society. Many students are simply not “hooked” into the campus community nor do they understand how a true liberal education can add benefit to their lives. This detachment has led to discouraging graduation and retention rates across the country (Tinto, 1993). It is vital that educators focus on the affective and cultural aspects of learning as well as the cognitive aspect in order to better connect with their students.

The attainment of a college degree is especially crucial to improving the quality of life and economic condition of marginalized groups and historically oppressed individuals who usually make up a sizeable proportion of students at-risk of academic failure, and in that sense, colleges have become increasingly important as gatekeepers to the acquisition of what is, for many students at-risk of academic failure, the passport to upward social mobility and the realization of the American Dream (Kelly, 2008). This is a very serious responsibility that should not be taken lightly, and postsecondary
institutions must take care to heed the message of Paulo Freire (2000) who warned that society’s cultural system perpetuates power relationships and holds groups in place like an invisible web.

*History of Developmental Education*

In *What Works: Research-Based Best Practices in Developmental Education,* Boylan (2002) defined developmental education as courses or services provided for the purpose of helping underprepared college students attain their academic goals, and it is not a new phenomenon. Although it has been around for many years, it did not become readily identifiable until the late 1960s when civil rights and feminist movements demanded greater access to higher education (Flores, 2003).

Boylan (1987) shared that the first recognition of the need to remediate underprepared students for college-level work came in the 17th century when English-speaking students were given help in anticipation of college-level Latin courses, and formal college reading and study programs have existed since the early days of the 20th century (Stahl, Simpson, & Hayes (1992). Higbee, Arendale, & Lundell (2005) traced the roots of developmental education as practiced today to *The Student Personnel Point of View* which was originally published by the American Council on Education in 1937 and set forth the principles of student development theory and transformative theories. The works of Arthur Chickering, William Perry, and Alexander Astin have guided developmental education since the 1960s (Higbee, Arendale, & Lundell, 2005).

The 1970’s open admission “experiment” at the City College of New York brought the challenges of developmental education to the forefront of higher education
(Flores, 2003). A new emphasis on learning rather than teaching came into vogue in the 1990s, and developmental educators embraced this paradigm shift (Higbee, Arendale, & Lundell, 2005; Kozeracki, 2002). A 2000 report published by the Continuous Quality Improvement Network in conjunction with the American Productivity and Quality Center reported that the use of active learning techniques was frequently cited by best-practice institutions as a major factor in the success of their developmental education instruction (Boylan, 2002).

In 1976, the National Association for Developmental Education (NADE) was founded in Chicago as the National Association for Remedial/Developmental Studies in Postsecondary Education and officially became NADE in 1984 (NADE, n.d.). The purpose of the organization is to focus on the academic success of students by providing professional development, supporting student learning, providing public leadership, disseminating exemplary models of practice, coordinating efforts with other organizations, facilitating communication developmental education professionals, and anticipating trends. The NADE motto is “helping underprepared students prepare, prepared students advance, advanced students excel.”

The goals of developmental education are:

- To provide education opportunity for all individuals, appropriate to their needs, goals, and abilities
- To enhance the retention of students
- To ensure proper placement by assessing levels of academic preparedness
• To develop skills and attitudes necessary for the attainment of academic, career, and life goals

• To maintain academic standards while helping learners to acquire competencies needed for success in academic coursework

• To promote the development and application of cognitive and affective learning theory

• To facilitate partnerships between educators, employers, and the community at large (NADE, n.d.)

In a 2000 interview, Alexander Astin identified the education of underprepared students as the most critical educational problem in America today (Schluender, 2007). What may be surprising to many folks is the finding that developmental education exists in every sector of American higher education, and many students today still require remediation in basic reading, writing, and computational skills (Upcraft & Stephens, 2000; Upcraft, Gardner, & Barefoot, 2005).

There is much debate, often quite bitter and acrimonious, about the presence of developmental education at the college level (other terms often used are remedial education, academic skills programs, or college preparatory programs), particularly in these times of tight financial constraints for postsecondary institutions (Malharich, Dusenberry, Sloan, Swinton, & van Slyck, 2003). While proponents of developmental education argue it has a long positive history, is cost effective, improves the standard of education and retention, and is beneficial, legislators and the general public view developmental education as a waste of financial resources and educators are concerned
that the programs devalue academic standards of higher education (Boylan, 2002; Boylan & Bonham, 1994; Flores, 2003). Much of the criticism arises from the high costs of many programs and limited success of past efforts to assist students in developmental education which has often marginalized the students in stand alone courses for which no college credit can be earned (Tinto, 1998b). Many argue that remedial courses should be the sole responsibility of community colleges while others suggest those who are underprepared should be sent back to the secondary schools (Ikenberry, 1997). However, although there is now a national trend to relegate developmental education to community colleges (Kozeracki, 2005; Jenkins & Boswell, 2002), many students continue to take developmental courses at the university level although they are “hidden” in various ways throughout the curriculum or simply renamed to reflect a more politically correct position.

One of the strengths of Developmental Education is its focus on teaching; however, this can also be one of its greatest weaknesses because this has created a dearth of data in the field (Boylan, 2002). Because of the lack of emphasis on research activities which are needed to demonstrate program effectiveness and ultimately to ensure long-term support, this is a major concern. Unfortunately, the relegation of all developmental education courses in public systems of higher education to two-year institutions will only exacerbate the problem (Upcraft, Gardner, & Barefoot, 2005). “The ongoing debate about the role of developmental education in different types of institutions of higher education may pose a threat to access for traditionally underrepresented populations, particularly to research universities” (Upcraft, Gardner, & Barefoot, 2005, p. 298). If
developmental educators hope to have a long-term impact on access and retention, they must also begin to examine the foundations of inequality in higher education in addition to knowing the theories of their individual disciplines, and student development and learning theories (Higbee, Bruch, Jehangir, Lundell, & Miksch, 2003).

In an ideal world, everyone who entered college would be academically prepared, but that is not the reality of today’s landscape in postsecondary education, and the sad truth is the more students need developmental education, the less likely they will stay in school and graduate (Adelman, 1999; Astin, 1985). Developmental education is not going away anytime soon, and new and innovative approaches are needed to better serve this population since these students often have academic and psychosocial needs that do not respond to traditional, conventional college teaching (Smith et al., 2004). Humphrey (2004) reported that the impact of learning communities in assisting underprepared students has begun to attract interest in the area of developmental education and is an approach that needs to be examined and assessed.

_The Developmental Education Program at Middle Tennessee State University_

Two critical happenings that brought the needs of students at-risk of academic failure in the state of Tennessee to the forefront were the impact of the Comprehensive Education Reform Act of 1984 and the 1984 Stipulation of Settlement of the suit against the State of Tennessee brought forth by Rita Sanders Geier in 1968 citing the state of Tennessee with maintaining a dual system of higher education that discriminated against African American citizens of Tennessee (Bader & Hardin, 2002). The Geier Stipulation of Settlement specifically addressed the issue of developmental education and required
developmental education programs to promote retention of students admitted under alternative admissions standards.

As a result, in 1984 the Tennessee Board of Regents (TBR) mandated a program of remedial and developmental studies through the A-100 Guidelines for its twenty institutions seeking to increase educational opportunities for the citizens of Tennessee. The program included a comprehensive mandatory assessment procedure, mandatory placement of underprepared students by level of deficiency, remedial and developmental courses in writing, reading, mathematics, and study skills, course enrollment limits, and a comprehensive support system which included academic counselors and tutoring (Bader & Hardin, 2002).

The Developmental Studies Program (DSP) at MTSU officially began in 1985 as a centralized division reporting to the Vice Provost for Academic Affairs. Prior to this implementation, MTSU had offered some scattered developmental courses in Math, English, and Reading, but there were no centralized or coordinated services for students at-risk of academic failure. It was felt that by coordinating developmental efforts through one program director and by adding study skills instruction and advising services that the retention and graduation rates among students at-risk of academic failure would be enhanced. Courses initially included a remedial and developmental level of English, Reading, and Study Skills, and a remedial Math, Elementary Algebra, and Intermediate Algebra. All the courses did not count for graduation credit, but did count as institutional credit and could therefore be used for full time enrollment status, financial aid, etc. Tutoring labs were established immediately while advising services were implemented in
fall 1989 with an advisor to student ratio of 1 to 300. The program won the John Champaigne Award for Outstanding Developmental Program in 1993 from the National Association of Developmental Education (NADE) and an Outstanding Advising Award in 1995 from the National Academic Advising Association (NACADA). Currently, there are 2135 students enrolled in developmental courses (now called K courses and offered for credit) for the fall 2008 semester (a 10% increase from the fall 2007 total of 1939), and 36% of the MTSU first time freshmen are enrolled in at least one developmental course.

Although some states continue to support developmental education for all types of public institutions, there is a growing trend to reduce or eliminate developmental studies programs in four-year institutions. This is the current condition in the state of Tennessee (Bader & Hardin, 2002). The high percentage of students in developmental studies in the state has become a significant cost for both the TBR institutions and the students, and the TBR feels the current developmental studies system does not effectively move students on to college-level coursework in a timely fashion (Tennessee Developmental Studies Redesign, n.d.) In fall 2002, the DSP advisors began reporting to the Student Affairs division, and their role was expanded to include advising for undeclared students as well as students in DSP. In fall 2004, remedial courses were still available on the MTSU campus, but were only offered through Motlow Community College and no longer officially considered MTSU courses. In fall 2006, the DSP division was completely dissolved, and a new division entitled Academic Enrichment was formed which continued to handle all testing and placement for all students admitted through alternative
admissions as well as officially coordinating the University Seminar program. New courses (designated as K courses) were designed to satisfy the requirements of the prior DSP courses, and the good news for students was that the courses would receive college level credit. The Developmental Writing course (DSPW0800) was moved to the English Department and renamed as ENGL1009K, Introduction to University Writing. The Developmental Reading course (DSPR0800) was moved to the Elementary & Special Education Department and renamed as READ1000K, Reading Skills Enrichment. The Learning Strategies (Study Skills) course (DSPS0800) remained in the Academic Enrichment Department and became an enhanced section of UNIV1010, University Seminar. The Intermediate Algebra course (DSPM0850) was moved to the Math Department and became an enhanced section of MATH1010K, Math for General Studies or MATH1710K, College Algebra. Due to political issues, the Math Department refused to accept the Elementary Algebra course (DSPM0800) which became MATH1000, Essentials of Math. It remains housed in the Academic Enrichment Department.

As a result of the TBR 2005-2010 Strategic Plan Objective A8 (increase speed and success of remedial/developmental work for students requiring them to be college-ready) and Strategy A8 (establish a best practice, system wide, community-college based remedial/developmental program that is substantially technology driven, composed of language arts and mathematics, and allows students to identify and focus on the academic areas where they are deficient), and with support from the Fund for the Improvement of Postsecondary Education (FIPSE), a Developmental Studies Program Redesign is currently being implemented with a fall 2010 system wide implementation (Berryman,
2008; Tennessee Developmental Studies Redesign, 2008). The system wide initiative was established to redesign TBR’s developmental math and English curriculum using technology-supported, active-learning strategies, and six funded pilot programs started in January 2008 which are being conducted at Austin Peay State University, Chattanooga State Technical Community College, Cleveland State Community College, Jackson State Community College, Northeast State Technical Community College, and Columbia State Community College. In collaboration with the Education Commission of the States and the National Center for Academic Transformation (NCAT), TBR is implementing six models: supplemental, replacement, emporium, online, buffet, and linked workshop. The supplemental model can include out-of-class activities and also changes what goes on in the class by creating an active learning environment, and the buffet model can include a learning communities model (National Center for Academic Transformation, n.d.).

With the current budget crisis in the state of Tennessee, it is anticipated that, along with the redesign initiative, there will be major changes in the way developmental education is delivered at MTSU. What remains the same is the need to provide a quality education for all admitted students at-risk of academic failure.

*History of University Seminar*

The creation of the first-year seminar course was preceded by the formation of a system of faculty advisers at Johns Hopkins University in 1877 and the existence of a board of freshman advisers at Harvard University in 1877 (Upcraft, Gardner, & Barefoot, 2005). A number of noncredit orientation courses evolved over the next two decades at
such institutions as Boston University and the University of Michigan (Gordon, 1989), and Reed College offered the first orientation course for credit in 1911 (Upcraft, Gardner, & Barefoot, 2005). Although differing in some respects, all were similar in that they included specific information about the institution as well as general information regarding college life (Chonko, 1999).

In 1972, John Gardner launched the first University 101 course at the University of South Carolina which was designed to help students make a successful transition into college (Smith et al., 2004), and this type of course began to proliferate on college campuses in the late 1970s as retention rates began to plummet (Barefoot & Fidler, 1992). In 1986, a national center was established at the University of South Carolina for what was then known as “the freshman year experience,” and the center has helped the nation focus on the first year of college through its publications, conferences, and research. Now called the National Resource Center for the First-Year Experience and Students in Transition, it continues its work today by providing resources and support for higher education professionals working to enhance the first-year student experience and other significant student transitions (Upcraft, Gardner, & Barefoot, 2005).

Upcraft, Gardner, & Barefoot (2005) reported that first-year seminars are offered by 80 percent of all four-year and 62 percent of all two-year institutions, and while they may vary in structure, content, grading, and credits, they are designed to foster better understanding of the institution, enhance academic interest and integration, and provide opportunities for social integration. They shared that the goal of first-year seminars is to assist students in their academic and social development and in their transition to college,
and since the course content is student centered, effective instruction in first-year seminars usually includes such active learning strategies as experiential learning, collaborative and cooperative learning, group projects, and oral presentations.

Several quantitative studies reported that students who enroll in freshman seminars earn significantly higher grade point averages and increased retention than non-participants, and students who are at-risk of academic failure experience increases in academic performance (Chonko, 1993). Also, in a national benchmarking study, Swing & Barefoot (2002) found that linked first-year seminars produced higher student-reported ratings on learning outcomes and satisfaction measures than stand-alone seminars.

