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A STUDY OF THE EFFECTIVENESS OF LEARNING COMMUNITIES AT A
SMALL LIBERAL ARTS COLLEGE

by

Paul David Watkins

A Dissertation

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Doctor of Education

Major: Higher and Adult Education

The University of Memphis

December 2013

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Dedication

I dedicate this work to my father, Robert A. Watkins, an educator who worked in the field of education almost all of his adult life. I also dedicate this to my mother, Mary Lou Watkins, who was always supportive and proud of my ministry in education and always reminded me that dad would be proud. Lastly, I also dedicate this work to Fr. John Norton, OP, who tirelessly asked me, “When was I going back to school to pursue a doctorate?”

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First, I would like to thank Dr. Patricia Murrell, who warmly welcomed me into the doctoral program at the University of Memphis. You have been a much needed advisor, mentor, and friend who always knew just when to provide support and then prod me into action. As chair of this doctoral dissertation, you have been invaluable.

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Abstract

Watkins, Paul David. Ed.D. The University of Memphis. December 2013. A study of the effectiveness of learning communities at a small liberal arts college. Major Professor: Patricia H. Murrell, Ed.D.

The purpose of this study is to determine the effectiveness of the learning community program at a small liberal arts college on educational outcomes as measured by differences in semester GPA between learning community participants and non-participants, as well as differences between types of learning communities, time of participation in learning communities, and the effect of demographic variables and prior attainment (converted SAT scores). Data was provided by a small liberal arts college on 294 participants. The sample was composed of 152 students who participated in a learning community and 142 who did not participate in a learning community for a total sample of 294 subjects.

To address the four research questions posed in this study, the Statistical Package for the Social Sciences (SPSS) was used to conduct hierarchical multiple regressions as well as an ANCOVA. The dependent variables considered were first semester GPA, second-semester GPA, and converted SAT score for research question 1. The independent variables considered were learning community, gender, ethnicity, and converted SAT score.

The results of the study indicate no effectiveness of participation in learning communities on improving student academic performance. None of the analyses showed any type of positive influence of the learning communities at the small liberal arts college on GPA. In addition, the hierarchical multiple regressions on Fall GPA and Spring GPA

both showed that participation in a learning community indicated lower GPA. This result was more pronounced in the fall than in the spring.

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Chapter 1

Introduction

This dissertation reports a quantitative study of learning communities and semester grade point average (GPA) at a small liberal arts college in the southeastern United States, called Study College. It compares the semester GPA data of learning community participants and non-participants to determine whether there are any differences between the two groups. The study examines the learning community participants to see whether there are significant differences in academic success (semester GPA) controlling for: (a) gender and (b) ethnicity. In addition, the study examines differences in academic success (semester GPA) by type of learning community, as well as differences in academic success (semester GPA) by time of learning community participation. The first chapter presents the background of the study, states the problem, and offers the purpose statement and research questions. The chapter goes on to provide the significance, theoretical framework, assumptions, limitations, delimitations, definitions, and concludes with an overview of the study.

Background of the Study

Learning communities can be found at over 500 colleges and universities, all with the aim of improving learning (Smith, Macgregor, Matthews, & Gabelnick, 2004). According to Upcraft, Gardner, and Barefoot (2005), learning communities are in place at 37 % of four-year and 23 % of two-year institutions. Learning communities can come in many forms and be either residential or non-residential (Stassen, 2003). Lenning and Ebbers (1999) identify four forms of learning communities: 1) curricular learning communities, which are composed of cohorts of students co-enrolled in two or three linked courses that share a theme; 2) classroom learning communities, which utilize the

instructional space as a primary method to build community by implementing active learning combined with group activities; 3) living–learning communities, which structure residential housing so that students co-enrolled in two or more linked courses reside in a common hall or building, and which facilitate additional contact time with course materials and concepts especially via supplemental learning; and 4) student-type learning communities, which are intended for selected student types, such as those who share honors aspirations, similar academic interests, minority status, disabilities, or questionable academic preparation.

There have been many influences on the creation of learning communities, including societal calls for educational reform, the influential philosophy of education of John Dewey, education professionals promoting academic excellence, and growing interest in educational research and assessment. A brief discussion of these influences is provided below.

Society has played a role in the creation of learning communities. They are generally seen as a response to calls to reform undergraduate education in general and the freshman year in particular (Gabelnick, Macgregor, Matthews, & Smith, 1990). In this context of a call to reform, "...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). In addition to a response to reform, learning communities are an expression of society's shared belief that students have a right to learn and succeed (Smith et al., 2004).

The philosophical underpinnings of learning communities are largely the work of John Dewey (Shapiro & Levine, 1999; Smith et al., 2004). Dewey (2008/1916) saw

learning as a social process with open-ended inquiry that would benefit from intensive faculty-student interaction based on shared inquiry.

Recent scholarship in a variety of fields reaffirms and builds on his work, reinforcing and deepening his observations about the social construction of knowledge, the importance of developmental perspective, and the value of active and collaborative approaches to education (Smith et al., 2004, p. 27).

The release of the 1984 report *Involvement in Learning: Realizing the Potential of American Higher Education* was a watershed document for higher education professionals. This report was written by a blue-ribbon commission appointed by the National Institute of Education. It recommended that all institutions of higher education design and implement learning communities so that students may realize their academic potential through active learning and increased faculty interaction.

Research being performed on assessment of higher education, and learning communities in particular, is growing as a gap in research is being recognized. According to Taylor (2003), interest in higher education assessment has been rapidly expanding at the same time as the expansion of learning community programs across the country, coinciding with “growing attention in higher education to assessment and accountability” (p. 1). This has resulted in higher education institutions realizing that investment in learning communities needs to be accompanied by an investment in assessment of outcomes (Taylor, 2003). In a review of 63 research studies, Lindblad (2000) reported that the studies varied tremendously in purpose, content, number, and size and called for additional systematic quantitative research and assessment of learning communities.

Statement of the Problem

The vast majority of learning communities have not been in existence for a long time; consequently, evidence of their efficacy for learning is not comprehensive or compelling (Tinto, 2000). The majority of published research on learning communities has been performed on the more complex types of learning communities that contain an integrated curriculum and increased faculty interaction and involvement (Lindblad, 2000). In addition, most studies have been conducted at large public research universities.

This study seeks to address two gaps in the literature. The first gap is that there appears to be no formal studies regarding the efficacy of learning communities for small liberal arts colleges. A good example of the gap can be found in the National Study of Living-Learning Programs (Inkelas, Szelenyi, Soldner, & Brower, 2008), which examined only large and mid-sized regional universities and did not include small liberal arts colleges.

The second gap in the literature is that there are only a few formal studies indicating that participation in learning communities results in an increase in GPA (Inkelas & Soldner, 2011). While some studies indicate a small improvement in GPA, some, such as Pascarella and Terenzini (1980), Potts and Schultz (2008), and Guy and Levine (2011) do not. Consequently, there are not enough studies to ascertain whether learning communities contribute to an increase or decrease in GPA.

Purpose Statement and Research Questions

The purpose of this study is to determine the effectiveness of the learning community program at Study College on educational outcomes as measured by

differences in semester GPA between learning community participants and non-participants, as well as differences between types of learning communities, time of participation in learning communities, and the effect of demographic variables and prior attainment. Prior attainment is measured by scores on the SAT or ACT scores converted to SAT scores; the variables will be called converted SAT scores representing college intake.

The research questions that will guide this study are as follows:

1. Are there significant differences in converted SAT scores (college intake) between learning community participants and learning community non-participants, controlling for gender and ethnicity?
2. Are there significant differences in academic success (semester GPA) between learning community participants and learning community non-participants in the first and second semesters of matriculation at the college, controlling for gender, ethnicity, and converted SAT scores (college intake)?
3. Are there significant differences in academic success (semester GPA) by type of learning community as science- or arts- related in the first and second semesters of matriculation at the college, controlling for gender, ethnicity, and converted SAT scores (college intake)?
4. Are there significant differences in academic success (semester GPA) by time of learning community participation—2005-2007, 2008, 2009—in the first and second semesters of matriculation at the college, controlling for gender, ethnicity, and converted SAT scores (college intake)?

Significance of the Study

This study will contribute to what is known about learning communities at small liberal arts colleges as well as contributing to the knowledge base regarding GPA performance and learning communities. The findings should be of value to faculty and staff who administer learning communities at small colleges as well as those who are interested in enhancing learning outcomes as measured by GPA. For small college administrators looking to justify the expense of learning communities, this study should prove valuable.

Theoretical Framework

This study utilized Astin's (1999) student involvement theory as a framework for analysis. He defined involvement as "the investment of physical and psychological energy in various objects. The objects may be highly generalized (the student experience) or highly specific (preparing for a chemistry examination)" (Astin, 1999, p. 519). In other words, student involvement in appropriate activities leads to learning. "The amount of student learning and personal development associated with any educational program is directly proportional to the quality and quantity of student involvement in that program" (Astin, 1999, p. 519). Since learning communities promote a higher quality and quantity of student involvement, his theory is highly applicable. Astin (1999) explained that a major reason he developed the theory was to explain how educational policies and practices affect student achievement (GPA) as well as student development.

Astin (1999) asked, "Do particular forms of involvement facilitate student development along the various dimensions postulated by theorists such as Chickering?"

(p. 528). Student involvement in learning communities may be a particular form of involvement that helps students develop academically. Chickering and Gamson (1987) offered seven principles for good practice in undergraduate education that learning communities generally promote; increased interaction, and cooperation between faculty and students, active learning, feedback and assessment, and high expectations. These seven principles compose a conceptual framework that can help in understanding how learning communities can facilitate student development, especially academic development as measured by GPA. Learning communities may be a particular form of involvement that enhances student academic and personal development.

Limitations of the Study

The study has the following limitations:

- The data are from a single small liberal arts college, which limits the ability to generalize the data to other colleges and universities.
- Students self-selected into the learning community. Both the intentions and level of commitment of the students could be considered different from students who did not self-select (non-participants).
- No data were available on the motivations of students for joining these learning communities.
- Another possible limitation is that the measure of academic success used, GPA, might not have been fully standardized. In other words, the difficulty of a course varies by instructor, and different instructors might use different scales and measurements for student evaluation.

Delimitations of the Study

The focus of this study is the learning community program at a small liberal arts college in the southeast. No other learning community programs at other small liberal arts colleges were included.

Definition of Terms

The terms listed and defined below are those that are significant to the current study.

- **Converted SAT Score:** in instances when only ACT scores were provided, these scores were converted via the ACT concordance to SAT scores (ACT, 2008).
- **Effectiveness:** The difference in semester GPA between learning community participants and non-participants.
- **GPA:** a numerical value assigned to letter grades earned by a student, and then the total numerical value of grades is divided by the total number of courses enrolled.
- **Hedges' g :** the difference between the mean outcome of the participant group and the mean outcome of the non-participant group divided by the pooled within-group standard deviation on the outcome measure (Institute of Education Sciences, 2008).
- **Learning Community:** A variety of curricular approaches that can link or cluster two or more courses around a theme and enroll a common cohort of students (Smith et al., 2004).

- **Linked Courses:** A type of learning community where a cohort of students enrolls in two or more courses in which assignments and syllabi are coordinated. Students must enroll in all linked courses (Gabelnick et al., 1990).
- **Living-Learning Community:** A type of learning community that is residential with an intentionally designed academic or thematic focus (Lenning & Ebbers, 1999; Shapiro & Levine, 1999).
- **Tutored Learning Community:** A more complex type of learning community that offers tutoring and study groups for participants. This type offers additional contact time with course material in a social setting (Smith et al., 2004).

Study Overview

This study addresses the gap in research regarding the effectiveness of learning communities as measured by semester GPA. The next chapter will provide a review of the literature that addresses the efficacy of learning communities along with a history of learning communities in general as well as at Study College. The literature review will also summarize relevant theoretical perspectives regarding the functioning of learning communities. In chapter 3, a discussion of the methodology and methods employed will be presented. In chapter 4, a discussion of the results of the analysis will be presented. In chapter 5, the results will be interpreted and implications for future research will be discussed.

Chapter 2

Review of the Literature

Introduction

Learning communities have been established at many colleges and universities in response to numerous calls for reform to improve learning in higher education (Shapiro & Levine, 1999; Talburt & Boyles, 2005). While learning communities have emerged as a practical solution to these calls for reform, it is not entirely clear from the literature that they are effective for academic performance in terms of GPA, especially for small liberal arts colleges. Studies are conflicting regarding grade point average, and a lacuna exists in research about small liberal arts colleges. Today, higher education administrators want to know whether precious financial and non-monetary resources are well spent on learning communities and whether they improve learning. The most widely utilized measure of learning effectiveness is GPA, which assigns a numerical value to letter grades earned by a student, and then the total numerical value of grades is divided by the total number of courses enrolled. Pascarella and Terenzini (2005) have described GPAs as “the lingua franca of the academic instructional world” (p. 397). Researchers use semester as well as annual GPA to determine effectiveness of learning communities.

This review will first provide a history of learning communities, as well as an examination of current existing models on college and university campuses. It will then provide theories to explain their possible effects on GPA. Learning community advocates often claim that increased student involvement is a hallmark feature of learning communities (Engstrom & Tinto, 2008; Stassen, 2003; Zhao & Kuh, 2004). Consequently, Astin’s (1999) student involvement theory will be explored, as well as the seven principles of a good undergraduate education proposed by Chickering and Gamson

(1987). In addition, this chapter will review the relevant quantitative research that indicates learning community effectiveness in terms of GPA, as well as the research that does not indicate its effectiveness in terms of GPA. Lastly, an overview of the learning community program at Study College will be provided.

History of Learning Communities

The origins of learning communities can be traced to the establishment of Harvard University in 1636. Having been founded by Puritans, the English model of higher education was used to structure Harvard, emphasizing the role of the community in its design (Cohen & Kisker, 2010; Schroeder & Mable, 1994). The quintessential English example of this model is Oxford University, as it is composed of many colleges and halls (Schroeder & Mable, 1994). The colleges at Oxford have a combination of residential and non-residential students, and the halls are residential with both faculty and students sharing living spaces. An example of this today at Oxford is Blackfriars Hall, where students live and dine with the faculty, and both students and faculty are available throughout the day and night for academic conversation. In the early American implementation of the English model, the University of Virginia created “the Lawn.” The founder of the University of Virginia, Thomas Jefferson, wanted students to live together on campus with faculty members and to dine with them in order to enhance learning (Alexander & Robertson, 1998).

In comparison to the English model of higher education, the German model emphasized faculty research and instruction. The combination of teaching and research was a distinguishing characteristic of this model (Cole, 2009). Residence halls, for students or faculty, were seen as an irritant that would impede research and were

therefore certainly not needed as they were in the English model. The German model steadily gained influence after the Civil War in the United States, and faculty began to move away from campus housing and instead focused on research and lectures (Cole, 2009). The University of Michigan abolished student residences altogether in the 1860s, and twenty years later, Harvard abolished its requirement that students live on campus (Duke, 1996). However, in the early part of the twentieth century, universities began to reemphasize the English residential college model. This began at Harvard, where the house program was established in 1926 with the intention of providing students an experience similar to Oxford and Cambridge Universities (Blimling, 1998; Duke, 1996).