Learning Communities

Although there can be many definitions of a learning community, one of the more widely used definitions is "a purposefully restructured curriculum where courses or course work are linked together so that students find greater coherence in what they are learning as well as increased intellectual interaction with faculty and fellow students" (Gabelnick, MacGregor, Matthews, & Smith, 1990, p. 5). The Washington Center for Improving the Quality of Undergraduate Education used the term learning communities to encompass various approaches to curricular reform that depart from the usual pattern of instructors teaching separate classes in separate subjects to separate students with the goal being to build community among students and faculty and to build curricular connections across disciplines and professional programs (Malnarich, 2005). Learning communities are meant to engage the whole college community and form connections between students, faculty, administrators, staff, the public community, etc. In many
respects, it is a very different outlook on what the college climate should be for the whole campus community, and it requires more of a commitment on the part of everyone as the paradigm shifts from teaching to learning. Lenning & Ebbers (1999) pointed out that learning communities must be intentionally developed in order to promote and maximize learning. Goodsell Love & Tokuno (1999) identified five key dimensions of learning communities: 1) student collaboration, 2) faculty collaboration, 3) curricular coordination, 4) shared setting, and 5) interactive pedagogy. Shapiro & Levine (1999) described the following basic characteristics of learning communities’ initiatives:

- Organizing students and faculty into smaller groups
- Encouraging integration of the curriculum
- Helping students establish academic and social support networks
- Providing a setting for students to be socialized to the expectations of college
- Bringing faculty together in more meaningful ways
- Focusing faculty and students on learning outcomes
- Providing a setting for community-based delivery of academic support programs
- Offering a critical lens for examining the first-year experience (p. 3)

"The learning community is built on the most pedagogical and cultural theories: active learning, cognitive development, constructivism, integrative and interdisciplinary education, critical literacy, multiculturalism, writing and thinking across the curriculum, and participatory, community-based democracy" (Klein, 2000, p. 18). Learning communities allow students to engage in dialogue with others to see various and diverse perspectives on issues, and learning becomes a process of reflecting, interpreting, and
negotiating meaning among the participants of a community (Flores, 2003; Brown, 1994; Lardner, 2003; Lave & Wenger, 1991). The underlying principle of learning communities is a core democratic belief that all students have the right to learn and succeed (Smith et al., 2004), and Gabelnick (1997) reminded us that social justice, community responsibility, and respect for differences are embedded in the curriculum of true learning communities.

According to Shapiro & Levine (1999), learning communities offer a very real and needed movement to create the kind of learning environment that engages individual students as well as the whole campus community. The learning communities movement is often referred to in discussions about reforming undergraduate education, general education, and the freshman year specifically (Gabelnick et al., 1990). “Learning communities have emerged as a practical, pedagogically sound concept for addressing the criticisms and challenges leveled at higher education today” (Shapiro & Levine, 1999, p. 14). Kellogg (1999) found that during the last two decades, higher education has begun to work on providing learning environments more conducive to students participating in their own learning. This direction is clearly supported by educational theorists such as John Dewey, Lev Vygotsky, David Kolb, and Jean Piaget who advocate active learning and student development theorists such as Arthur Chickering, William Perry, and Alexander Astin.

The philosophical, structural, and pedagogical roots of contemporary learning communities are found in the work of John Dewey, Alexander Meiklejohn, and Joseph Tussman and in the early debates about democracy and the aims of general and liberal
education (Shapiro & Levine, 1999; Smith et al., 2004). Dewey advocated for learning environments characterized by cooperative and collaborative approaches to learning, and Meiklejohn and Tussman's efforts offered an alternative to the fragmented and incoherent curriculum students typically experienced (Upcraft, Gardner, & Barefoot, 2005).

The first learning communities program dates back to 1927 when Alexander Meiklejohn formed the two-year Experimental College at the University of Wisconsin which was designed as a living-learning community. He is often considered the father of the learning communities movement because of his insights about the need to reorganize the structure of the college curriculum (Gabelnick et al., 1990; Smith, 2003). Students and faculty read and discussed classic Greek literature the first year and then compared it to contemporary American literature in the second year (Kellogg, 1999). It was a democratic project which pulled from a cross section of the student body rather than just focusing on honors students (Smith et al., 2004).

In 1930, under the direction of President A. Lawrence Lowell, the Harvard House System was implemented (Chonko, 1999). Students as well as a senior member of the faculty and several senior tutors who also served as mentors lived together in houses that had dining areas and libraries in addition to normal housing accommodations. The leadership of Dr. Lowell provided the impetus for the further development of learning communities (Goodsell, 1993).

The next major nod to learning communities came about in the 1960s and 1970s when the higher education system nearly doubled in size and the community college
system was widely established (Smith et al., 2004). Joseph Tussman established a learning communities program modeled on Meiklejohn’s Experimental College at the University of California at Berkeley in 1965, and in the mid-1970s, the federated learning communities at SUNY-Stony Brook and the learning clusters at LaGuardia Community College in New York further articulated the idea of learning communities (Smith et al., 2004). In 1970, The Evergreen State College in Olympia, Washington was established as a new public alternative college and efforts were made to design a coherent institution with a team-taught integrated curriculum (Smith, 2001).

In 1984, the report *Involvement in Learning: Realizing the Potential of American Higher Education* was published by the Study Group on the Conditions of Excellence in American Higher Education, and one of their recommendations called for all institutions in higher education to create organized learning communities, and as a result of this recommendation, by 2000, a national learning communities movement encouraging faculty, staff, administration, and students to create active learning environments that prepare students for living in a complex world was spawned (Smith, et al., 2004). Support for this movement is evidenced in the works throughout the 1990s and early 2000s of Vincent Tinto, Alexander Astin, Ernest Boyer, Ernest Pascarella, Patrick Terenzini, John Gardner, Barbara Leigh Smith, Jean MacGregor, Patrick Hill, and Nancy Shapiro among others, and research (Bruffee, 1995; Cross, 1998; Tinto, 1994) strongly suggests that learning communities involve learners as active participants. In 1996, a national resource center for learning communities was created at the Washington Center (a public service center for improving the quality of undergraduate education) at The
Evergreen State College which provides a summer institute, a national directory of
campus programs, workshops, and many other resources (Washington Center for
Improving the Quality of Undergraduate Education, n.d.). Many federally funded
programs such as Title III programs (serving first-generation and low-income students),
Title V programs (serving Hispanic students), and various other educational opportunities
programs are encouraging the development of learning communities to address the needs
of their specific at-risk target populations in hopes of increasing student success and
retention rates (Lardner et al., 2005; Schmidt, 2008; Smith et al., 2004).

Faculty can also benefit from participating in learning communities programs.
Moore (2000) and Kellogg (1999) reported that instructors were energized and revitalized
by the interdisciplinary approach and the opportunity to connect with colleagues from
other disciplines. Participating in learning communities typically leads to greater
attention to pedagogy and enhanced collegiality across disciplines (Upcraft, Gardner, &
Barefoot, 2005). Klein (2000) reported that there are definite challenges, but faculty
participating in a learning communities program have an incredible opportunity to teach
in ways that extend beyond classroom boundaries and to become leaders of change.

Organization and Administration of Learning Communities

Learning communities are found at 37 percent of four-year and 23 percent of two-
year institutions (Upcraft, Gardner, & Barefoot, 2005). However, the programs are often
very varied in structure, organization, and administration.

There are five major learning community models that exist in a mix and match
fashion on today's college campuses (Kellogg, 1999). These include linked courses,
learning clusters, freshmen interest groups (FIGS), federated learning communities, and coordinated studies. Linked courses simply consist of two courses which include the same cohort of students, and the instructors may or may not collaborate. Learning clusters link three or four courses which concentrate on a particular theme or topic. FIGS are especially popular at large universities because they specifically target freshmen with a peer advising component, and they are often centered around academic majors. The most complex models are the federated learning communities and the coordinated studies which involve a great deal of coordination and faculty involvement. A residential component is often included, and Klein (2000) asserts that a residential learning community is a valuable tool for citizenship building.

Learning communities that are designed specifically for students in developmental education also vary on the degree of curricular integration and degree of collaboration among faculty and staff, but there are three general structural frameworks: unmodified courses, linked or clustered classes, and team-taught learning communities (Malnarich, 2005). In the unmodified courses, ten to thirty students enroll in two or three larger “regular” classes as well as an additional course that is available only to them. The additional course could include components such as career exploration, academic advising, study groups, service learning projects, etc. or serve as an integrative seminar. In the linked classes, students register together in two or more courses that are explicitly linked by content or theme, and there is coordination between the faculty to intentionally foster community through social and curricular connections. In team-taught learning communities, students enroll in a fully team-planned program of study across disciplines.
that usually have a topic or theme focus. James, Bruch, & Jehangir (2006) shared that learning communities can assist students in developmental education build two-way bridges between home and higher education which is critical for many low-income and first generation students.

The organization and administration of learning communities is the key to the success or failure of the program. Shapiro & Levine (1999) described five “change levers” that must be considered when planning and organizing learning communities: institutional mission statements, strategic planning processes and documents, periodic reviews of departments and colleges, collaboration between departments and colleges, and external reviews. Elliott & Decker (1999) discussed four sources that are critical to develop campus wide support for learning communities: people, organizational culture, context, and financial support. Smith et al. (2004) underscored establishing a collaborative leadership team as the single most important step in initiating and sustaining successful learning communities. Shapiro & Levine (1999) emphasized the importance of collaboration between Academic Affairs and Student Affairs which can sometimes be difficult due to cultural differences. “Of utmost importance is the support of the president and provost or academic dean” (Lenning & Ebbers, 1999, p.75). The message must come from the top that learning communities are a vital part of the undergraduate education experience, and there is real interest and support for the program. By tying the concept of learning communities to the mission statement of the institution, the campus sends a consistent message to its constituents and public that
learning and community are important (Shapiro & Levine, 1999). This message is then incorporated into departmental goals, planning processes, and evaluation.

A critical component of successful learning communities programs is the faculty. “The research literature demonstrates conclusively that well-designed and implemented learning communities significantly and positively affect both students and faculty, but a commitment to learning communities cannot occur unless faculty buy in on their implementation” (Lenning & Ebbers, 1999, p. 70). When planning learning communities, involving faculty members who are respected scholars, tenured, and very involved in teaching-learning initiatives sends the message that the program is being taken seriously (Shapiro & Levine, 1999). Institutions must have support for faculty participation in learning communities built into the reward system of tenure, release time, promotion, etc. because effective learning communities require that the faculty spend a great deal of time coordinating their efforts and with one another which can be labor-intensive (Boylan, 2002; Lenning & Ebbers, 1999).

*Research in the Efficacy of Learning Communities: GPA and Retention*

“A preponderance of studies indicate that learning communities strengthen student retention and academic achievement, and that both students and teachers in learning communities say that their learning community experience is positive” (Taylor, 2004, p. iii). Astin (1993) and Tinto (1997; 1998a) reiterated that membership in one or more college communities is a critical factor in student development as well as retention and students learn more from courses that are integrated into a community than they do from isolated courses.
The first in-depth assessment of students' academic and social experience in learning communities was published as part of a national research project on student learning in higher education (Malinarich, 2005; Tinto, 2005a) when Tinto, Goodsell-Love, and Russo (1993) investigated the FIG at the University of Washington, the coordinated studies program at Seattle Central Community College, and learning community clusters at La Guardia Community College in New York City. One of their findings was that when students learn in collaborative settings, their academic performance and persistence increased. Using discriminant analysis, stepwise regression, and logistical regression, Tinto and Goodsell-Love (1993) examined retention of FIG students at the University of Washington for the 1992-1993 entering classes and found that 99.2% of the FIG students were retained for their second semester versus 95.8% of the non-FIG students, and FIG students' mean GPA was 3.14 versus 2.98 for non-FIG students. They found that these differences were statistically significant even after controlling for entering academic ability and gender. When reviewing the Coordinated Studies Program (CSP) at Seattle Central Community, Tinto, Goodsell-Love, and Russo (1993) found that CSP students persisted to the following spring and fall quarters at a significantly higher rate than did similar students in the regular classes (83.8 versus 80.9 percent and 66.7 versus 52.0 percent respectively) even after controlling for possible self-selection artifacts and for other student attributes that also contribute to student achievement. Shapiro (2004) reported retention data that show learning community students are retained at significantly higher rates than non-learning community students.
Controlling for entering academic ability, Wilcox, DelMas, Stewart, Johnson, & Ghere (1997) found that students in the learning communities program at the General College at the University of Minnesota earned higher grades for the semester in which they participated in the learning community, but there were no statistical differences between the grades of the two groups in subsequent semesters. They also found that the participants also reenrolled at the institution at a higher rate than non-participants their sophomore year. Using a linear regression model to control for entering characteristics such as high school grade point average, Scholastic Aptitude Test scores, gender, ethnicity, and academic program, and a logistic regression to determine the impact on retention, Stassen (2003) used institutional data for the entering classes of 1999 and 2000 and found a positive relationship between learning communities and retention to date. A study conducted at the Washington Center for Improving the Quality of Undergraduate Education reported that the University of Washington’s Freshmen Interest Groups GPAs were significantly better and had higher retention rates than students not in the groups (Humphrey, 2004). Tokuno (1993) found for the entering classes of 1988, 1989, and 1990 that FIG students were retained at a higher rate than non-FIG students, but the study did not control for entering ability. Shapiro & Levine (1999) reviewed retention data from learning communities programs at Temple University, University of Missouri-Columbia, Indiana University Purdue University Indianapolis, and University of Maryland’s College Park Scholars which indicated a favorable effect on retention and academic achievement. Creation of a learning communities cluster that incorporated a first-year seminar at Slippery Rock University of Pennsylvania is believed to have had an
influence on the 8% increase in first- to second-year students’ retention and helped to focus the attention of the administration on retention issues (Yale, Brinjak, & Longwell, 2004).

According to Moore (2000), students in learning communities tended to earn more credit hours than their comparison groups and tended to enroll in subsequent semester at higher rates. Klein (2000) reported that students in the Chapman Learning Community at Bowling Green State University had a retention rate at least 10 percent above the university average in the program’s first three years. Henscheid (2004) found that from 1998 to 2001, students participating in the Freshman Learning Communities (FLC) Program at Appalachian State University were retained from their first to sophomore year at higher rates than students who did not participate in the program. She also found that the FLC students achieved a higher GPA at the end of their first semester than non-FLC cohorts although there was little difference in the GPAs by the end of the first year.

A longitudinal retention study at the University of Missouri-Columbia found that freshman students in the FIG cohort earned a higher mean grade point average than nonparticipants and demonstrated a 12 percent higher retention rate for FIG members after three years (Student Life Studies Abstract, 1996). Lardner (2003) reviewed the learning communities that focused on science, math and engineering for students of color at the University of Texas in El Paso (UTEP) and found in 1997 that the retention rate for students in the learning communities was 77% compared with an overall retention rate of 68%.
There are very few studies that have examined the long term effect of learning communities (Price, 2005). Using logistic regression to control for the entering academic ability, ethnicity, gender, initial academic major, and parental income of entering first-time college students, Beckett (2006) found that students at a public, residential institution in the Midwest who participated in a FIG were more likely to earn a baccalaureate degree and graduate within four years than non-FIG students. Furthermore, the effect size associated with FIG participation was significantly greater for lower income and lower ability students compared to the general population leaving Beckett to suggest that institutions would be well-served to create similar learning environments for students at-risk of academic failure. A freshman learning communities program at Iowa State University found that 41% of the students who participated in the program graduated by the fourth year compared to only 25% of the comparison group for the 1998 cohort (Taylor et al., 2003).