In 1927, Alexander Meiklejohn started the Experimental College at the University of Wisconsin. This endeavor was the first to use the term “learning community” and to implement a living–learning community model with both faculty and students living together. The Experimental College featured an integrated, common curriculum and a close community of students and faculty who lived in the same building (Smith, MacGregor, Matthews, & Gabelnick, 2004). Meiklejohn is widely viewed as the father of the learning communities movement because of his insights and reorganization of the college curriculum (Gabelnick, MacGregor, Matthews, & Smith, 1990; Smith et al., 2004). Meiklejohn restructured both the curriculum and housing arrangements to “build a community and create a seamless interface between the living and learning environments” (as cited in Smith, 2001, p. 5). Classes were team-taught, active learning was emphasized, and students were required to put theory into practice (Smith, 2001). The relationship of the teacher to the student was that of an advisor (Meiklejohn, 1930).

A disciple of Meiklejohn, Joseph Tussman created a learning communities program at the University of California at Berkeley in 1965, which was modeled after that created by Meiklejohn at Wisconsin. Tussman was a professor of philosophy at Berkeley, and his purpose was to teach first- and second-year undergraduate students to become responsible citizens in a democratic society (Trow, 1998). The program featured a common curriculum, and all faculty were present for all lectures, with tutorials for students performed by faculty (Trow, 1998; Tussman, 1969). During the second year, faculty had dinner once a week with the students (Tussman, 1969). According to the Faculty Senate at The University of California, Berkeley (2005), “The program sought to give students a thorough and systematic knowledge of ideas ranging from Homer to Thoreau and from Plato to Malcolm X” (Faculty Senate at The University of California, Berkeley, 2005, ¶ 3). However, the program ended in 1969, just four years later. Tussman explained that his decision to end the program was based on difficulties with faculty (Burruss, 2005; Trow, 1998). Not surprisingly, the Faculty Senate at the university wrote, “the program unfortunately faltered because of excessive costs and the reluctance of many students to submit themselves to its highly structured curriculum” (Faculty Senate at The University of California, Berkeley, 2005, ¶ 3).

Tussman’s experience at Berkeley nevertheless inspired an enormously successful learning community program at Evergreen State College in Olympia, Washington. Indeed, the Washington Center at Evergreen State College has been the preeminent leader in implementing learning communities (Dodge & Kendall, 2004). The Evergreen State College traces its founding to 1967, but it did not enroll students until the fall semester of 1971 (Youtz, 1984). Youtz (1984) explains the school’s beginnings: “Much

of the curriculum planning effort of the first year was devoted to detailed design of the strongest possible and most diverse set of Meiklejohn-like interdisciplinary programs we could conceive” (Youtz, 1984, p. 4). Evergreen also incorporated the ideas of Tussman, as the initial faculty planners of the university were all required to read Tussman’s memoir, *Experiment at Berkeley* (Smith et al., 2004). In the 1980s, the university began further implementation of the learning community program, and by 1987, the Washington State legislature funded the Washington Center at Evergreen, the focus of which would be the promotion of learning communities throughout the country (Smith et al., 2004).

From this point forward, learning communities began to flourish throughout the United States. By the year 2004, learning communities had been established in over 600 institutions of higher education (Smith et al., 2004). More institutions are added every year.

Models of Learning Communities

First, some definitions of the term “learning communities” will enhance the current discussion. Astin (1985a) offers a broad definition as follows:

Such communities can be organized along curricular lines, common career interests, avocational interests, residential living areas, and so on. These can be used to build a sense of group identity, cohesiveness, and uniqueness; to encourage continuity and the integration of diverse curricular and co-curricular experiences; and to counteract the isolation that many students feel. (p. 161)

Astin’s definition aptly describes the different organization of learning communities at the college which is the subject of this study. However, it does not appear to adequately capture the importance of faculty-student interaction. Another definition offered by Smith and Hunter is more limited than Astin’s definition in terms of organization; however, it does stress the importance of increased faculty-staff interaction.

A learning community is a deliberate restructuring of the curriculum to build a community of learners among students and faculty. Learning communities generally structure the curriculum so that students are actively engaged in a sustained academic relationship with other students and faculty over a longer period of time than is possible in traditional courses. (Smith & Hunter, 1988, p. 52)

Taken together, the above definitions are helpful in understanding the variety and nature of learning communities. The restructuring of the curriculum mentioned by Smith and Hunter (1988) can take many different forms, which leads to different learning community models. These models range from a simple co-registration model (e.g., freshman interest group) to more complex, team-taught coordinated studies models (Shapiro & Levine, 1999). In addition, learning communities are often residentially based, where participants take courses together and share living space.

According to Lenning and Ebbers (1999), there are four different learning community models: 1) curricular learning communities, which are composed of cohorts of students co-enrolled in two or three linked courses that share a theme; 2) classroom learning communities, which utilize the instructional space as a primary method to build community by implementing active learning combined with group activities; 3) living-learning communities, which structure residential housing so that students co-enrolled in two or more linked courses reside in a common hall or building, and which facilitate additional contact time with course materials and concepts especially via supplemental learning; and 4) student-type learning communities, which are intended for selected student types, such as those who share honors aspirations, similar academic interests, minority status, disabilities, or questionable academic preparation (Lenning & Ebbers, 1999).

The first model of curricular learning communities uses a cohort of students, who enroll in two or more courses. The cohort enrolls in an additional course where it meets as a community and engages in active learning and additional time with course materials. This model is known by many names, such as freshman seminar, interest group, integrative seminar, or colloquy seminar (Smith et al., 2004). Linking or clustering courses is a common way of implementing the curricular model of learning communities. Typically, a skill-building course would be linked to a content course. For example, a skill-building computer software course, such as one involving spreadsheet and data analysis software, could be linked to an introductory finance course. When two courses are connected, this model is called a “linked” or “paired” course. When more than two are integrated, the model is known as a “clustered learning community.” Students enroll in a cohort, although the course might admit non-cohort students. These models offer students additional time with material as well as community building, both of which feature greater student curricular and social involvement. In this model, it is possible to have a sequential course learning community. In this model, cohorts of students can take two or three courses sequentially organized around a theme. Smith et al. (2004) explain the value and problems of such a model: “Sequential course learning communities offer promising opportunities for deepening curricular connections from one term to the next, but they often lack the depth, intensity, and synergy that comes with intensive immersion in multiple courses during a single term” (Smith et al., 2004, p. 91).

The second model is that of a classroom based learning community (Lenning & Ebbers, 1999). This model emphasizes “reflection, responsibility, relationship, and respect” (Lenning & Ebbers, 1999. p. 29) with the goal of human development with the

themes of “experiential, developmental, and transcendental” (p. 29). According to Lenning and Ebbers (1999), in this model of learning community, the instructor practices democracy, creates a caring community that responds to needs of students, masters classroom facilitation, utilizes an innovative curriculum with developmental activities, and becomes an effective change agent.