There have been some studies conducted on learning communities for students enrolled in developmental education programs. Engstrom & Tinto (2008) carried out a systematic, multi-institutional, longitudinal four year study of the impact of learning communities on academically underprepared predominantly low-income students who were enrolled in 13 two-year and six four-year colleges in California, Florida, Massachusetts, Maryland, New Jersey, New York, North Carolina, Pennsylvania, Tennessee, Texas, and Washington. They sampled all students in the learning community classrooms and a comparison group of students who took the same subjects and were as academically similar to the learning community students as possible and
found that the average difference in persistence between learning community and comparison group students in the four-year institutions was nearly 10 percent, and in the two-year colleges it was slightly more than five percent. A study of 2002-03 enrollment data found that 10 percent more of the students who participated in the Academic Improvement for Success program (AIM) at the Metropolitan Community College in Nebraska successfully completed developmental English and reading courses than those taking the same courses outside of the learning community and had higher retention rates and GPAs (Raftery, 2005). However, 7 percent fewer AIM students were able to successfully complete the developmental math course than non-AIM students. The AIM students persisted for an average of five quarters, with a 90 percent retention rate after one quarter and 74 percent retention rate after an academic year while the students in regular developmental English had an 81 percent retention rate for one quarter, and a 65 percent retention rate for the academic year. McCabe & Day (1998) reported that the use of learning communities resulted in a significant increase in students’ persistence in developmental English and reading courses.

*Research that Repudiates the Efficacy of Learning Communities*

Some studies do not support the positive benefits of a learning community. Humphrey (2004) did not find a positive relationship between implementing a learning community and benefits for students, but felt one possible explanation could be found in the degree or effectiveness of the learning community implementation and argued against simply implementing learning communities without careful consideration of additional factors.
In a study at Temple University, Levine & Tompkins (1996) found retention rates in the control group were as high as those for FIG learning communities in their first semester of college, although learning community students did earn significantly higher grades. In a study examining freshmen at-risk of academic failure who majored in business, Potts & Schultz (2008) found no statistically significant differences in mean GPA, credits earned, and retention rates between the freshman seminar learning communities students and the no-treatment control group. Some students complained about the heavy workload required in learning communities, registration issues, and that the collaborative nature of learning communities was challenging for shy students while some faculty complained about the heavy workload (Golde & Pribbenow, 2000; MacGregor, 2003; Minkler, 2002). Talburt & Boyles (2005) voiced concerns that learning communities can provide too much “hand holding”, and Dillon (2003) and Jaffee (2007) reported that learning communities can promote and reinforce a “secondary school” mentality. Browne & Minnick (2005) expressed concern that there is too much emphasis on social development rather than intellectual development.

It is also important to note that while there are many benefits that can result from learning communities, the actual management of the programs can be very complex and demanding, and successful learning communities require a high level of faculty endorsement along with a broad base of support from administrators, academic advisors, and registration personnel (MacGregor, 1994; Moore, 2000, Talburt & Boyles, 2005). Tinto (2005b) cautioned that a real problem is learning communities are often considered the work of Student Affairs and not that of the faculty, and as a result, programs continue
to sit at the margins of academic life. He also pointed out that sometimes good programs are not fully implemented or not implemented correctly, and this is one of the hurdles that confront the learning community movement because too many institutions stop at co-registration and do not pursue the pedagogical and curriculum changes that true learning communities require.

Questions have also been raised about some of the research conducted on learning communities, and there are several limitations within the literature that are important to highlight. Much of the research is anecdotal accounts (Talburt & Boyles, 2005), and Gabelnick et al. (1990) reported that large-scale evaluation studies on learning communities are rare because the resources required to collect and analyze data to measure achievement, retention, and intellectual development are lacking. Beckett (2006) warned that while some evidence indicates learning communities can be designed to assist students at-risk of academic failure, many of the quantitative studies that have been published have simply focused on differences in persistence and mean grade point averages between FIG participants and non-participants without accounting for important demographic and pre-college attributes such as entering academic ability, gender, ethnicity, academic major, or parental income, and very few studies have explored the issue of degree attainment. Bailey & Alfonso (2005) stated that while there is a tremendous amount of material on learning communities, much of it is difficult to obtain since the majority of studies are unpublished single-institution assessments. Also, some studies used quantitative measures, but omitted a comparison group, either a control
group or a matched sample, and the validity of the authors' conclusions could be questioned.

**Summary**

Learning communities are becoming more common on college campuses, and there is research on learning communities and their impact on student success, but it tends to address general collegiate populations and not specific populations such as students at-risk of academic failure (Engstrom, 2008; Moore, 2000). Also, in recent years, due to limited institutional resources, many have begun to question the viability of learning communities. "With an increasingly complex student population (particularly at public institutions) and fewer resources being allocated to adequately serve students, higher education institutions are in need of institutional specific research to determine which intervention is most effective at increasing the quality of teaching and learning" (Chonko, 1999, p. 16). Beckett (2006) emphasized that leaders in higher education need to more rigorously scrutinize the benefits of learning communities before touting them as an answer to problems in undergraduate education, and there is a particular need to examine the effect of learning communities on persistence towards graduation. It is important to assess learning community students' achievement in order to improve practice, prove the efficacy of learning communities, and strengthen theory (MacGregor, 1999; Taylor, Moore, MacGregor, & Lindblad, 2003). It is especially important for assessments to be longitudinal in order to truly assess the long-term impact of learning communities (Taylor et al., 2003). This is particularly true of learning communities for students at-risk of academic failure.
CHAPTER III

Methodology

Background

The creation of a learning communities program began at Middle Tennessee State University (MTSU) in fall 1999. Linked courses were formed, and cohorts of approximately 25 students were registered for two classes together. The goal of the program was to increase the retention rate and semester GPAs of first time freshmen students at the university.

Normally, LC at MTSU consisted of two courses that were simply linked and shared a common cohort of students. However, the goal of the MTSU program continues to be to have all LC instructors collaborating and interacting with each other and with the students as well as students interacting with each other both inside and outside of the traditional classroom setting with the hopes of increasing student academic success and retention, increasing student engagement and motivation, increasing student intellectual development, and fostering better communication and connections. These factors are important for all students, but particularly for students who are at-risk of academic failure.

Because of staffing changes, poor record keeping, and a lack of program coordination, the data collected for 1999 through 2002 was sketchy at best. No systematic or organized collection of data occurred. In order to further develop and build support for the program, evidence of increased retention and GPAs, particularly
for beginning freshmen, needed to be demonstrated. In fall 2003, this researcher began
to collect GPA and retention information for the LC.

*Treatment*

In fall 2004, with support from the Vice President of Student Affairs, money was
provided for the further development of the program, and two sections of Intermediate
Algebra were linked with two sections of University Seminar to form on a trial basis two
Learning Communities (LC) for students at-risk of academic failure who were required to
take developmental studies math based on their ACT math sub-score. University
Seminar courses are three credit hour classes which are designed to assist students in
making the transition to college life; to enhance academic skills; to provide growth
through self-awareness; and to increase student success both in college and after college
graduation (MTSU, n.d.c).

The instructors of the two fall 2004 Intermediate Algebra/University Seminar LC
agreed to collaborate and work together and, with financial support, also added a social
component to their program. They agreed to provide tutoring, utilize collaborative
learning instruction, and provide out of class social activities to foster the academic
success and retention of the students enrolled in the Intermediate Algebra/University
Seminar LC. Tutoring sessions for the Intermediate Algebra classes were held
throughout the semester during specified class periods in their linked University Seminar
classes. One of the LC met twice at the respective instructors’ homes to share a meal and
socialize while the other had a pizza party and met for coffee outside of class twice.
Since fall 2005, there have been two Intermediate Algebra/University Seminar LC for
each fall semester, but due to no financial support and faculty/staff changes, the LC are simply linked with a common cohort of students and do not include the collaboration of the instructors or any out of class activities.

*Impetus for the Study*

The TBR’s current initiative to redesign its Developmental Studies Programs renewed interest in learning communities for students at-risk of academic failure. Because the fall 2004 Intermediate Algebra/University Seminar LC included some components to function as a “true” learning community rather than just simply being linked with a common cohort of students, assessing them provided initial information to the TBR about the year-to-year retention rates, year-to-year cumulative GPAs, and year-to-year earned cumulative hours of students at-risk of academic failure at one of its four-year institutions to determine the effectiveness of such programs. The assessment of the fall 2005 Intermediate Algebra/University Seminar LC also provided information on the LC approach with two linked courses and a common cohort of students (but no collaboration between instructors or social component) versus stand alone courses for students at-risk of academic failure. Therefore, the purpose of this study was to evaluate the effects of Learning Communities (LC) at MTSU on year-to-year retention rates, year-to-year cumulative GPAs, and year-to-year earned cumulative hours of students in developmental studies with ACT sub-scores of 17 or 18 in math.

*Research Design*

This research study had a causal-comparative research design. Ex-post facto data was used to examine year-to-year retention rates, year-to-year cumulative GPAs, and
year-to-year earned cumulative hours. In order to closely examine the treatment effect of LC, the researcher examined the educational records of 261 first time freshmen enrolled in University Seminar at Middle Tennessee State University for the fall 2004 and fall 2005 semesters to determine if there were differences among these three groups of students for each semester (see Figure 1):

- Group (LC) - first time freshmen enrolled in the Intermediate Algebra/University Seminar LC

- Group 2 (Non-LC) - first time freshmen enrolled in traditional stand alone Intermediate Algebra and University Seminar classes, and

- Group 3 (REG) - first time freshmen enrolled in University Seminar who were not required to take Intermediate Algebra, but had a Math ACT sub-score of 19

Figure 1. Fall 2004 and Fall 2005 Groups
The year-to-year retention rates, year-to-year cumulative GPAs, and year-to-year earned cumulative hours for the fall 2004 LC and the fall 2005 LC were also examined to see if differences existed between the fall 2004 LC with the social and collaborative components versus the fall 2005 LC which was simply linked and contained no social or collaborative components.

Population

Middle Tennessee State University (MTSU) is a public institution of higher learning which is located in Murfreesboro, TN. As a comprehensive university, MTSU offers a range of undergraduate programs and selected graduate programs. MTSU’s undergraduate student population for fall 2004 was 20,288 with a total of 3143 first time freshmen, and the undergraduate student population for fall 2005 was 20,389 with a total of 3208 first time freshmen (Middle Tennessee State University, n.d.b). There were 1315 first time freshmen enrolled in the University Seminar course for fall 2004, and there were 1279 first time freshmen enrolled in the course for fall 2005. For fall 2004, there were two hundred and seven (16%) of the first time freshmen enrolled in Intermediate Algebra with 42 of the students enrolled in LC sections. For fall 2005, there were two hundred and fifteen (17%) of the first time freshmen enrolled in Intermediate Algebra with 45 of the students enrolled in LC sections. There were 173 (13%) first time freshmen enrolled in University Seminar who had a Math ACT sub-score of 19 in fall 2004, and there were 159 (12%) for fall 2005.
Sample

The fall 2004 cohort included the 42 first time freshmen who were enrolled in the two Intermediate Algebra/University Seminar LC (a linked DSPM0850-L01 course/UNIV1010-L04 course and a linked DSPM0850-L02 course/UNIV1010-L06 course with 21 students in each link), 42 first time freshmen who were enrolled in traditional Intermediate Algebra and University Seminar classes (non-LC), and 42 “regular” first time freshmen enrolled in University Seminar with a Math ACT sub-score of 19 who would have been placed into Intermediate Algebra and classified as at-risk if their Math ACT sub-score was one point lower (REG). Only traditional age students (age 23 or younger) were included in the sample. A matching procedure was used to control for the gender and ethnicity of the sample (N=126).

Of the 42 LC students, 17 were male and 25 were female. The ethnicity disaggregation was as follows: 30 White, 9 African American, 1 Hispanic, 1 American Indian, and 1 Asian or Pacific Islander. Of the 156 Non-LC students, 58 were male and 98 were female. The ethnicity disaggregation was as follows: 123 White, 22 Black, 4 Hispanic, 1 American Indian, 3 Asian or Pacific Islander, 1 Alaskan Native, and 2 Not Specified. Of the 166 REG students, 71 were male and 95 were female. The ethnicity disaggregation was as follows: 144 White, 17 African American, 2 Hispanic, and 3 Asian or Pacific Islander. In order to have the same number of students in each group (42), a matching procedure was used where students from the Non-LC group and the REG group were randomly selected for each category (Male White, Male African American, Male Hispanic, Male American Indian, Male Asian or Pacific Islander, Male
Alaskan Native, Female White, Female African American, Female Hispanic, Female American Indian, and Female Asian or Pacific Islander). There was no Male American Indian in the REG group so a perfect match on ethnicity was not possible. Because of this factor and also the low numbers for the Hispanic (6), American Indian (1), Asian or Pacific Islander (6), and Alaskan Native (1) populations in the Non-LC (156 total) and REG (166 total) groups, the following categories were used: Male White, Male African American, Male Other, Female White, Female African American, and Female Other.

The fall 2005 cohort included the 45 first time freshmen who were enrolled in the two Intermediate Algebra/University Seminar LC (a linked DSPM0850-L01 course/UNIV1010-L06 course and a linked DSPM0850-L02 course/UNIV1010-L07 course with 23 students in one link and 22 students in one link), 45 first time freshmen who were enrolled in traditional Intermediate Algebra and University Seminar classes (non-LC), and 45 “regular” first time freshmen enrolled in University Seminar with a Math ACT sub-score of 19 who would have been placed into Intermediate Algebra and classified as at-risk if their Math ACT sub-score was one point lower (REG). Only traditional age students (age 23 or younger) were included in the sample. A matching procedure was used to control for the gender and ethnicity of the sample (N=135).