The third model is known as living–learning communities (Lenning & Ebbers, 1999; Shapiro & Levine, 1999; Smith et al., 2004). Living–learning communities are those in which students who share an interest in a theme or academic major also share living quarters. In other words, students share housing based on their common interests, defined living spaces, shared values, and robust participation by members. Students in the living–learning community will enroll as a cohort in corresponding coursework. In this fashion, living–learning communities are a way to assist students to learn in a more coherent framework (St. Onge, Peckskamp, & McIntosh, 2003). In other words, the principal aim of a living–learning community is integration of both learning and living. This integration centers on three areas of higher education: curriculum, instruction, and housing. Consequently, a living–learning community can provide a wider influence on the curricular and co-curricular atmospheres than a non-residential learning community.

The fourth model is known as student-type learning communities, which are intended for selected student types, such as those who share honors aspirations, similar academic interests, minority status, disabilities, or questionable academic preparation (Lenning & Ebbers, 1999).

Theoretical Framework

In 1983, the National Institute of Education created a study group whose task was to provide a report suggesting how the United States should improve undergraduate education. The following year, the study group published an influential report entitled *Involvement in Learning: Realizing the Potential of American Higher Education: Final Report of the Study Group on the Conditions of Excellence in American Higher Education* (1984). The report recommended that institutions of higher education focus on three critical areas: (1) student involvement – the extent of time, energy and effort students apply to learning; (2) high expectations – creating expectations for student learning outcomes that are shared by both the student and the institution of higher education; and (3) assessment and feedback – creating a system of regular and periodic assessment, with feedback given to improve learning outcomes (National Institute of Education, 1984).

According to Alexander Astin, a high-profile member of this study group and an important contributor to this report, student involvement is the cornerstone of the mini-theory presented by the study group, as high expectations, assessment, and feedback are the means to accomplish student involvement (Astin, 1985b). Astin (1999) defined student involvement as “the quality and quantity of the physical and psychological energy that students invest in the college experience” (p. 528). Astin is widely known for his student involvement theory, which holds that in order to optimize learning, institutions of higher education should create and deliver environments and programs that facilitate student involvement.

Astin's theory of student involvement has five postulates: (1) Involvement is an investment of psychological and physical energy in some type of object; (2) Students invest varying amounts of energy in objects; (3) Involvement has quantitative and qualitative features; (4) The extents of student learning and personal development are a function of the quality and quantity of effort students expend; and (5) The effectiveness of any educational policy or practice is related to the extent to which it encourages students to become engaged in appropriate activities that increase student involvement (Astin, 1999, p. 519).

Of the five postulates, the last two are the most important for implementation on college campuses. In other words, programming should increase the quality and quantity of student academic effort as much as possible. However, there are limits "beyond which increasing involvement ceases to produce desirable results and even becomes counterproductive" (Astin, 1985a p. 156). Astin's student involvement theory has gained wide acceptance on college and university campuses and can be found supporting many engaged learning activities on college campuses today (Kuh, 2009).

One example of an engaged learning activity is participation in a learning community. Astin (1993) maintains, and Tinto (1997) reinforces, the idea that membership in college communities is a critical factor in student academic development and that students learn more from courses that are integrated into a community than they do from isolated courses.

Two other members of the study group, Chickering and Gamson (1987), later developed the *Seven Principles for Good Practice in Undergraduate Education*, a set of guidelines designed to assist faculty, staff, and students more fully integrate praxis and

theories on teaching and learning (Gamson, 1991). These seven principles support the theory that increased collaboration and contact between students and faculty is essential for excellence in educational experiences, and has influenced institutions of higher education to change their pedagogical structures and activities (Chickering & Gamson, 1987).

Chickering and Gamson (1987) proposed seven principles or guidelines to improve the quality of undergraduate education:

1. encourage contact between students and faculty
2. develop reciprocity and cooperation among students
3. encourage active learning
4. give prompt feedback
5. emphasize time on task
6. communicate high expectations
7. respect diverse talents and ways of learning. (p. 1)

The first principle of increasing faculty-student contact holds that “frequent student-faculty contact in and out of classes is the most important factor in student motivation and involvement” (Chickering & Gamson, 1987, p. 3). The authors provide an example of the freshman seminar, which is a common type of learning community at many universities. According to the second principle of reciprocity and cooperation, “learning is enhanced when it is more like a team effort than a solo race” (p. 3). The authors state that learning communities are a popular method for students to work together. The third principle of fostering active learning understands that “learning is not a spectator sport” (p. 4). The authors suggest students working in team projects, offering

peer critiques, and teaching parts of courses. They recommend the practice of a learning community at the University of Michigan where students engage in research projects with faculty. The fourth principle of feedback recognizes that “at various points during college, and at the end, students need chances to reflect on what they have learned, what they still need to know, and how to assess themselves” (p. 4). The authors describe the example of how some colleges and universities’ writing courses provide constant feedback from instructors and peers, so students revise multiple drafts and polish their work. The students learn the importance of feedback in learning and improving their performance. The fifth principle of time on task can be summarized as “time plus energy equals learning” (p. 5). Authors recommend clusters of courses on related topics as a type of learning community. The sixth principle, communicate high expectations, is based on the reality of “expect more and you will get more” (p. 5). The authors insist that the most important expectations are “the day-to-day, week-in and week-out expectations students and faculty hold for themselves and for each other in all their classes” (p. 5). Expectations in learning communities of peers, faculty, and sometimes staff are key to enhancing learning. Lastly, the seventh principle recognizes and respects different talents and diverse learning styles. In other words, “there are many roads to learning” (p. 6). Learning communities can promote different learning styles such as concrete experiences with peers, reflective observation, abstract conceptualization, and active experimentation (Kolb & Kolb, 2005).

These seven principles can be seen as related to the three study group recommendations of increased student involvement, high expectations, and assessment with feedback. All of the principles, except for 4 and 6, can be seen as manifestations of

student involvement; number 6 is high expectations, and number 4 is assessment and feedback. The seven principles are meant to be guidelines for improving teaching and learning, not as a modern 10 commandments (Chickering & Gamson, 1987). In order to maximize learning, both faculty and students should familiarize themselves with these principles (Chickering & Ehrmann, 1996). First published in 1996, the seven principles were soon republished in the June 1987 issue of the *Wingspread Journal*, and more than 150,000 copies of the reprint were freely distributed by the Johnson Foundation (Chickering & Gamson, 1999). Since their publication, the seven principles have also been adapted into an influential report, *Making Quality Count in Undergraduate Education* (Education Commission of the States, 1995).

Both Astin (1985a) and Chickering and Reisser (1993) claim academic benefits of learning communities, especially living-learning communities. Learning communities “embody the principles of student involvement and active learning” (Chickering & Reisser, 1993, p. 413). Student-faculty interaction has a direct positive relationship to learning and academic performance (Astin, 1993). To properly implement student involvement theory and to improve educational outcomes, institutions should provide the means and incentive for student-faculty relationships (Hoffman, 1996). Indeed, Astin (1985a) recommends learning communities as a method to increase student-faculty interaction.

Astin (1985a; 1993) claims students learn more from courses integrated into the community. In addition, Chickering (1993) and Chickering and Ehrmann (1996) make the same claim as Astin. After nearly 40 years of studying the impact of student involvement on the undergraduate experience, Astin (1996) concludes that three kinds of

involvement are most influential on academic performance: involvement with academics, involvement with faculty, and involvement with peer groups. Inkelas and Weisman (2003) noted that these three concepts are core components of residential learning communities. “These elements are manifested through academic services (such as tutoring, advising, and study groups), greater opportunities to interact with faculty on an informal basis, easier access to faculty, and structured programming that promotes sustained interaction with peers” (Inkelas & Weisman, 2003, p. 339) .