Of the 45 LC students, 14 were male and 31 were female. The ethnicity disaggregation was as follows: 36 White, 8 African American, and 1 Asian or Pacific Islander. Of the 179 Non-LC students, 69 were male and 110 were female. The ethnicity disaggregation was as follows: 151 White, 20 Black, 4 Hispanic, 1 American Indian, and 3 Asian or Pacific Islander. Of the 128 REG students, 59 were male and 69 were
female. The ethnicity disaggregation was as follows: 110 White, 12 African American, 2 Hispanic, 2 Asian or Pacific Islander, 1 Alaskan Native, and 1 American Indian. In order to have the same number of students in each group (45), a matching procedure was used where students from the Non-LC group and the REG group were randomly selected for each category (Male White, Male African American, Male Hispanic, Male American Indian, Male Asian or Pacific Islander, Male Alaskan Native, Female White, Female African American, Female Hispanic, Female American Indian, and Female Asian or Pacific Islander. There was no Female Asian or Pacific Islander in the REG group so a perfect match on ethnicity was not possible. Because of this factor and also the low numbers for the Hispanic (6), American Indian (2), Asian or Pacific Islander (5), and Alaskan Native (1) populations in the Non-LC (179 total) and REG (128 total) groups, the following categories were used: Male White, Male African American, Male Other, Female White, Female African American, and Female Other.

Comparisons were also made between the fall 2004 LC (42 students) and the fall 2005 LC (45 students). Although the age of the students was traditional college age (23 years old or younger) for both groups, a matching procedure could not be used to control for gender and ethnicity due to sample sizes. In the fall 2004 LC, 17 (41%) were male and 25 (59%) were female while there were 14 (31%) males and 31 (68%) females in the fall 2005 LC. In the fall 2004 LC, there 30 (72%) White, 9 (21%) African American, 1 (2%) Hispanic, 1 (2%) American Indian, and 1 (2%) Asian or Pacific Islander while there were 36 (80%) White, 8 (17%) African American, and 1 (2%) Asian or Pacific Islander in the fall 2005 LC. Because there was not a perfect match for ethnicity or gender and
also because of the low numbers for the Hispanic, American Indian, and Asian or Pacific Islander populations, the following categories were used for gender and ethnicity categories: Male White, Male African American, Male Other, Female White, Female African American, and Female Other. Comparisons of the 2004 LC and 2005 LC by gender and ethnicity are provided in Table 1.

Table 1

*Distribution of 2004 LC and 2005 LC by Gender & Ethnicity*

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ethnicity</th>
<th>2004 LC (N = 42) Number &amp; Percent</th>
<th>2005 LC (N = 45) Number &amp; Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>White</td>
<td>10 (24%)</td>
<td>12 (27%)</td>
</tr>
<tr>
<td></td>
<td>African American</td>
<td>5 (12%)</td>
<td>2 (4%)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>2 (5%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Female</td>
<td>White</td>
<td>20 (48%)</td>
<td>24 (53%)</td>
</tr>
<tr>
<td></td>
<td>African American</td>
<td>4 (9%)</td>
<td>6 (13%)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>1 (2%)</td>
<td>1 (2%)</td>
</tr>
</tbody>
</table>

*Data Collection Procedures*

The data were gathered from MTSU’s student information system (BANNER) and then loaded into an Excel spreadsheet. Year-to-year retention rates were entered for 2004 fall to 2005 fall (fall 2004 cohort only), 2005 fall to 2006 fall, 2006 fall to 2007 fall, and 2007 fall to 2008 fall. Year-to-year cumulative GPAs were entered for
2005 spring (fall 2004 cohort only), 2006 spring, 2007 spring, 2008 spring, and 2009 spring. Year-to-year earned cumulative hours were entered for 2005 spring (fall 2004 cohort only), 2006 spring, 2007 spring, 2008 spring, and 2009 spring. Other variables entered were the student M number (identification number), semester (fall 2004 or fall 2005), class (LC, Non-LC, and REG), gender, ethnicity, and ACT Math sub-score as shown in the sample in Appendix A.

An application for Tennessee State University’s Institutional Review Board (IRB) was submitted and received approval to conduct this study (Appendix B). Permission from the researcher’s department chair to collect, examine, and compile student data was also obtained (Appendix C). The collection of student data was conducted by the researcher only to ensure student confidentiality.

*Variables Used in Analysis*

Retention rate – a dependent continuous variable entered as an integer. A 2 was entered if the student returned for the following year or graduated, and a 1 was entered if the student did not return for the following year.


Learning community – an independent nominal variable entered as a category. LC was entered for students enrolled in the Intermediate Algebra/University Seminar learning communities, Non-LC was entered for students enrolled in non-LC sections of
Intermediate Algebra and University Seminar, and REG was entered for students with an ACT Math sub-score of 19 who are not required to take Intermediate Algebra.

*Other Variables in the Data Set*

Entering semester – a nominal variable entered as a category. Fall 2004 was entered for the first time freshman entering fall 2004, and Fall 2005 was entered for the first time freshmen entering fall 2005.

Student number – an informative variable entered as a string. The student’s M number was used to ensure confidentiality.

Gender – a nominal variable entered as a category. The student’s gender (M or F) was entered.

Ethnic origin – a nominal variable entered as a category. The student’s ethnic origin (White, African American, Other) was entered.

Math ACT sub-score – a continuous variable entered as a real variable. The student’s highest Math ACT sub-score which was used for university admission purposes was entered.

*Null Hypotheses*

The following null hypotheses were tested:

H_01: There is no statistically significant difference among the year-to-year retention rates of the first time freshmen enrolled in the Intermediate Algebra/University Seminar LC, the first time freshmen enrolled in the non-LC sections of Intermediate Algebra and University Seminar, and the first time freshmen enrolled in University Seminar
with an ACT Math sub-score of 19 who were not required to take Intermediate Algebra for the fall 2004 semester.

\( H_02: \) There is no statistically significant difference among the year-to-year cumulative GPAs of the first time freshmen enrolled in the Intermediate Algebra/University Seminar LC, the first time freshmen enrolled in the non-LC sections of Intermediate Algebra and University Seminar, and the first time freshmen enrolled in University Seminar with an ACT Math sub-score of 19 who were not required to take Intermediate Algebra for the fall 2004 semester.

\( H_03: \) There is no statistically significant difference among the earned cumulative hours of the first time freshmen enrolled in the Intermediate Algebra/University Seminar LC, the first time freshmen enrolled in the non-LC sections of Intermediate Algebra and University Seminar, and the first time freshmen enrolled in University Seminar with an ACT Math sub-score of 19 who were not required to take Intermediate Algebra for the fall 2004 semester.

\( H_04: \) There is no statistically significant difference among the year-to-year retention rates of the first time freshmen enrolled in the Intermediate Algebra/University Seminar LC, the first time freshmen enrolled in the non-LC sections of Intermediate Algebra and University Seminar, and the first time freshmen enrolled in University Seminar with an ACT Math sub-score of 19 who were not required to take Intermediate Algebra for the fall 2005 semester.

\( H_05: \) There is no statistically significant difference among the year-to-year cumulative GPAs of the first time freshmen enrolled in the Intermediate Algebra/University
Seminar LC, the first time freshmen enrolled in the non-LC sections of Intermediate Algebra and University Seminar, and the first time freshmen enrolled in University Seminar with an ACT Math sub-score of 19 who were not required to take Intermediate Algebra for the fall 2005 semester.

$H_06$: There is no statistically significant difference among the year-to-year earned cumulative hours of the first time freshmen enrolled in the Intermediate Algebra/University Seminar LC, the first time freshmen enrolled in the non-LC sections of Intermediate Algebra and University Seminar, and the first time freshmen enrolled in University Seminar with an ACT Math sub-score of 19 who were not required to take Intermediate Algebra for the fall 2005 semester.

$H_07$: There is no statistically significant difference between the year-to-year retention rates of the first time freshmen enrolled in the fall 2004 Intermediate Algebra/University Seminar LC and the first time freshmen enrolled in the fall 2005 Intermediate Algebra/University Seminar LC.

$H_08$: There is no statistically significant difference between the year-to-year cumulative GPAs of the first time freshmen enrolled in the fall 2004 Intermediate Algebra/University Seminar LC and the first time freshmen enrolled in the fall 2005 Intermediate Algebra/University Seminar LC.

$H_09$: There is no statistically significant difference between the year-to-year earned cumulative hours of the first time freshmen enrolled in the fall 2004 Intermediate Algebra/University Seminar LC and the first time freshmen enrolled in the fall 2005 Intermediate Algebra/University Seminar LC.
Statement on Data Analysis

Descriptive and inferential statistics were run using the StatView software package. Descriptive statistics were analyzed to determine if the assumptions of normal distributions and equal variances were resolved. Frequencies, percentages, means, and standard deviations were generated to provide descriptive data and the F test was used to determine if variances could be equal.

For \( H_01 \) and \( H_04 \), the nonparametric Kruskal-Wallis with an alpha level of .10 was used to analyze the data for the first to second year retention rates because the skewness and kurtosis did not fall within the acceptable range for parametric testing. ANOVAs with an alpha level of .05 were used to analyze the data for the second to third year, third to fourth year, and fourth to fifth year retention rates. For \( H_02 \), ANOVAs with an alpha level of .05 were used to analyze the data for the year-to-year cumulative GPAs. For \( H_03 \), ANOVAs with an alpha level of .05 were used to analyze the data for the year-to-year earned cumulative hours for the fall 2004 cohort. For \( H_05 \), ANOVAs with an alpha level of .05 were used to analyze the data for year-to-year cumulative GPAs. For \( H_06 \), ANOVAs with an alpha level of .05 were used to analyze the data for year-to-year earned cumulative hours. For \( H_07 \), \( H_08 \), and \( H_09 \), unpaired t-tests with an alpha level of .05 were used to analyze year-to-year retention rates, year-to-year cumulative GPAs, and year-to-year earned cumulative hours.

Delimitations

Only data for students who were continuously enrolled were examined for the study. Students who dropped out or stopped out and later returned were not included.
CHAPTER IV

Results

Introduction

The purpose of this study was to evaluate the effects of Learning Communities (LC) at Middle Tennessee State University (MTSU) on retention rates, cumulative GPAs, and earned cumulative hours of students with ACT sub-scores of 17 or 18 in math who were enrolled in the developmental studies program. These students are considered at-risk of academic failure due to their math placement which is based on their ACT math sub-score. The study compared three groups of students: students enrolled in the Intermediate Algebra/University Seminar LC, students enrolled in traditional Intermediate Algebra and University Seminar classes (non-LC), and “regular” students with a Math ACT sub-score of 19 who would have been placed into Intermediate Algebra and classified as at-risk if their Math ACT sub-score was one point lower (REG). All of the students were first time freshmen who were enrolled in the University Seminar course which is designed to assist students in making the transition to college life. Semesters examined were the fall 2004 semester and the fall 2005 semester.

The initial student population of first time freshmen enrolled in the University Seminar course (1315 for fall 2004 and 1279 for fall 2005) was provided by MTSU’s Records Office (see Appendix D). The sample consisted of 261 students (126 for the fall 2004 semester and 135 students for the fall 2005 semester). Retention, GPA, and earned cumulative hours information for the sample was retrieved from MTSU’s student
information system (BANNER), and descriptive and inferential statistics were run using the StatView software package.

Demographics

For the fall 2004 semester, there were 126 students (42 students in each of the three groups – LC, Non-LC, and REG) included in the study. All the students were classified as traditional students (age 23 or younger). A matching procedure was used to control for gender and ethnicity. Each group had 17 males and 25 females. The ethnicity breakdown for each group was 30 White, 9 African American, and 3 Other (see Table 2).

Table 2

*Distribution of Fall 2004 Sample by Gender & Ethnicity (N=126)*

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ethnicity</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>White</td>
<td>30</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>African American</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Female</td>
<td>White</td>
<td>60</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>African American</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

For the fall 2005 semester, there were 135 students (45 students in each of the three groups – LC, Non-LC, and REG) included in the study. All the students were classified as traditional students (age 23 or younger). A matching procedure was used to
control for gender and ethnicity. Each group had 14 males and 31 females. The ethnicity breakdown was 36 White, 8 African American, and 1 Other (see Table 3).

Table 3

*Distribution of Fall 2005 Sample by Gender & Ethnicity (N=135)*

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ethnicity</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>White</td>
<td>36</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>African American</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Female</td>
<td>White</td>
<td>72</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>African American</td>
<td>18</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

*Descriptive Statistics for Year-to-Year Retention Rates of the Fall 2004 Cohort*

Retention rates were examined for fall 2004 through fall 2008. The first to second year retention rate (fall 2004 to fall 2005) was 69% for LC, 81% for Non-LC, and 69% for REG. The second to third year retention rate (fall 2005 to fall 2006) was 45% for LC, 64% for Non-LC, and 64% for REG. The third to fourth year retention rate (fall 2006 to fall 2007) was 38% for LC, 55% for Non-LC, and 60% for REG. The fourth to fifth year retention rate (fall 2007 to fall 2008) was 31% for LC, 50% for Non-LC, and 60% for REG. The mean was calculated using a 1 if the student did not return the next year and a 2 if the student returned the next year or graduated.
Table 4 presents the frequencies, percents, means and standard deviations for the year-to-year retention rates of the three groups for 2004 fall to 2005 fall, 2005 fall to 2006 fall, 2006 fall to 2007 fall, and 2007 fall to 2008 fall.

Table 4

*Retention Rates for the Fall 2004 Cohort (N=126, 42 per group)*

<table>
<thead>
<tr>
<th>Year to Year</th>
<th>Group</th>
<th>N &amp; %</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004F to 2005F</td>
<td>LC</td>
<td>29 – 69%</td>
<td>1.69</td>
<td>.468</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>34 – 81%</td>
<td>1.81</td>
<td>.397</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>29 – 69%</td>
<td>1.69</td>
<td>.468</td>
</tr>
<tr>
<td>2005F to 2006F</td>
<td>LC</td>
<td>19 – 45%</td>
<td>1.45</td>
<td>.504</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>27 – 64%</td>
<td>1.64</td>
<td>.485</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>27 – 64%</td>
<td>1.64</td>
<td>.485</td>
</tr>
<tr>
<td>2006F to 2007F</td>
<td>LC</td>
<td>16 – 38%</td>
<td>1.38</td>
<td>.492</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>23 – 55%</td>
<td>1.55</td>
<td>.504</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>25 – 60%</td>
<td>1.60</td>
<td>.497</td>
</tr>
<tr>
<td>2007F to 2008F</td>
<td>LC</td>
<td>13 – 31%</td>
<td>1.31</td>
<td>.468</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>21 – 50%</td>
<td>1.50</td>
<td>.506</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>25 – 60%</td>
<td>1.60</td>
<td>.497</td>
</tr>
</tbody>
</table>
Descriptive Statistics for Year-to-Year Cumulative GPAs - Fall 2004

Year-to-year cumulative GPAs were examined for spring 2005 through spring 2009. Table 5 presents the frequencies, means, standard deviations, and range for the cumulative GPAs of the three groups for spring 2005, 2006, 2007, 2008, and 2009.