Lastly, based on Astin’s (1996) conclusions regarding involvement and on Chickering’s development of student involvement by specifying how involvement can be best implemented on campus, one can hypothesize that learning communities founded on the concepts of student involvement with academics, faculty, and peers can create an environment that will improve academic performance in terms of semester GPA.

Research in Efficacy of Learning Communities

This section will review research that has been conducted on learning communities relative to GPA. GPA is a commonly used measure that researchers employ to study academic performance (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008; Pascarella & Terenzini, 2005; Pasque & Murphy, 2005). In this review, seven studies reveal an increase in GPA for learning community participation, and five do not. This section will review the studies indicating an increase in GPA first, and then follow with a review of studies that do not indicate any gains in GPA.

Review of studies indicating an increase in GPA. Seven studies indicate an increase in GPA for learning community participation, including Tinto, Goodsell-Love, and Russo (1993), Wilcox, delMas, Stewart, Johnson, and Ghery (1997), Stassen (2003),

Pasque and Murphy (2005), Hotchkiss, Moore, and Pitts (2006), and Jamelske (2009). These studies were all conducted at medium- to large-sized public universities.

In a study at the University of Washington located in Seattle, Washington, Tinto et al. (1993) studied learning communities with a large number of traditional-aged students living on campus. Students had the opportunity to take part in a Freshman Interest Group from 1992-1993, when entering freshman students were studied. They found that the learning community participants' mean semester GPA was 3.14 versus 2.98 for non-participants (Tinto, Goodsell-Love, & Russo, 1993, p. 50). This was the case even after controlling for possible self-selection, academic ability, and gender. In this study, participation in a learning community proved, in both multivariate discriminate and regression analyses, to be a significant independent predictor of academic performance. The learning community model studied was a cluster model.

A later study at the General College of the University of Minnesota by Wilcox, del Mas, Stewart, Johnson, and Ghore (1997) demonstrated higher semester GPA for non-residential learning community participants in the years 1992-1994. Student academic progress was calculated for four semesters. The General College was an entry point for academically underprepared students at a large university. Students in the learning community co-enrolled in a curricular package consisting of three to four courses, including a course designed to assist participants in developing and enhancing their study skills. Controlling for entering academic ability, the researchers found that students in the program 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. However, this was only found during the

semester of participation, as there were no significant differences between grades of participants versus non-participants for subsequent semesters at the college (Wilcox et al., 1997). The college utilized a curricular cluster model for the learning communities under study. No differences were found for gender or ethnicity. ANOVAs with control groups were used. Learning community participants had a higher mean quarter GPA of 2.73 compared to the control group GPA of 2.36. However, this improved GPA was only observed during the first quarter.

Edwards and McKelfresh (2002) studied living-learning communities at the College of Natural Sciences situated within a large public university in Colorado. This study examined the effect of participation in a living-learning community on GPA. The participants were 81 students who resided in the living-learning community and a control group of 261 students who resided in other student dormitories. The authors gathered data from institutional records and regressed first-semester and first-year GPAs on gender, a measure of academic ability, ethnicity, and living-learning community participation. The main effect of participation in a community was not statistically significant for first-semester GPA or full-year GPA. Interestingly, the living-learning community affected an increase in GPA for male participants. However, female participants in the living-learning community had GPAs that were statistically indistinguishable from those of the men. Outside of the living-learning community, women in the study had a higher average GPA than the men. However, men involved in the living-learning community showed an increase in their GPA at a level similar to the women (Edwards & McKelfresh, 2002).

Stassen (2003) studied the relationship between participation in living-learning communities and GPA at a large, moderately selective public Research I university in the northeast. She examined three different living-learning programs for freshman. All three of the living-learning communities studied fall in the Linked Course cluster model in the categorization of learning community models. Stassen (2003) used institutional data for the entering classes of 1999 and 2000 to identify the impact of the three programs on academic achievement and freshman-to-sophomore retention. Using a linear regression model to control for entering characteristics such as high school grade point average (GPA), (SAT) scores, gender, ethnicity, and academic program, she found that all three programs had a significant and “positive effect on first-semester GPA, even after all these entering characteristics are taken into consideration” (Stassen, 2003, p. 596).

Pasque and Murphy (2005) studied seven different living-learning communities at a large public research university in the Midwest. The authors used self-reported GPA in the study obtained via a questionnaire. There were 3,144 valid observations considered with a 65.3% overall response rate to the survey. “Approximately 77.9% of living-learning program participants and 55.5% of students in traditional residence halls submitted a survey” (Pasque & Murphy, 2005, p. 432). Utilizing *t*-tests and multiple regression, the researchers controlled for past academic achievement, socioeconomic status, and demographic characteristics, and found that participation in the living-learning communities indicated higher GPAs. However, the effect size was very small, and the study utilized self-reported GPA obtained via a questionnaire in lieu of institutional data (Pasque & Murphy, 2005).

Hotchkiss et al. (2006) studied freshman-learning communities at Georgia State University in Atlanta, Georgia. This university is large, public, and non-residential. The researchers were able to analyze four years of data from 1999 to 2002. Freshman learning communities utilized five-course block scheduling, were non-residential, and lasted one semester. Utilizing multiple regression, the researchers were able to control for background characteristics including test scores. According to Hotchkiss et al. (2006), living-learning communities can increase “a student’s GPA from about three-quarters to one full letter grade, depending on the student’s race and gender (p. 207)” with the notable exception of white female students. The researchers examined first-semester GPA as well as cumulative GPA. “Second-year participation GPA increases were found to be .34 of a letter grade” (Hotchkiss et al., 2006, p. 207). Interestingly, the researchers found that students who self-selected into a learning community had lower entering characteristics than non-participants. The researchers found participation in a learning community increased first-year GPA by approximately three-quarters of a letter grade, depending on the participant’s ethnicity and gender. The lone exception found was for white female students, who experienced no boost from learning community participation. This effect falls to approximately 0.34 of a letter grade for the second-year GPA. Importantly, the researchers discovered that controlling for self-selection yielded results that demonstrated learning community participation does not impact all race and gender groups similarly.

Jamelske (2009) investigated the influence of a first-year experience learning community on the first-year GPA of a class of first-year students at a medium-sized public midwestern university. The stated goal of the learning community was “to

enhance the quality of the first year experience and student success across the domains of learning” (p. 377). Students connected with peers and also worked closely with a faculty member on both in-class and out-of-class activities to strengthen their connection to the university community. The results showed students in the student type model of learning community had higher first-year GPAs than non-participating students.

Review of studies not indicating an increase in GPA. Five studies do not indicate an increase in GPA for learning community participants, including Pascarella and Terenzini (1980), Pike, Schroeder, & Berry (1997), Potts and Schultz (2008), Levine and Guy (2011), and Purdie and Rosser (2011). Four of the five took place at medium-to-large public institutions, and only one was conducted at a large private institution. The section that follows will provide a review of these studies.

The earliest study to examine the effects of learning community participation on GPA was a longitudinal panel study by Pascarella and Terenzini (1980), who examined students at a large private residential university in the Northeast. The study examined a sample of 773 freshman taken from the university in 1975. Pascarella and Terenzini regressed first-year GPA against several variables including participation in a living-learning community. Holding all other variables constant, Pascarella and Terenzini did not find any significant associations between participation in the living-learning community and GPA (Pascarella & Terenzini, 1980).