Table 5

Cumulative GPAs for the Fall 2004 Cohort

<table>
<thead>
<tr>
<th>Year</th>
<th>Group</th>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Spring 2005)</td>
<td>LC</td>
<td>38</td>
<td>2.37</td>
<td>.847</td>
<td>0.00-3.46</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>38</td>
<td>2.75</td>
<td>.554</td>
<td>1.30-3.60</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>39</td>
<td>2.50</td>
<td>.929</td>
<td>0.00-3.89</td>
</tr>
<tr>
<td>2 (Spring 2006)</td>
<td>LC</td>
<td>24</td>
<td>2.50</td>
<td>.651</td>
<td>.98-3.35</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>28</td>
<td>2.79</td>
<td>.554</td>
<td>1.25-3.61</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>28</td>
<td>2.84</td>
<td>.544</td>
<td>1.65-3.75</td>
</tr>
<tr>
<td>3 (Spring 2007)</td>
<td>LC</td>
<td>19</td>
<td>2.82</td>
<td>.363</td>
<td>2.04-3.33</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>25</td>
<td>2.85</td>
<td>.463</td>
<td>1.99-3.63</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>25</td>
<td>2.95</td>
<td>.447</td>
<td>2.17-3.74</td>
</tr>
<tr>
<td>4 (Spring 2008)</td>
<td>LC</td>
<td>14</td>
<td>2.79</td>
<td>.464</td>
<td>1.90-3.39</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>22</td>
<td>2.90</td>
<td>.487</td>
<td>1.67-3.69</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>25</td>
<td>2.96</td>
<td>.462</td>
<td>2.02-3.65</td>
</tr>
<tr>
<td>5 (Spring 2009)</td>
<td>LC</td>
<td>9</td>
<td>2.86</td>
<td>.490</td>
<td>1.96-3.51</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>11</td>
<td>2.85</td>
<td>.531</td>
<td>2.09-3.73</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>17</td>
<td>2.84</td>
<td>.431</td>
<td>2.16-3.52</td>
</tr>
</tbody>
</table>
The first year cumulative GPA average was 2.37 for LC, 2.75 for Non-LC, and 2.50 for REG. The second year cumulative GPA average was 2.50 for LC, 2.79 for Non-LC, and 2.84 for REG. The third year cumulative GPA average was 2.82 for LC, 2.85 for Non-LC, and 2.95 for REG. The fourth year cumulative GPA average was 2.79 for LC, 2.90 for Non-LC, and 2.96 for REG. The fifth year cumulative GPA average was 2.86 for LC, 2.85 for Non-LC, and 2.84 for REG.

Descriptive Statistics for Year-to-Year Earned Cumulative Hours
of the Fall 2004 Cohort

The first year earned cumulative hours average was 18 for LC, 20 for Non-LC, and 22 for REG. The second year earned cumulative hours average was 43 for LC, 46 for Non-LC, and 51 for REG. The third year earned cumulative hours was 72 for LC, 73 for Non-LC, and 79 for REG. The fourth year earned cumulative hours was 101 for LC, 102 for Non-LC, and 105 for REG. The fifth year earned cumulative hours was 121 for LC, 121 for Non-LC, and 129 for REG.

In order to more closely examine the earned cumulative hours of the three groups for 2005 spring, 2006 spring, 2007 spring, 2008 spring, and 2009 spring, the range of earned cumulative hours was provided in addition to the number, mean, and standard deviation. For spring 2005, the earned cumulative hours ranged from 0-33; for spring 2006, the range was 6-65; for spring 2007, the range was 39-96; for spring 2008, the range was 55-128; and for spring 2009, the earned cumulative hours ranged from 79 to 152. Table 6 presents the frequencies, means, standard deviations, and range for the
earned cumulative hours of the three groups for 2005 spring, 2006 spring, 2007 spring, 2008 spring, and 2009 spring.

Table 6

*Earned Cumulative Hours for the Fall 2004 Cohort*

<table>
<thead>
<tr>
<th>Year</th>
<th>Group</th>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Spring 2005)</td>
<td>LC</td>
<td>38</td>
<td>18</td>
<td>6.18</td>
<td>3-27</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>38</td>
<td>20</td>
<td>6.55</td>
<td>4-31</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>39</td>
<td>22</td>
<td>8.34</td>
<td>0-33</td>
</tr>
<tr>
<td>2 (Spring 2006)</td>
<td>LC</td>
<td>24</td>
<td>43</td>
<td>11.88</td>
<td>12-60</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>28</td>
<td>46</td>
<td>12.52</td>
<td>6-65</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>28</td>
<td>51</td>
<td>9.36</td>
<td>27-62</td>
</tr>
<tr>
<td>3 (Spring 2007)</td>
<td>LC</td>
<td>19</td>
<td>72</td>
<td>10.93</td>
<td>43-88</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>25</td>
<td>73</td>
<td>14.69</td>
<td>39-96</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>25</td>
<td>79</td>
<td>11.37</td>
<td>50-93</td>
</tr>
<tr>
<td>4 (Spring 2008)</td>
<td>LC</td>
<td>14</td>
<td>101</td>
<td>16.60</td>
<td>61-125</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>22</td>
<td>102</td>
<td>20.18</td>
<td>55-128</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>25</td>
<td>105</td>
<td>17.08</td>
<td>57-123</td>
</tr>
<tr>
<td>5 (Spring 2009)</td>
<td>LC</td>
<td>9</td>
<td>121</td>
<td>21.75</td>
<td>79-148</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>11</td>
<td>121</td>
<td>17.51</td>
<td>83-143</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>17</td>
<td>129</td>
<td>18.88</td>
<td>84-152</td>
</tr>
</tbody>
</table>
Descriptive Statistics for Year-to-Year Retention Rates of the Fall 2005 Cohort

Table 7 presents the frequencies, percents, means and standard deviations for the retention rates of the three groups for 2005 fall to 2006 fall, 2006 fall to 2007 fall, and 2007 fall to 2008 fall.

Table 7

Retention Rates for the Fall 2005 Cohort (N = 135, 45 per group)

<table>
<thead>
<tr>
<th>Year to Year</th>
<th>Group</th>
<th>N &amp; %</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005F to 2006F</td>
<td>LC</td>
<td>34 – 76%</td>
<td>1.76</td>
<td>.435</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>28 – 62%</td>
<td>1.62</td>
<td>.490</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>37 – 88%</td>
<td>1.82</td>
<td>.387</td>
</tr>
<tr>
<td>2006F to 2007F</td>
<td>LC</td>
<td>25 – 56%</td>
<td>1.56</td>
<td>.503</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>19 – 42%</td>
<td>1.42</td>
<td>.499</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>34 – 76%</td>
<td>1.76</td>
<td>.435</td>
</tr>
<tr>
<td>2007F to 2008F</td>
<td>LC</td>
<td>23 – 51%</td>
<td>1.51</td>
<td>.506</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>15 – 33%</td>
<td>1.33</td>
<td>.477</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>28 – 62%</td>
<td>1.62</td>
<td>.490</td>
</tr>
</tbody>
</table>

The first to second year retention rate was 76% for LC, 62% for Non-LC, and 88% for REG. The second to third year retention rate was 56% for LC, 42% for Non-LC, and 76% for REG. The third to fourth year retention rate was 51% for LC, 33% for Non-LC, and 62% for REG.
Descriptive Statistics for Year-to-Year Cumulative GPAs - Fall 2005

Table 8 presents the frequencies, means, standard deviations, and range for the cumulative GPAs of the three groups for 2006 spring, 2007 spring, 2008 spring, and 2009 spring.

Table 8

Cumulative GPAs for the Fall 2005 Cohort

<table>
<thead>
<tr>
<th>Year</th>
<th>Group</th>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Spring 2006)</td>
<td>LC</td>
<td>41</td>
<td>2.47</td>
<td>.686</td>
<td>0.67-3.88</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>39</td>
<td>2.68</td>
<td>.698</td>
<td>.88-3.79</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>41</td>
<td>2.86</td>
<td>.616</td>
<td>1.10-3.88</td>
</tr>
<tr>
<td>2 (Spring 2007)</td>
<td>LC</td>
<td>30</td>
<td>2.53</td>
<td>.587</td>
<td>1.17-3.71</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>26</td>
<td>2.73</td>
<td>.626</td>
<td>1.08-3.73</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>34</td>
<td>2.91</td>
<td>.550</td>
<td>1.60-3.89</td>
</tr>
<tr>
<td>3 (Spring 2008)</td>
<td>LC</td>
<td>23</td>
<td>2.71</td>
<td>.531</td>
<td>1.77-3.81</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>21</td>
<td>2.82</td>
<td>.589</td>
<td>1.36-3.83</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>32</td>
<td>2.83</td>
<td>.653</td>
<td>1.42-3.77</td>
</tr>
<tr>
<td>4 (Spring 2009)</td>
<td>LC</td>
<td>23</td>
<td>2.65</td>
<td>.567</td>
<td>1.82-3.86</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>16</td>
<td>3.10</td>
<td>.404</td>
<td>2.30-3.88</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>24</td>
<td>3.01</td>
<td>.466</td>
<td>2.11-3.75</td>
</tr>
</tbody>
</table>

The first year cumulative GPA average was 2.47 for LC, 2.68 for Non-LC, and 2.86 for REG. The second year cumulative GPA average was 2.53 for LC, 2.73 for Non-
LC, and 2.91 for REG. The third year cumulative GPA average was 2.71 for LC, 2.82 for Non-LC, and 2.83 for REG.

*Descriptive Statistics for Year-to-Year Earned Cumulative Hours of the Fall 2005 Cohort*

Table 9 presents the frequencies, means, standard deviations, and range for the earned cumulative hours of the three groups for 2006 spring through 2009 spring.

Table 9

*Earned Cumulative Hours for the Fall 2005 Cohort*

<table>
<thead>
<tr>
<th>Year</th>
<th>Group</th>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Spring 2006)</td>
<td>LC</td>
<td>41</td>
<td>20</td>
<td>6.24</td>
<td>3-28</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>39</td>
<td>19</td>
<td>5.63</td>
<td>6-28</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>41</td>
<td>24</td>
<td>6.13</td>
<td>8-33</td>
</tr>
<tr>
<td>2 (Spring 2007)</td>
<td>LC</td>
<td>30</td>
<td>43</td>
<td>11.59</td>
<td>12-60</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>26</td>
<td>43</td>
<td>10.26</td>
<td>18-59</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>34</td>
<td>50</td>
<td>9.14</td>
<td>33-72</td>
</tr>
<tr>
<td>3 (Spring 2008)</td>
<td>LC</td>
<td>23</td>
<td>72</td>
<td>14.99</td>
<td>40-106</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>21</td>
<td>69</td>
<td>16.35</td>
<td>38-94</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>32</td>
<td>76</td>
<td>16.33</td>
<td>40-102</td>
</tr>
<tr>
<td>4 (Spring 2009)</td>
<td>LC</td>
<td>23</td>
<td>96</td>
<td>17.50</td>
<td>59-120</td>
</tr>
<tr>
<td></td>
<td>Non-LC</td>
<td>16</td>
<td>106</td>
<td>15.59</td>
<td>81-131</td>
</tr>
<tr>
<td></td>
<td>REG</td>
<td>24</td>
<td>111</td>
<td>13.61</td>
<td>69-136</td>
</tr>
</tbody>
</table>
The first year earned cumulative hours average was 20 for LC, 19 for the Non-LC, and 24 for REG. The second year cumulative hours average was 30 for LC, 26 for Non-LC, and 34 for REG. The third year earned cumulative hours average was 23 for LC, 21 for Non-LC, and 31 for REG. The fourth year earned cumulative hours was 23 for LC, 16 for Non-LC, and 24 for REG. Ranges were provided to more closely examine the earned cumulative of the three groups.

Analysis of Null Hypotheses

This study sought to discover the statistically significant differences among the academic success of three groups as determined by year-to-year retention rates, year-to-year cumulative GPAs, and year-to-year earned cumulative hours. The three groups were: first time freshmen enrolled in the Intermediate Algebra/University Seminar LC, first time freshmen enrolled in traditional Intermediate Algebra and University Seminar classes (Non-LC), and “regular” first time freshmen enrolled in University Seminar with a Math ACT sub-score of 19 who would have been placed into Intermediate Algebra and classified as at-risk if their Math ACT sub-score was one point lower (REG). Two first time freshmen cohorts were examined: fall 2004 semester (N = 126, 42 students in each group) and fall 2005 semester (N = 145, 45 students in each group).

Nine hypotheses were included in the study. Data used for seven out of the nine hypotheses (H₀₂, H₀₃, H₀⁵, H₀₆, H₀₇, H₀₈, and H₀₉) were found to be within the acceptable range of normal distribution and equal variances and parametric testing (ANOVAs and unpaired t-tests) was used. Non-parametric testing (Kruskal-Wallis) was
used for $H_01$ and $H_04$ because there was not a normal distribution for the first to second year retention rates of both the fall 2004 cohort and the fall 2005 cohort. Data for the second to third year retention rate, the third year to fourth year retention rate, and the fourth year to fifth year retention rate were found to be within the acceptable range of normal distribution and equal variances so parametric testing (ANOVA) was used for these year-to-year retention rates. Findings for all hypotheses are presented in Tables 10 through Table 39.

The hypotheses included:

$H_01$: There is no statistically significant difference among the year-to-year retention rates of the first time freshmen enrolled in the Intermediate Algebra/University Seminar LC, the first time freshmen enrolled in the non-LC sections of Intermediate Algebra and University Seminar, and the first time freshmen enrolled in University Seminar with an ACT Math sub-score of 19 who were not required to take Intermediate Algebra for the fall 2004 semester.

Findings for the first to second year retention rate (fall 2004 to fall 2005), the second to third year retention rate (fall 2005 to fall 2006), the third to fourth year retention rate (fall 2006 to fall 2007), and the fourth to fifth year retention rate (fall 2007 to fall 2008) are reported.

For the first to second year retention rate, the skewness and kurtosis did not fall within the acceptable range for parametric testing, and the Kruskal-Wallis was utilized as a nonparametric analysis. The $p$-value of .554 was greater than the tested alpha
of .05, and therefore, there was no statistically significant difference among the first to second year retention rates of the three groups. Findings are presented in Table 10.

Table 10

Results of the Kruskal-Wallis for the First to Second Year Retention Rates of the Fall 2004 Cohort

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean Rank</th>
<th>df</th>
<th>H</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>42</td>
<td>61.000</td>
<td>2 (123)</td>
<td>1.181</td>
<td>.5540</td>
</tr>
<tr>
<td>Non-LC</td>
<td>42</td>
<td>68.500</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>42</td>
<td>61.000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For the second to third year retention rate, since all assumptions were met for parametric testing, an ANOVA was used. The p-value of .3712 was greater than the alpha of .05; therefore, there was no statistically significant difference among the second to third year retention rates of the three groups. Findings are presented in Table 11.