Pike explored the experience of 1,018 freshman who participated in one of 22 living-learning communities in 1995 at the University of Missouri-Columbia (Pike et al., 1997). The University of Missouri-Columbia is a large public research university. Participants in the freshman interest group took three common general education courses

and a first-year seminar, and lived in the same residential facility. Results were not statistically significant between participants and non-participants, controlling for background characteristics, high school GPA, and ACT score. Institutional data for GPA were used. Using a two-group path analysis, they found indirect effects on persistence and GPA achievement from the freshman learning group experience. However, based on survey data, two of the major findings were that freshman learning groups had a “substantial positive effect on faculty-student interaction” and “positive effects on social integration and institutional commitment” (p. 617). Although this study used complex statistical analysis, two limitations of the study are important to note. First, the study was conducted in 1995, the first year of the program; at that time, only 225 of the 3,845 first-time college students, or 5.9% of the entering class, participated in a living-learning community. Thus, one could argue that the program was extremely selective and the type of student who chose to join such a program had different intentions compared to typical students.

Potts and Schultz (2008) found no statistical differences in mean GPA between freshman seminar curricular learning community participants and a control group. The researchers took a sample of 223 of the 1,126 freshman students who matriculated at the public, medium-sized, mostly undergraduate, 92% white, and 61% female university in the fall of 2000. The researchers divided the sample between the learning communities and a control group. Both the learning community participants and the control group enrolled in three common courses: English, economics, and a math course. In addition, 131 of the participants enrolled in a Freshman Seminar within the business college. “The numerical differences in mean GPA and credits earned and the retention rates are

relatively small. ANOVA tests of means show no differences among the average credits earned and eighth semester GPA across treatment groups” (Potts & Schultz, 2008, p. 652).

At California State University at Chico, a large public university, Levine and Guy (2011) examined a curricular cluster model of linked courses learning community to see whether participants’ GPA would be increased compared to a control group. Utilizing multiple regression and SAT as a covariate, they found learning community participants had a mean semester GPA of 2.35 in the learning community group and of 2.63 in the control group (Levine & Guy, 2011, p. 59). The SAT scores between learning community participants and non-participants were not found to be statistically significant.

Lastly, Purdie and Rosser (2011) examined two different living-learning communities and one linked course model at a large public research university located in the Midwest. This study examined the comparative impact on GPA of three different freshman learning community programs offered simultaneously at the same university. Two of these programs, a freshman interest group, and academic-themed floors (ATF), were variations of living-learning communities, and the third was a First-Year Experience non-residential student type community model. Participants in the freshman interest group took four courses together and lived in the same area, along with a peer adviser who constructed a small freshman seminar with the students. Students in the academic-themed floor program did not have a shared curriculum and thus lacked the in-class connection. The researchers controlled for entering and environmental characteristics, and only participation in the freshman interest group learning community resulted in statistically significant higher GPAs. “However, improving a student’s GPA by .009

does not seem to be of practical significance” (Purdie & Rosser, 2011, p. 108). The authors concluded that participation in the ATF living-learning community or the first-year experience learning community did not impact first-semester GPA. The results of this study confirm prior research (Tinto & Goodsell-Love, 1993; Stassen, 2003), which found participation in a freshman interest group learning community leads to higher GPAs. The authors suggest that the connection to the curriculum and the quantity and quality of peer-to-peer interaction bolster the success of the learning community.

History of the Learning Community Program at Study College

The college’s espoused goals, as adopted in 2007, for the learning community program were:

- Attracting high-achieving students and improving their retention
- Deepening students’ sense of responsibility for their education
- Situating learning in residential halls as well as classrooms
- Deepening connections between faculty and students
- Encouraging faculty-staff collaboration
- Development of study skills
- Improvement of dormitory living environments
- Enhancing critical thinking and other liberal arts skills. (Haynes, 2011, p. 2)

The college decided to initiate learning communities when a new faculty member, recently arrived from Duke University, had experience with them and championed their use. This new faculty member, along with the ad-hoc committee for the freshman experience at the college, launched two learning communities in 2000 as a part of the freshman experience program. The ad-hoc committee decided on the use of a cluster

model of learning community for the theme of American Studies (2000, 2002, 2004) and a linked-course model for English-humanities (2000, 2001). The English-humanities learning community linked two courses, English and a humanities course. The American studies cluster learning community contained a cohort of freshman students co-enrolled in three integrated courses. The initial instance of the American community was as a living-learning community, but other iterations of the American Studies learning community in later years were not. Entrance into both the learning communities was offered only after students applied and submitted an essay for review. Approximately 20 students participated in each of the learning communities offered during these years.

For unexplained reasons, at the end of the 2003-2004 school year, the first-year experience program ended. At this time, two professors at the college, one in the history department and another in the English department, initiated a linked course learning community with the theme of the British Empire. The professors wanted to work with serious students interested in English and history. The new British Empire learning community was successfully offered every year from 2004 to 2010 and enrolled on average 15 students per year. The British Empire learning community adopted some features of the previous American studies learning community by incorporating meals, movies, seminars, and excursions, which provided increased faculty and student interaction and community.

In 2006, two years after faculty at the college successfully launched the British Empire learning community, the student affairs department of the college initiated two learning communities in response to courses that freshman often found quite demanding. The first of these communities was an economics community and only lasted one year.

The second community was a living–learning community based on biology, which featured tutoring. The biology learning community functioned in 2006, 2007, and 2008. While the biology learning community offered additional contact with course material via optional tutoring, it did not feature increased time with faculty, which was a feature of earlier communities. In terms of size, the biology learning community had several times more members than all preceding learning communities, with up to 70 members sharing a community.

After four years of loose experimentation with learning communities, the college appointed a Faculty Fellow for Learning Communities in 2008. The faculty fellow was charged with a three-fold mission of “1) developing a comprehensive learning community program, 2) assessing the effectiveness of these communities, and 3) facilitating collaboration between faculty and staff” (Haynes, 2011, p. 1). The college added learning communities in religious studies, humanities, and economics. Student response to the new communities was strong, and after a rigorous application process each new community averaged 15 students in membership. A new type of community was developed for the humanities and religious studies communities involving sequential courses. As all of the other learning communities were only in existence for the first semester of the freshman year, this community was the first to link coursework sequentially throughout the freshman year instead of linking them concurrently.

The following year, in 2009, the college reinstated both the humanities and the religious studies learning communities and added a new linked course learning community in American studies, and art and environmental studies both utilized the unmodified model. Each new community contained approximately 15 students. Lastly,

in 2010, the college offered new curricular learning communities in political science and mathematics and changed the American studies community from a cluster to a linked model. All of the communities averaged 15 members.

In sum, the Study College has offered co-ed living–learning and curricular learning communities that have integrated varying aspects of the freshman year. A common feature of all of the learning communities has been that students have enrolled in at least one shared course. The college reports, “learning communities are particularly effective in building a sense of community among students and between students and faculty” (Study College, 2013, ¶ 4). Lastly, the college has seen the value in learning communities as creating “enhanced relationships with faculty and other students, convenient access to peer tutoring, and participation in special programs and trips” (Study College, 2013, ¶ 4).

Chapter 3

Methodology

Introduction

The intent of this study is to determine the effectiveness of the learning community program at a small southeastern liberal arts college on educational outcomes. Differences in semester grade point averages (GPAs) between learning community participants and non-participants will be assessed. The research questions that will guide this study are as follows:

- Are there significant differences in converted SAT scores (college intake) between learning community participants and learning community non-participants, controlling for gender and ethnicity?
- Are there significant differences in academic success (semester GPA) between learning community participants and learning community non-participants in the first and second semesters of matriculation at the college, controlling for gender, ethnicity, and converted SAT scores (college intake)?
- Are there significant differences in academic success (semester GPA) by type of learning community as science- or arts- related in the first and second semesters of matriculation at the college, controlling for gender, ethnicity, and converted SAT scores (college intake)?
- Are there significant differences in academic success (semester GPA) by time of learning community participation—2005-2007, 2008, 2009—in the first and second semesters of matriculation at the college, controlling for gender, ethnicity, and converted SAT scores (college intake)?