Table 11

Results of the ANOVA for the Second to Third Year Retention Rates of the Fall 2004 Cohort

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>42</td>
<td>1.69</td>
<td>2 (123)</td>
<td>.999</td>
<td>.3712</td>
<td>.213</td>
</tr>
<tr>
<td>Non-LC</td>
<td>42</td>
<td>1.81</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>42</td>
<td>1.69</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
For the third to fourth year retention rate, since all assumptions were met for parametric testing, an ANOVA was used. The p-value of .1263 was greater than the alpha of .05; therefore, there was no statistically significant difference among the third to fourth year retention rates of the three groups. Findings are presented in Table 12.

Table 12

Results of the ANOVA for the Third to Fourth Year Retention Rates of the Fall 2004 Cohort

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>42</td>
<td>1.452</td>
<td>2 (123)</td>
<td>2.104</td>
<td>.1263</td>
<td>.412</td>
</tr>
<tr>
<td>Non-LC</td>
<td>42</td>
<td>1.643</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>42</td>
<td>1.643</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For the fourth to fifth year retention rate, the p-value of .0277 was less than the alpha of .05; therefore, there was a statistically significant difference among the fourth to fifth year retention rates of the three groups. The data were further examined to determine where the statistically significant difference occurred among the three groups.

The post hoc Fisher's PLSD was used and determined the statistically significant difference occurred between LC and REG (p-value = .0086) with REG having a higher fourth to fifth year retention rate than LC. Findings are presented in Table 13.
Table 13

Results of the ANOVA for the Fourth to Fifth Year Retention Rates of the Fall 2004 Cohort

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>42</td>
<td>1.310</td>
<td>2 (123)</td>
<td>3.694</td>
<td>.0277*</td>
<td>.667</td>
</tr>
<tr>
<td>Non-LC</td>
<td>42</td>
<td>1.500</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>42</td>
<td>1.595</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at the .05 level.

H₀2: There is no statistically significant difference among the year-to-year cumulative GPAs of the first time freshmen enrolled in the Intermediate Algebra/University Seminar LC, the first time freshmen enrolled in the non-LC sections of Intermediate Algebra and University Seminar, and the first time freshmen enrolled in University Seminar with an ACT Math sub-score of 19 who were not required to take Intermediate Algebra for the fall 2004 semester.  

Since all assumptions were met for parametric testing, ANOVAs were used to determine if a statistical difference occurred among the three groups. Cumulative GPAs were examined for the first year (spring 2005), second year (spring 2006), third year (spring 2007), fourth year (spring 2008), and fifth year (spring 2009).

For the first year cumulative GPA, the p-value of .1086 was greater than the alpha of .05; therefore, there was no statistically significant difference among the cumulative GPA averages of the three groups. Findings are presented in Table 14.
Table 14

Results of the ANOVA for the First Year Cumulative GPAs of the Fall 2004 Cohort

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>38</td>
<td>2.37</td>
<td>2</td>
<td>2.265</td>
<td>.1086</td>
<td>.440</td>
</tr>
<tr>
<td>Non-LC</td>
<td>38</td>
<td>2.75</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>39</td>
<td>2.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For the second year cumulative GPA, the p-value of .0824 was greater than the alpha of .05; therefore there was no statistically significant difference among the cumulative GPA averages of the three groups. Findings are presented in Table 15.

Table 15

Results of the ANOVA for the Second Year Cumulative GPAs of the Fall 2004 Cohort

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>24</td>
<td>2.50</td>
<td>2</td>
<td>2.579</td>
<td>.0824</td>
<td>.489</td>
</tr>
<tr>
<td>Non-LC</td>
<td>28</td>
<td>2.79</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>28</td>
<td>2.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For the third year cumulative GPA, the p-value of .5606 was greater than the alpha of .05; therefore there was no statistically significant difference among the cumulative GPA averages of the three groups. Findings are presented in Table 16.
Table 16

Results of the ANOVA for the Third Year Cumulative GPAs of the Fall 2004 Cohort

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>19</td>
<td>2.82</td>
<td>2</td>
<td>.584</td>
<td>.5606</td>
<td>.139</td>
</tr>
<tr>
<td>Non-LC</td>
<td>25</td>
<td>2.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>25</td>
<td>2.95</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For the fourth year cumulative GPA, the p-value of .5755 was greater than the alpha of .05; therefore there was no statistically significant difference among the cumulative GPA averages of the three groups. Findings are presented in Table 17.

Table 17

Results of the ANOVA for the Fourth Year Cumulative GPAs of the Fall 2004 Cohort

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>14</td>
<td>2.79</td>
<td>2</td>
<td>.558</td>
<td>.5755</td>
<td>.135</td>
</tr>
<tr>
<td>Non-LC</td>
<td>22</td>
<td>2.90</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>25</td>
<td>2.96</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For the fifth year cumulative GPA, the p-value of .9944 was greater than the alpha level of .05; therefore there was no statistically significant difference among the cumulative GPA averages of the three groups. Findings are presented in Table 18.
Table 18

*Results of the ANOVA for the Fifth Year Cumulative GPAs of the Fall 2004 Cohort*

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>9</td>
<td>2.86</td>
<td>2</td>
<td>.006</td>
<td>.9944</td>
<td>.051</td>
</tr>
<tr>
<td>Non-LC</td>
<td>11</td>
<td>2.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>17</td>
<td>2.84</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

H₀₃: There is no statistically significant difference among the earned cumulative hours of the first time freshmen enrolled in the Intermediate Algebra/University Seminar LC, the first time freshmen enrolled in the non-LC sections of Intermediate Algebra and University Seminar, and the first time freshmen enrolled in University Seminar with an ACT Math sub-score of 19 who were not required to take Intermediate Algebra for the fall 2004 semester.

Since all assumptions were met for parametric testing, ANOVAs were used to determine if a statistical difference occurred among the three groups. Earned cumulative hours were examined for the first year (spring 2005), second year (spring 2006), third year (spring 2007), fourth year (spring 2008), and fifth year (spring 2009).

For the first year earned cumulative hours, the p-value of .1025 was greater than the alpha of .05; therefore, there was no statistically significant difference among the earned cumulative hours of the three groups. Findings are presented in Table 19.
Table 19

Results of the ANOVA for the First Year Earned Cumulative Hours of the Fall 2004 Cohort

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>37</td>
<td>18</td>
<td>2</td>
<td>2.325</td>
<td>.1025</td>
<td>.450</td>
</tr>
<tr>
<td>Non-LC</td>
<td>38</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>39</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For the second year earned cumulative hours, the p-value of .0526 was greater than the alpha of .05; therefore there was no statistically significant difference among the earned cumulative hours of the three groups. Findings are presented in Table 20.

Table 20

Results of the ANOVA for the Second Year Earned Cumulative Hours of the Fall 2004 Cohort

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>21</td>
<td>43</td>
<td>2</td>
<td>3.066</td>
<td>.0526</td>
<td>.567</td>
</tr>
<tr>
<td>Non-LC</td>
<td>28</td>
<td>46</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>28</td>
<td>51</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For the third year earned cumulative hours, the p-value of .1790 was greater than the alpha of .05; therefore there was no statistically significant difference among the earned cumulative hours of the three groups. Findings are presented in Table 21.
Table 21

Results of the ANOVA for the Third Year Earned Cumulative Hours of the Fall 2004 Cohort

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>16</td>
<td>74</td>
<td>2</td>
<td>1.768</td>
<td>.1790</td>
<td>.345</td>
</tr>
<tr>
<td>Non-LC</td>
<td>25</td>
<td>73</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>25</td>
<td>79</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For the fourth year earned cumulative hours, the p-value of .8118 was greater than the alpha of .05; therefore there was no statistically significant difference among the earned cumulative hours of the three groups. Findings are presented in Table 22.

Table 22

Results of the ANOVA for the Fourth Year Earned Cumulative Hours of the Fall 2004 Cohort

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>13</td>
<td>102</td>
<td>2</td>
<td>.209</td>
<td>.8118</td>
<td>.081</td>
</tr>
<tr>
<td>Non-LC</td>
<td>22</td>
<td>102</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>25</td>
<td>105</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For the fifth year earned cumulative hours, the p-value of .4675 was greater than the alpha level of .05; therefore there was no statistically significant difference among the earned cumulative hours of the three groups. Findings are presented in Table 23.
Table 23

Results of the ANOVA for the Fifth Year Earned Cumulative Hours of the Fall 2004 Cohort

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>8</td>
<td>121</td>
<td>2</td>
<td>.778</td>
<td>.4675</td>
<td>.166</td>
</tr>
<tr>
<td>Non-LC</td>
<td>11</td>
<td>121</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>17</td>
<td>129</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

H₀₄: There is no statistically significant difference among the year-to-year retention rates of the first time freshmen enrolled in the Intermediate Algebra/University Seminar LC, the first time freshmen enrolled in the non-LC sections of Intermediate Algebra and University Seminar, and the first time freshmen enrolled in University Seminar with an ACT Math sub-score of 19 who were not required to take Intermediate Algebra for the fall 2005 semester.

Findings for the first to second year retention rate (fall 2005 to fall 2006), the second to third year retention rate (fall 2006 to fall 2007), and the third to fourth year retention rate (fall 2007 to fall 2008) are reported.

For the first to second year retention rate, the skewness and kurtosis did not fall within the acceptable range for parametric testing, and the Kruskal-Wallis was used. The p-value of .2491 was greater than the tested alpha of .05, and therefore, there was no statistically significant difference among the first to second year retention rates of the three groups. Findings are presented in Table 24.
Table 24

*Results of the Kruskal-Wallis for the First to Second Year Retention Rates of the Fall 2005 Cohort*

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean Rank</th>
<th>df</th>
<th>H</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>45</td>
<td>69.500</td>
<td>2 (132)</td>
<td>2.779</td>
<td>.2491</td>
</tr>
<tr>
<td>Non-LC</td>
<td>45</td>
<td>60.500</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>45</td>
<td>74.000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For the second to third year retention rate, since all assumptions were met for parametric testing, an ANOVA was used. The p-value of .0051 was less than the alpha of .05; therefore, there was a statistically significant difference among the second to third year retention rates of the three groups. Findings are presented in Table 25.

Table 25

*Results of the ANOVA for the Second to Third Year Retention Rates of the Fall 2005 Cohort*

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>45</td>
<td>1.56</td>
<td>2 (132)</td>
<td>5.500</td>
<td>.0051*</td>
<td>.855</td>
</tr>
<tr>
<td>Non-LC</td>
<td>45</td>
<td>1.42</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>45</td>
<td>1.76</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at the .05 level.
The post hoc Fisher's PLSD was then used and determined that the statistically significant difference occurred between Non-LC and REG (p = .0013) with REG having a higher second to third year retention rate than Non-LC.

For the third to fourth year retention rate, since all assumptions were met for parametric testing, an ANOVA was used. The p-value of .0213 was less than the alpha of .05; therefore, there was a statistically significant difference among the third to fourth year retention rates of the three groups. Findings are presented in Table 26.

Table 26

Results of the ANOVA for the Third to Fourth Year Retention Rates of the Fall 2005 Cohort

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>45</td>
<td>1.511</td>
<td>2</td>
<td>3.964</td>
<td>.0213*</td>
<td>.703</td>
</tr>
<tr>
<td>Non-LC</td>
<td>45</td>
<td>1.333</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>45</td>
<td>1.622</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at the .05 level.

The post hoc Fisher's PLSD was then used and determined that the statistically significant difference occurred between Non-LC and REG (p = .0060) with REG having a higher third to fourth year retention rate.

H_0.5: There is no statistically significant difference among the year-to-year cumulative GPAs of the first time freshmen enrolled in the Intermediate Algebra/University
Seminar LC, the first time freshmen enrolled in the non-LC sections of Intermediate Algebra and University Seminar, and the first time freshmen enrolled in University Seminar with an ACT Math sub-score of 19 who were not required to take Intermediate Algebra for the fall 2005 semester. Since all assumptions were met for parametric testing, ANOVAs were used.

For the first year cumulative GPA, the p-value of .0355 was less than the alpha of .05; therefore, there was a statistically significant difference among the cumulative GPA averages of the three groups. Findings are presented in Table 27.

Table 27

Results of the ANOVA for the First Year Cumulative GPAs of the Fall 2005 Cohort

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>41</td>
<td>2.47</td>
<td>2</td>
<td>3.434</td>
<td>.0355*</td>
<td>.440</td>
</tr>
<tr>
<td>Non-LC</td>
<td>39</td>
<td>2.68</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>40</td>
<td>2.86</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at the .05 level.

A post hoc Fisher's PLSD was then used and determined that the statistical significance occurred between LC and REG (p = .0101) with REG having a higher first year cumulative GPA.

For the second year cumulative GPA, the p-value of .0381 was less than the alpha of .05; therefore there was a statistically significant difference among the cumulative GPA averages of the three groups. Findings are presented in Table 28. A
post hoc Fisher’s PLSD was then used and determined that the statistical significance occurred between LC and REG (p = .0108) with REG having a higher second year cumulative GPA.

Table 28

*Results of the ANOVA for the Second Year Cumulative GPAs of the Fall 2005 Cohort*

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>30</td>
<td>2.53</td>
<td>2</td>
<td>3.394</td>
<td>.0381*</td>
<td>.619</td>
</tr>
<tr>
<td>Non-LC</td>
<td>26</td>
<td>2.73</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>34</td>
<td>2.91</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at the .05 level.

For the third year cumulative GPA, the p-value of .7509 was greater than the alpha of .05; therefore there was no statistically significant difference among the cumulative GPA averages of the three groups. Findings are presented in Table 29.

Table 29

*Results of the ANOVA for the Third Year Cumulative GPAs of the Fall 2005 Cohort*

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>23</td>
<td>2.71</td>
<td>2</td>
<td>.288</td>
<td>.7509</td>
<td>.093</td>
</tr>
<tr>
<td>Non-LC</td>
<td>21</td>
<td>2.82</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>32</td>
<td>2.83</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
For the fourth year cumulative GPA, the p-value of .0095 was less than the alpha of .05; therefore there was a statistically significant difference among the cumulative GPA averages of the three groups. Findings are presented in Table 30. A post hoc Fisher’s PLSD was then used and determined that the statistical significance occurred between LC and Non-LC (p = .0060) with Non-LC having a higher fourth year cumulative GPA and between LC and REG (p = .0135) with REG having a higher fourth year cumulative GPA.