Research Design

This study undertakes quantitative analysis of secondary data utilizing a causal-comparative design. Secondary analysis is a means of investigating data obtained for other purposes. Hakim (1982) defines secondary analysis as “any further analysis of an existing dataset that presents interpretations, conclusions, or knowledge additional to, or different from, those presented in the first report on the inquiry as a whole and its main results” (p. 1). This study interprets the semester GPA data in a different way from the reasons it was gathered and reported for academic transcripts. Secondary analysis has a long pedigree and its use is common in United States and Britain (Smith, 2008). Indeed, according to Glass (1976), the importance of secondary analysis has “eclipsed that of primary analysis” (p. 3).

Causal-comparative research aims to determine the causes or reasons for differences in groups or individuals (Gay, Airasian, & Mills, 2006). In this research design, the independent variables are thought to have a causal effect on the dependent variables. “Put simply, causal-comparative research attempts to establish cause-effect relationships among groups” (Gay et al., 2006, p. 12). As the researcher has no control of the independent variables or random assignment into groups, it is not a true experimental design and consequently can only produce limited cause and effect information (Schenker & Rumrill, 2004); nevertheless, the use of causal-comparative design is an important part of educational research (Gay et al., 2006).

In this study, archival data will be used: student SAT or ACT scores and first- and second-semester GPAs while enrolled in the college during the first year. If a student’s institutional record contained an ACT score without an SAT score, the ACT

score was converted to an SAT score utilizing the ACT concordance (ACT, 2008), resulting in a common college intake score. Students were grouped according to participation and non-participation in the learning community program. The effects of gender and ethnicity upon first- and second-semester GPAs were also examined.

Research Context

The small southeastern liberal arts college that is the focus of this study enrolled around 1,600 students during the Fall Semester of 2011 (National Center for Education Statistics, 2013). The Study College offered both curricular and residential learning communities for freshman. The curricular learning communities were in the forms of linked course and cluster models. All data were provided by Study College.

Population and Sample

Population. Study College enrolled circa 1,600 students during the fall semester of 2011 (National Center for Education Statistics, 2013). Approximately 25% of the student body matriculated from the Southeastern United States with the balance coming primarily from Texas and the northeastern United States in addition to about 5% coming from overseas. Nearly all of the students enrolled were 18 to 22 years of age, and 75% lived in campus housing (National Center for Education Statistics, 2013). All freshman students lived in campus housing unless provided an exemption for living with relatives in the city in which the college is situated. Approximately 80% of the students were white, 5% international, and 15% domestic students of color (National Center for Education Statistics, 2013).

Sample. A sample was taken from the data set for academic years 2005-2010. The sample was composed of 152 students who participated in a learning community and

142 who did not participate in a learning community for a total sample of 294 participants. The Study College provided data regarding the following learning communities: American Studies, Art, British Empire, Environmental Studies, Religious Studies, and Humanities. All of the aforementioned learning communities are included in this study. The control group was composed of students who did not participate in learning communities for the 2005-2010 academic year who have complete data available in the dataset.

Data Collection

Data were collected at Study College for the period between the fall of 2005 and the spring of 2010. The college's institutional researcher retrieved the data from the college's student information system, and entered them into an Excel spreadsheet. This archival data was used for the secondary analysis of an existing data set. The researcher did not obtain personally identifying student information. Students were assigned numbers for identification. In addition to supplying the spreadsheet, the college also supplied a manuscript providing a history of the learning community program. Lastly, institutional review board exemption by the University of Memphis was granted for the study. Approval for the study was also granted by the Study College.

Variables

The variables used in the study were the following:

- Independent: Learning community, gender, ethnicity, and converted SAT score.
- Dependent: First semester GPA, second-semester GPA, converted SAT score for Research Question 1 only.

- Learning community is an independent nominal variable. Each student will be identified as a participant and assigned a 1 or non-participant and assigned a 0.
- Gender is a categorical variable. Each student will be assigned 1 for female or 0 for male.
- Ethnicity is a categorical variable. Each student will be classified 1 for white or 0 for non-white.
- Converted SAT score is a continuous variable.
- First-semester GPA is a continuous variable for the fall of 2009.
- Second-semester GPA is a continuous variable for the spring of 2010.

Data Analysis

The study addresses the research questions using both the categorical and the continuous independent variables described above. The *Statistical Package for the Social Sciences (SPSS), 20th edition*, was used to generate descriptive statistics including frequencies per categorical variables, and means and standard deviations for all continuous variables. The descriptive statistics of skewness and kurtosis were used to see whether the assumption of a normal distribution can be held. SPSS was also used to plot the residuals in an effort to check the assumptions of linearity and of homoscedasticity.

Finally, SPSS will be used to conduct multiple regression. Multiple regression provides the capability of measuring the relationship of both the categorical and the continuous independent variables to a continuous dependent variable (Keith, 2006). Multiple regression can explain the amount of variance or error of the independent variables regressed on the dependent variable. “[R]egression analysis is a method of

analyzing the variability of a dependent variable by resorting to information available on one or more independent variables” (Pedhazur, 1982, p. 5). Another way of putting it is, “what are the expected changes in the dependent variable as a result of changes (observed or induced) in the independent variables?” (Pedhazur, 1982, p. 5). As for the appropriateness of using multiple regression for this study, he states that “multiple regression analysis (MR) is eminently suited for analyzing the collective and separate effects of two or more independent variables on a dependent variable” (p. 6).

This study will utilize a hierarchical multiple regression to examine the effects that participation in a learning community has on semester GPAs. Block 1 will include converted SAT scores to control for any preexisting differences in academic ability. Block 2 will include the variables of participation, gender, ethnicity, and will examine whether there are differences in in first-semester GPA. A similar regression will be run for second-semester GPAs. A Hedges’ *g* effect will be computed on all means.

Validity and Reliability

As the study utilizes a causal-comparative design, the internal validity for this type of design is not as strong as that of an experimental design. More specifically, in a causal-comparative research design, the independent variables cannot be manipulated. There is no random assignment into groups, and, as a consequence, some degree of internal validity is lost. It is possible that there may be preexisting differences in the groups. If students with higher standardized test scores self-select into the learning communities, this would be a threat to internal validity. The first research question is designed to address this issue. Lastly, the semester GPA, SAT and ACT scores, and

demographic variables of ethnicity and gender will be assumed valid as they are identical to the official objective records of the college.

Chapter 4

Results

The purpose of this study was to determine the effectiveness of the learning community program at Study College, on educational outcomes as measured by differences in semester grade point average (GPA) between learning community participants and non-participants. The differences between types of learning communities, time of participation in learning communities, and the effect of demographic variables and prior attainment (converted SAT scores) were also examined. The independent variables were learning community, gender, ethnicity, and converted SAT score. The dependent variables were first semester and second-semester GPA. For the first research question only, converted SAT score was a dependent variable as well.

This chapter addresses the results of the statistical procedures used to answer the following research questions:

1. Are there significant differences in converted SAT scores (college intake) between learning community participants and learning community non-participants, when controlling for gender and ethnicity?
2. Are there significant differences in academic success (semester GPA) between learning community participants and learning community non-participants in the first and second semesters of matriculation at the college, when controlling for gender, ethnicity, and converted SAT scores?
3. Are there significant differences in academic success (semester GPA) by type of learning community as science- or arts- related in the first and second

semesters of matriculation at the college, when controlling for gender, ethnicity, and converted SAT scores?