Table 30

*Results of the ANOVA for the Fourth Year Cumulative GPAs of the Fall 2005 Cohort*

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>23</td>
<td>2.65</td>
<td>2</td>
<td>5.039</td>
<td>.0095*</td>
<td>.805</td>
</tr>
<tr>
<td>Non-LC</td>
<td>16</td>
<td>3.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>24</td>
<td>3.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at the .05 level.

\( H_0:6 \): There is no statistically significant difference among the year-to-year earned cumulative hours of the first time freshmen enrolled in the Intermediate Algebra/University Seminar LC, the first time freshmen enrolled in the non-LC sections of Intermediate Algebra and University Seminar, and the first time freshmen enrolled in University Seminar with an ACT Math sub-score of 19 who were not required to take Intermediate Algebra for the fall 2005 semester. Since all assumptions were met for parametric testing, ANOVAs were used.
For the first year earned cumulative hours, the p-value of .0010 was less than the alpha of .05; therefore, there was a statistically significant difference among the earned cumulative hours of the three groups. Findings are presented in Table 31. A post hoc Fisher’s PLSD was then used and determined that the statistically significant difference occurred between LC and REG (p = .0022) with REG earning more first year cumulative hours and between Non-LC and REG (p = .0007) with REG earning more first year cumulative hours.

Table 31

*Results of the ANOVA for the First Year Earned Cumulative Hours of the Fall 2005 Cohort*

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>41</td>
<td>20</td>
<td>2</td>
<td>7.354</td>
<td>.0010*</td>
<td>.947</td>
</tr>
<tr>
<td>Non-LC</td>
<td>39</td>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>41</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at the .05 level.

For the second year earned cumulative hours, the p-value of .0189 was less than the alpha of .05; therefore there was a statistically significant difference among the earned cumulative hours of the three groups. Findings are presented in Table 32. A post hoc Fisher’s PLSD was then used and determined that the statistically significant difference occurred between LC and REG (p = .0147) with REG earning more second year cumulative hours and between Non-LC and REG (p = .0176) with REG earning more cumulative hours.
Table 32

*Results of the ANOVA for the Second Year Earned Cumulative Hours of the Fall 2005 Cohort*

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>30</td>
<td>43</td>
<td>2</td>
<td>4.156</td>
<td>.0189*</td>
<td>.720</td>
</tr>
<tr>
<td>Non-LC</td>
<td>26</td>
<td>43</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>34</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at the .05 level.*

For the third year earned cumulative hours, the p-value of .3026 was greater than the alpha of .05; therefore there was no statistically significant difference among the earned cumulative hours of the three groups. Findings are presented in Table 33.

Table 33

*Results of the ANOVA for the Third Year Earned Cumulative Hours of the Fall 2005 Cohort*

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>23</td>
<td>72</td>
<td>2</td>
<td>1.215</td>
<td>.3026</td>
<td>.248</td>
</tr>
<tr>
<td>Non-LC</td>
<td>21</td>
<td>69</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>31</td>
<td>76</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For the fourth year earned cumulative hours, the p-value of .0067 was less than the alpha of .05; therefore there was a statistically significant difference among the earned cumulative hours of the three groups. Findings are presented in Table 34. A post
hoc Fisher’s PLSD was then used and determined that the statistically significant
difference occurred between LC and Non-LC (p = .0478) with Non-LC earning more
fourth year cumulative hours and between LC and REG (p = .3735) with REG earning
more fourth year cumulative hours.

Table 34

*Results of the ANOVA for the Fourth Year Earned Cumulative Hours of the Fall 2004 Cohort*

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Mean</th>
<th>df</th>
<th>F</th>
<th>P-value</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>23</td>
<td>96</td>
<td>2</td>
<td>5.447</td>
<td>.0067*</td>
<td>.839</td>
</tr>
<tr>
<td>Non-LC</td>
<td>16</td>
<td>106</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REG</td>
<td>24</td>
<td>111</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at the .05 level.

H₀7: There is no statistically significant difference between the year-to-year retention
rates of the first time freshmen enrolled in the fall 2004 Intermediate
Algebra/University Seminar LC and the first time freshmen enrolled in the fall 2005
Intermediate Algebra/University Seminar LC.

Since all assumptions were met for parametric testing were met, unpaired t-tests
were used. For the first to second year retention rate, the p-value of 1.159 was greater
than the alpha level of .05; therefore, there was no statistically significant difference.
For the second to third year retention rate, the p-value of .3419 was greater than the
alpha level of .05; therefore there was no statistically significant difference. For the
third to fourth year retention rate, the p-value of .2273 was greater than the alpha level
of .05; therefore there was no statistically significant difference. Findings are presented in Table 35.

Table 35

*Results of the Unpaired t-tests for the Comparison of the Fall 2004 and the Fall 2005 Cohort on Year-to-Year Retention Rates*

<table>
<thead>
<tr>
<th>Year to Year</th>
<th>Mean Diff.</th>
<th>df</th>
<th>t-Value</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>First to Second</td>
<td>-.065</td>
<td>85</td>
<td>-.673</td>
<td>1.159</td>
</tr>
<tr>
<td>Second to Third</td>
<td>-.103</td>
<td>85</td>
<td>-.956</td>
<td>.3419</td>
</tr>
<tr>
<td>Third to Fourth</td>
<td>-.019</td>
<td>85</td>
<td>-1.216</td>
<td>.2273</td>
</tr>
</tbody>
</table>

H₀₈: There is no statistically significant difference between the year-to-year cumulative GPAs of the first time freshmen enrolled in the fall 2004 Intermediate Algebra/University Seminar LC and the first time freshmen enrolled in the fall 2005 Intermediate Algebra/University Seminar LC.

Since all assumptions were met for parametric testing were met, unpaired t-tests were used. For the first year cumulative GPA, the p-value of .5866 was greater than the alpha level of .05; therefore, there was no statistically significant difference. For the second year cumulative GPA, the p-value of .8591 was greater than the alpha level of .05; therefore, there was no statistically significant difference. For the third year cumulative GPA, the p-value of .4455 was greater than the alpha level of .05; therefore, there was no statistically significant difference. For the fourth year cumulative GPA,
the p-value of .4325 was greater than the alpha level of .05; therefore, there was no statistically significant difference. Findings are presented in Table 36.

Table 36

Results of the Unpaired t-tests for the Comparison of the Fall 2004 and the Fall 2005 Cohort on Cumulative GPAs

<table>
<thead>
<tr>
<th>Cumulative GPA</th>
<th>Mean Diff.</th>
<th>df</th>
<th>t-Value</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year One</td>
<td>-.094</td>
<td>77</td>
<td>-.546</td>
<td>.5866</td>
</tr>
<tr>
<td>Year Two</td>
<td>-.030</td>
<td>52</td>
<td>-.178</td>
<td>.8591</td>
</tr>
<tr>
<td>Year Three</td>
<td>.111</td>
<td>40</td>
<td>.771</td>
<td>.4455</td>
</tr>
<tr>
<td>Year Four</td>
<td>.143</td>
<td>35</td>
<td>.794</td>
<td>.4325</td>
</tr>
</tbody>
</table>

H₀₉: There is no statistically significant difference between the year-to-year earned cumulative hours of the first time freshmen enrolled in the fall 2004 Intermediate Algebra/University Seminar LC and the first time freshmen enrolled in the fall 2005 Intermediate Algebra/University Seminar LC.

Since all assumptions were met for parametric testing were met, unpaired t-tests were used. For the first year earned cumulative hours, the p-value of .3593 was greater than the alpha level of .05; therefore, there was no statistically significant difference.

For the second year earned cumulative hours, the p-value of .9731 was greater than the alpha level of .05; therefore, there was no statistically significant difference. For the third year earned cumulative hours, the p-value of .6069 was greater than the alpha level of .05; therefore, there was no statistically significant difference. For the fourth
year earned cumulative hours, the p-value of .3517 was greater than the alpha level of .05; therefore there was no statistically significant difference. Findings are presented in Table 37.

Table 37

Results of the Unpaired t-tests for the Comparison of the Fall 2004 and the Fall 2005 Cohort on Earned Cumulative Hours

<table>
<thead>
<tr>
<th>Cumulative Hours</th>
<th>Mean Diff.</th>
<th>df</th>
<th>t-Value</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year One</td>
<td>-1.299</td>
<td>76</td>
<td>-.922</td>
<td>.3593</td>
</tr>
<tr>
<td>Year Two</td>
<td>-.114</td>
<td>49</td>
<td>-.034</td>
<td>.9731</td>
</tr>
<tr>
<td>Year Three</td>
<td>2.185</td>
<td>37</td>
<td>.519</td>
<td>.6069</td>
</tr>
<tr>
<td>Year Four</td>
<td>5.702</td>
<td>34</td>
<td>.944</td>
<td>.3517</td>
</tr>
</tbody>
</table>

Additional Results

In order to further examine the long term effects of participating in a learning communities, the fall 2004 cohort and fall 2005 cohort were also examined for graduation rates. Descriptive statistics are provided in Table 38 for the fall 2004 cohort and Table 39 for the fall 2005 cohort as preliminary data. Normally there is a six year period to calculate university graduation rates, and therefore, no inferential statistics are included due to time constraints.

For the fall 2004 cohort, 11 (26%) of the LC students have graduated, 15 (36%) of the Non-LC students have graduated, and 17 (40%) of the REG students have graduated. Findings are presented in Table 38.
Table 38  *Graduation Rates – Fall 2004 Cohort (N = 126, 42 per group)*

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>11-26%</td>
</tr>
<tr>
<td>Non-LC</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>15-36%</td>
</tr>
<tr>
<td>REG</td>
<td>6</td>
<td>0</td>
<td>1</td>
<td>10</td>
<td>17-40%</td>
</tr>
</tbody>
</table>

For the fall 2005 cohort, 3 (7%) of the LC students have graduated, 3 (7%) of the Non-LC students have graduated, and 5 (11%) of the REG students have graduated.

Findings are presented in Table 39.

Table 39  *Graduation Rates – Fall 2005 Cohort (N = 135, 45 per group)*

<table>
<thead>
<tr>
<th>Groups</th>
<th>Dec. 2008</th>
<th>May 2009</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC</td>
<td>3</td>
<td></td>
<td>3-7%</td>
</tr>
<tr>
<td>Non-LC</td>
<td>3</td>
<td></td>
<td>3-7%</td>
</tr>
<tr>
<td>REG</td>
<td>1</td>
<td>4</td>
<td>5-11%</td>
</tr>
</tbody>
</table>

*Summary*

Results showed no statistically significant differences in year-to-year cumulative GPAs and year-to-year cumulative hours among the LC, Non-LC, and REG for the fall 2004 cohort. There was no statistically significant difference in the first to second year retention rate, second to third year retention rate, and the third to fourth year retention rate for the fall 2004 cohort, but there was a statistically significant difference in the
fourth to fifth year retention rate. Results showed statistically significant differences in year-to-year retention rates (second to third, third to fourth), year-to-year cumulative GPAs (first, second, and fourth) and year-to-year cumulative hours (first, second, and fourth) among the LC, Non-LC, and REG for the fall 2005 cohort. Results showed no statistically significant differences in year-to-year retention rates, year-to-year cumulative GPAs, and year-to-year cumulative hours between the fall 2004 LC and the fall 2005 LC.
CHAPTER V

Discussion

Introduction

As accountability, fiscal constraints, and public scrutiny have risen among postsecondary institutions, universities have increasingly become more concerned with examining ways monies are spent and determining what programs are most effective to increase retention and further increase student success (Smith, 2008; Engstrom, 2008). There is a particular need for systematic assessments of existing developmental education programs to see what instructional approaches are most effective (Kozeracki, 2005). The TBR is no different in this respect and is currently examining how developmental studies education is delivered in both its community colleges and four year universities in order to provide the most productive and cost effective instructional approaches for students at-risk of academic failure.

This study utilized an ex post facto research design to explore whether participating in a learning communities program had a positive impact on the achievement of college freshmen at-risk of academic failure who were placed in a developmental studies math course. The study took place at a four year university in middle Tennessee. Year-to-year retention rates, year-to-year cumulative GPAs, and year-to-year earned cumulative hours were examined for three groups in two fall cohorts (fall 2004 and fall 2005). The three groups consisted of first time freshmen enrolled in the Intermediate Algebra/University Seminar LC (LC), first time freshmen enrolled in
traditional stand alone Intermediate Algebra and University Seminar classes (Non-LC), and first time freshmen enrolled in University Seminar who were not required to take Intermediate Algebra, but had a Math ACT sub-score of 19 (REG). All the freshmen were 23 years of age or younger, and a matching procedure was used to control for gender and ethnicity of the three groups (LC, Non-LC, and REG) for each cohort. Also, the fall 2004 LC had social and collaborative components which included tutoring and out of class activities while the fall 2005 LC was simply linked and included no outside activities. This allowed for further examination of the effects of the organization of the MTSU learning communities program for students at-risk of academic failure.

Findings

Research Question #1

For the fall 2004 cohort and the fall 2005 cohort, are there differences among the year-to-year retention rates of the first time freshmen enrolled in the Intermediate Algebra/University Seminar LC, the first time freshmen enrolled in the non-LC sections of Intermediate Algebra and University Seminar, and the first time freshmen enrolled in University Seminar with an ACT Math sub-score of 19 who were not required to take Intermediate Algebra?

For the fall 2004 cohort, there were no statistically significant differences among the three groups for the first to second year retention rate, the second to third year retention rate, and the third to fourth year retention rate. There was a statistically significant difference among the three groups for the fourth to fifth year retention rate with REG having a higher retention rate than LC.
For the fall 2005 cohort, there was no statistically significant difference among the three groups for the first to second year retention rate. There was a statistically significant difference among the three groups for the second to third year retention rate with REG having a higher retention rate than Non-LC. There was a statistically significant difference among the three groups for the third to fourth year retention rate with REG having a higher retention rate than Non-LC.

Research Question #2

For the fall 2004 cohort and the fall 2005 cohort, are there differences among the year-to-year cumulative GPAs of the first time freshmen enrolled in the Intermediate Algebra/University Seminar LC, the first time freshmen enrolled in the non-LC sections of Intermediate Algebra and University Seminar, and the first time freshmen enrolled in University Seminar with an ACT Math sub-score of 19 who were not required to take Intermediate Algebra?

For the fall 2004 cohort, there was no statistically significant difference among the three groups for the first year, second year, third year, fourth year, and fifth year cumulative GPAs.

For the fall 2005 cohort, there was a statistically significant difference among the three groups for the first year cumulative GPA with REG having a higher GPA than LC. There was a statistically significant difference among the groups for the second year cumulative GPA with REG having a higher GPA than LC. There was no statistically significant difference among the three groups for the third year cumulative GPA. There
was a statistically significant difference among the three groups with Non-LC having a higher GPA than LC and REG having a higher GPA than LC.

*Research Question #3*

For the fall 2004 cohort and the fall 2005 cohort, are there differences among the year-to-year earned cumulative hours of the first time freshmen enrolled in the Intermediate Algebra/University Seminar LC, the first time freshmen enrolled in the non-LC sections of Intermediate Algebra and University Seminar, and the first time freshmen enrolled in University Seminar with an ACT Math sub-score of 19 who were not required to take Intermediate Algebra?

For the fall 2004 cohort, there was no statistically significant difference among the three groups for the first year, second year, third year, fourth year, and fifth year earned cumulative hours.

For the fall 2005 cohort, there was a statistically significant difference among the three groups for the first year earned cumulative hours with REG earning more hours than Non-LC and LC. There was a statistically significant difference among the three groups for the second year earned cumulative hours with REG earning more hours than Non-LC and LC. There was no statistically significant difference among the three groups for the third year earned cumulative hours. There was a statistically significant difference among the three groups for the fourth year earned cumulative hours with Non-LC earning more hours than LC and REG earning more hours than LC.
Research Question #4

Are there differences between the year-to-year retention rates, year-to-year cumulative GPAs, and year-to-year earned cumulative hours of the first time freshmen enrolled in the fall 2004 Intermediate Algebra/University Seminar LC and the first time freshmen enrolled in the fall 2005 Intermediate Algebra/University Seminar LC?

There were no statistically significant differences among the fall 2004 LC and the fall 2005 LC on year-to-year retention rates, year-to-year cumulative GPAs, and year-to-year earned cumulative hours.

Conclusions

Based on the findings, the learning communities approach as implemented at this one university (with or without the social and collaborative components) did not yield a statistically significant difference for students at-risk of academic failure enrolled in the developmental studies program. However, students participating in the LC did perform as well as the other groups in general. Students participating in the LC are being retained and are earning both the needed cumulative GPAs and hours to matriculate to graduation. Retaining students is as important a fiscal management issue for universities as is constantly recruiting new students to maintain enrollment levels.

When comparing the fall 2004 students who received the LC treatment with the social and collaborative components versus the fall 2005 students who received the LC treatment which included only linked courses to Non-LC and REG, it appears that the fall 2004 LC with the social and collaborative components fared better because there were more instances where REG and Non-LC performed at a statistically significant higher
level than LC for the fall 2005 cohort. The fall 2004 LC performed as well as the other two groups on year-to-year retention rates, year-to-year cumulative GPAs, and year-to-year earned cumulative hours. Although there were no statistically significant differences, this does suggest a positive effect of the LC; these students were being retained. There was only one occurrence where there was a statistically significant difference for the fall 2004 cohort; REG had a statistically significant higher fourth to fifth year retention rate than LC. For the fall 2005 cohort, there were several instances where the comparison groups (Non-LC and REG) performed at a statistically significant higher level than LC. For the year-to-year cumulative GPAs of the fall 2005 cohort, REG had a statistically significant higher first year and second year GPA than LC, and both REG and Non-LC had a statistically significant higher fourth year cumulative GPA than LC. For the year-to-year earned cumulative hours of the fall 2005 cohort, REG earned a statistically significant higher total of first year and second year earned cumulative hours than LC, and both REG and Non-LC earned a statistically significant higher total of fourth year earned cumulative hours. This suggests the social and collaborative components of the fall 2004 LC may have been helpful although there was no statistically significant difference between the fall 2004 LC and the fall 2005 LC on year-to-year retention rates, year-to-year cumulative GPAs, and year-to-year earned cumulative hours.

*Implications for Further Research*

This study contributes to the growing body of institution-specific literature and the learning communities approach for students at-risk of academic failure. However,
while the demand for institution-specific research will only continue to grow as the
demand for scarce resources increases (Chonko, 1999), one should be cautious in
generalizing the results of a single-institution study since institutional factors such as
mission, cost, size, and location have been shown to affect persistence and should be also
examined (Woodard, Mallory, & De Luca, 2001). For example, MTSU has
approximately 25,000 students, but only 3,000 students live on campus. The needs and
corns of undergraduate commuter students are often very different from residential
undergraduate students, and variables such as this should be taken into account.

Based on the findings from this study, the following recommendations for further
research are submitted:

1. There is a need for more research on learning communities which are
designed specifically for students at-risk of academic failure. Although
this study did not find the learning communities approach to be a effective
statistically significant effective instructional approach for this group of
students at-risk of academic failure, there is research to support the
positive effects of learning communities for students enrolled in
developmental studies programs (Malnarich, Dusenberry, Sloan, Swinton,
& van Slyck, 2003).

2. Questions remain. What are the key components of successful programs?
How are they organized, structured, and implemented? Tinto & Engstrom
(2008) argue that effective learning communities require more than simple
co-registration (“learning communities lite”), and the literature reiterates
that a purposefully restructured curriculum is a must for effective learning communities
(Gabelnick et al., 1990; Goodsell Love & Tokuno, 1999; Smith, 2001).

3. There is a need for research that examines learning communities which are
designed specifically for commuter students. For many commuter
students, higher education is simply another activity in their lives and not
necessarily a priority (Levine & Cureton, 1998). The idealized vision of
students living on campus has faded as more and more students commute,
simultaneously hold full time or part-time jobs, and have family
obligations (Smith et al., 2004). How can the needs of these students be
addressed in order to increase student retention and success? Are there
better ways to form connections between the commuter students and the
university?

4. There is a need for research that examines the organizational structure of
successful learning communities. Lenning & Ebbers (1999) point out that
learning communities must be intentionally developed in order to promote
and maximize active learning and must also have the support of the
president, provost, and faculty. Tinto (2005b) cautions that a real problem
is learning communities are often considered the work of Student Affairs
and not that of the faculty. The support should be built into the reward
system of tenure, release time, etc. because effective learning communities
require that the faculty spend a great deal of time planning, organizing,
coordinating, and implementing instruction that embraces active learning (Boylan, 2002; Lenning & Ebbers 1999). There has to be buy-in from the faculty or learning communities often continue to sit at the margins of academic life (Tinto, 2005b).

5. The use of qualitative methods in future studies would be extremely helpful in exploring how a successful learning communities program is implemented by the institution and experienced by students at-risk of academic failure and the faculty who teach in those learning communities. Moore (2000) emphasizes that input from the students on their experiences are invaluable in understanding the learning communities experience and how it affects student achievement. A qualitative research component would also enhance research findings by providing more specific information regarding the nature of the faculty members’ experiences and perceptions.

6. More research is needed to explore and assess instructional practices that promote active learning in addition to learning communities. Are there other approaches such as inquiry-based learning, experiential learning, supplemental instruction, self-paced instruction, service-learning, etc. that would make a greater difference for students at-risk of academic failure? In order to effectively evaluate and sustain practices that truly promote active learning, thorough assessments need to occur (MacGregor, 2003).
Implications for MTSU

Based on the findings of this study, the following recommendations are submitted for MTSU and its governing board (TBR):

1. If the learning communities program is going to be continued for students at-risk of academic failure, MTSU should consider contacting other four-year public institutions with large commuter populations who have successful learning communities programs to examine their organization and administration. What are the components? Where are the programs housed? What support is provided for the faculty? Are evaluations conducted? Are the learning communities specifically designed for students at-risk of academic failure? How is the curriculum planned and implemented?

2. Focus groups comprised of students and faculty members who participated in all learning communities options should be conducted. Input from these two groups could provide valuable information on what works, what does not, etc. in order to make improvements and better understand student and faculty expectations and experiences on the learning communities approach in general.

3. Focus groups comprised of students at-risk of academic failure should also be conducted. How can the university provide support that is valuable and needed? Are the needs of students at-risk of academic failure who are commuters, adult students, working more than 25 hours, English language learners, etc. being considered? What are the students’ perceptions? The good news is students at-risk of academic failure at MTSU are graduating (fall 2004 cohort: 11 (26%) LC,
15 (36%) Non-LC and fall 2005 cohort: 3 (7%) LC, 3 (7%) Non-LC. What are
the variables that contributed to their success?

4. MTSU and the TBR might consider examining other active learning approaches
(supplemental instruction, inquiry-based learning, experiential learning, self-
paced instruction, cooperative learning, service learning, and web-based
instruction) and their effectiveness with students in developmental studies
programs. Would one of these approaches be a more effective approach for
developmental education at the TBR’s four-year institutions?

5. There is a need to track students who drop out or stop out and later return
to the university. What are the reasons – financial, personal, etc.? For
tracking student success, perhaps the old standard of continual enrollment is
outdated. Smith et al. (2004) reminds us that more and more students often attend
two or three different institutions during the postsecondary experience.
How do we measure student success?

6. MTSU and the TBR may consider implementing programs to address the
perceptions and sensitivity of faculty, staff and personnel regarding students at-
risk of academic failure. In order to truly experience reform in higher education,
the collective body of students, faculty, staff, and administrators alike must
commit to the notion of community where learning must become a shared
experience for all constituents, including students who are at-risk of academic
failure (Chonko, 1999; Tinto, 1998a). The underlying principle of learning
communities is a core democratic belief that all students have the right to learn
and succeed (Smith et al., 2004).

Summary

Evidence produced by this study indicated that the learning communities
approach was not an effective instructional approach to make a statistically significant
difference on academic achievement for students at-risk of academic failure who were
placed in the developmental education program at MTSU. The students participating in
the learning communities did not experience higher retention rates, achieve higher grade
point averages, or earn more cumulative hours although they did perform as well as the
other two comparison groups in general. Like Humphrey (2004), this study argues
against simply implementing learning communities without careful consideration of
additional factors such as the administration, organization, and support of the learning
communities program.

Perhaps the greater question, as posed by Beckett (2006), is what obligations do
institutions have to help students at-risk of academic failure succeed? More students than
ever are coming to college, but many are simply not graduating from college. As
Engstrom & Tinto (2008) so clearly stress, access without support is not opportunity.
Institutions that admit students at-risk of academic failure have an ethical responsibility
to find and implement the most effective instructional approaches that actively engage all
students in the learning process, and thereby, promote their academic success. More
research is needed to determine if the learning communities approach could be such an
effective choice.
REFERENCES


Undergraduate Education, in cooperation with the American Association for Higher Education.


Smith, B.L. (2001, Summer/Fall). The challenge of learning communities as a growing national movement. Peer Review, 4-8.


State University. **Dissertations and Theses Full-text from Proquest.** (UMI No. 3320200).


http://learningcommons.evergreen.edu/pdf/Pages_from_ImpactLC.pdf


http://faculty.soec.syr.edu/vtinto/Files/Developmental%20Education%20Learning%20Communities.pdf


for the Freshmen Year Experience & Students in Transition.


APPENDICES
APPENDIX A

Student Data Set Sample
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APPENDIX B

Institutional Review Board
Office of the Vice President

To: Terri J. Tharp
ttharp@mtsu.edu
Dr. Carol Stice
cstice@tnstate.edu
Dept.: Teaching and Learning

From: Dr. G. Pamela Burch-Sims, Chair, Institutional Review Board

Re: Protocol #HS2009-2195

Date: Friday, May 22, 2009

The document listed below has been carefully reviewed and found to be in compliance with OPRR document title 45, Code of Federal Regulations part 46, the protection of human subjects, as amended by Federal policy, effective August 19, 1991. This project is approved as it presents minimal or no research risks to the pool of impending human subjects. Please make note, that any deviations in the administration of the protocol, accidental or otherwise should be reported to the IRB as soon as possible. The FWA for Tennessee State University is #FWA00007692, which is effective from July 16, 2007 through July 16, 2010.

"Learning Comunities for University Students At-risk of School Failure: can They make a Difference?"

This approval is valid for one year from the date indicated above. Continuation of research beyond that date requires re-approval by the Institutional Review Board.

Please contact me at 963-5661 or e-mail irb@tnstate.edu for additional information.
APPENDIX C

Permission from Department Chair
April 24, 2009

Human Subjects Review Committee
Office of Research and Sponsored Programs
Agricultural Research and Extension, Room 114
Tennessee State University
3500 John A. Merritt Blvd.
Nashville, TN 37209

To Whom It May Concern:

Terri J. Tharp has requested permission to receive already existing student data from Middle Tennessee State University for her dissertation research. Terri is currently a full time temporary instructor in the Elementary and Special Education Department, and as the Chair of the department, I am granting that permission. I have been informed of the purposes of the study and the nature of the research procedures and have signed off on Terri’s computer print-out request to our Records Office.

If you have any questions or concerns, please contact me at (615) 898-2680 or cjones@mtsu.edu.

Sincerely,

Connie Jones, Ed.D.
Chair, Elementary and Special Education
APPENDIX D

Computer Data Request Form
Name of person requesting information: Terri J. Tharp

Phone number: (615) 494-7633  Email Address: ttharp@mtsu.edu

Today's date: 5/6/2009  Previous Work Order Number: N/A

Department or organization represented: Elementary and Special Education

Information requested:
1. Selection criteria: First time Freshmen enrolled in UNIV1010 who fall into these two categories: first time freshmen who were also enrolled in Intermediate Algebra (DSPM0850) and first time freshmen who had a Math ACT subscore of 19

2. Sort order: By UNIV1010 sections

3. Output format: Excel spreadsheet - UNIV1010 Section, students' M number, sex, race, ACT Math Subscore, high school GPA, DSPM0850 status (if enrolled - section number, if not, blank)

Semester of information requested: Fall 2004 and Fall 2005

Output desired:
Lists:  Y  N  How many copies: 1
Labels:  Y  N  How many sets: __________
Address preference in rank order: ___Local ___Permanent
Purpose of printout in detail: To track GPAs, retention rates, and graduation rates of first time freshmen enrolled in UNIV1010 - RLC treatment effect

Check one:
___ Charge to MTSU account number __________

Requestor will pay MTSU directly. (Requestor should see the secretary in Information Technology Division, Cope Administration Building, Room 003, for bill.)

Distribution:
Contact when information is available. Phone: (615) 494-7633  E-mail: ttharp@mtsu.edu

Signature of Requester (Accepting responsibility for payment and proper use of information): [Signature]

Date: 4/27/09

Approval: Dean, department chair, organization faculty sponsor, etc.

Approval: Records Office (Obtained after IRB approval)

Date: 4/27/09

Note: Please check with your department head before requesting information to determine whether or not the information is on file in his/her office. Much information can be obtained from the semester enrollment statistical reports.

E-mail Notice: Mass campus e-mail distribution is only allowed by authorized campus offices.