4. Are there significant differences in academic success (semester GPA) by time of learning community participation—2005-2007, 2008, 2009—in the first and second semesters of matriculation at the college, when controlling for gender, ethnicity, and converted SAT scores?

Description of the Sample

The sample was comprised of 294 first year students at Study College, a small, private, southeastern liberal arts college. The GPA for each student in the sample was reported for his or her first two semesters of matriculation. The GPA data were considered trustworthy because the data were provided by the college, rather than self-reported by the students. Gender, ethnicity, SAT score, and learning community information were also provided for each student. A frequency table with demographic characteristics of the sample is provided in **Table 1**.

The treatment group and the gender group were approximately evenly split; however, ethnicity was split by approximately 70/30. One case was deleted from the analyses because ethnicity was not provided. The community type and community period variables included only those students participating in the learning communities. The type of learning community was broken down into the general categories of arts and sciences; more students were participating in the science-type learning communities. The number of first year students participating in learning communities was similar over the three time periods, with a slightly greater number of first year students participating in 2008.

Table 1

Demographic Characteristics of Sample (N = 294)

Variable	n	%
Treatment		
No Learning Community	152	51.7
Learning Community	142	48.3
Gender		
Male	142	48.3
Female	152	51.7
Ethnicity		
Other Ethnicity	90	30.6
White	203	69.0
Not Provided	1	.3
Community Type		
Sciences	81	27.6
Arts	61	20.7
Not Applicable	152	51.7
Community Period		
2005-2007	42	14.3
2008	56	19.0
2009	44	15.0
Not Applicable	152	51.7

Results

Research Question 1. The problem guiding Research Question 1 centered on whether there was a difference in converted SAT scores between those students who participated in learning communities in their first year of matriculation at the college and those students who did not participate. In order to address this research question, a hierarchical regression was performed, while controlling for gender and ethnicity. The dependent variable was converted SAT scores. This model was run to determine if a difference existed in the type of students joining learning communities. Another way of looking at this question was: Were better students (as determined by SAT) self-selecting into learning communities? The results of the analysis are given in Table 2.

The results indicated that there was no significant difference between learning community participants and non-learning community participants based on converted SAT scores. In terms of gender, males started out with higher converted SAT scores than females. Specifically, a female's converted SAT scores were found to be 28.57 points lower than a male's score at this college. However, there was not a large practical result that warranted further discussion. There was no significant difference in ethnicity in terms of converted SAT scores.

The evidence from the regressions showed no indication that there was a difference in converted SAT scores between learning community participants and non-participants when controlling for gender and ethnicity.

Research Question 2. This question addressed whether a difference in academic success existed between learning community participants and non-participants. The data used to answer this question were first year students' GPA for their first and second

semesters at the college, using both Fall GPA and Spring GPA. In order to address this question, a hierarchical regression was performed on Fall GPA, while controlling for gender, ethnicity, and converted SAT score. For the hierarchical regression, the demographic variables only were entered for the first block, followed by SAT scores, and finally by learning community participation. Entering the data in this manner yielded more detailed information about the learning community variable and its influence on the regression equation. The results of the analysis are found in **Table 3**.

SAT score and learning community status were both found to be significant in the final iteration of the model. As was expected, when looking at GPA, SAT scores were significant. There was also a significant difference in the dependent variable for participation in a learning community versus non-participation. A student in a learning community was found to have a GPA 0.22 points lower than a student that was not in a learning community, when controlling for SAT score and demographic variables. This result was different from the expected result, as participation in a learning community was expected to predict higher values of GPA.

Additionally, a 1 point increase in the SAT of a student indicated a 0.002 point increase in the student's GPA for the fall semester. Although the R^2 was higher than in the SAT model (Research Question 1), it was still quite low. The adjusted R^2 for the model was .13, meaning that the model explained only 13% of the variation in Fall GPA. The same regression was performed on Spring GPA, controlling for the same independent variables. The results are found in **Table 4**.

Table 2

Hierarchical Regression Summary for Gender, Ethnicity, and Learning Community Participation Status on Converted SAT Scores (N = 293)

Source	<i>B</i>	<i>S.E.B.</i>	β	<i>t</i>	<i>p</i>
Block 1: Demographics Model Fit: $F(2, 290) = 3.20, R^2 = .02,$ F Change (2, 290) = 3.20, $p = .042$					
Gender (0 = Male, 1 = Female)	-29.20	12.92	-0.13	-2.26	0.025
Ethnicity (0 = Other, 1 = White)	13.89	13.99	0.06	0.99	0.322
Block 2: Demographics + LC Model Fit: $F(3, 289) = 2.45, p = .063, R^2 = .03,$ F Change (1, 289) = .953, $p = .328$					
Gender (0 = Male, 1 = Female)	-28.57	12.93	-0.13	-2.21	0.028
Ethnicity (0 = Other, 1 = White)	16.48	14.24	0.07	1.16	0.248
LC (0 = No LC, 1 = LC)	12.85	13.13	0.06	0.98	0.328

Table 3

Hierarchical Regression Summary for Gender, Ethnicity, Converted SAT Scores, and Learning Community Participation Status on Fall GPA (N = 293)

Source	B	S.E.B.	β	t	p
Block 1: Demographics Model Fit: $F(2, 290) = 3.61, R^2 = .024,$ F Change (2, 290) = 3.61, $p < .05$					
Gender (0 = Male, 1 = Female)	0.05	0.07	0.04	0.71	0.476
Ethnicity (0 = Other, 1 = White)	0.19	0.07	0.15	2.63	0.009
Block 2: Demographics + SAT score Model Fit: $F(1, 289) = 27.74, p < .001, R^2 = .11,$ F Change (3, 289) = 11.88, $p < .001$					
Gender (0 = Male, 1 = Female)	0.09	0.06	0.08	1.43	0.153
Ethnicity (0 = Other, 1 = White)	0.17	0.07	0.14	2.44	0.015
SAT Score	0.00	0.00	0.30	5.27	0.000
Block 3: Demographics + SAT score + Learning Community Model Fit: $F(4, 288) = 12.26, p < .001, R^2 = .15,$ F Change (1, 288) = 12.05, $p = .001$					
Gender (0 = Male, 1 = Female)	0.08	0.06	0.07	1.32	0.190
Ethnicity (0 = Other, 1 = White)	0.12	0.07	0.10	1.78	0.076
SAT Score	0.00	0.00	0.31	5.56	0.000
LC (0 = No LC, 1 = LC)	-0.22	0.06	-0.19	-3.47	0.001

Table 4

Hierarchical Regression Summary for Gender, Ethnicity, Converted SAT Scores, and Learning Community Participation Status on Spring GPA (N = 293)

Source	B	S.E.B.	β	t	p
Block 1: Demographics Model Fit: $F(2, 290) = 1.99, R^2 = .01,$ F Change (2, 290) = 1.99 $p = .138$					
Gender (0 = Male, 1 = Female)	0.08	0.07	0.07	1.18	0.237
Ethnicity (0 = Other, 1 = White)	0.12	0.07	0.10	1.68	0.094
Block 2: Demographics + SAT score Model Fit: $F(3, 289) = 10.47, p < .001, R^2 = .10,$ F Change (1, 289) = 27.06, $p < .001$					
Gender (0 = Male, 1 = Female)	0.13	0.07	0.11	1.91	0.057
Ethnicity (0 = Other, 1 = White)	0.10	0.07	0.08	1.45	0.149
SAT Score	0.00	0.00	0.29	5.20	0.000
Block 3: Demographics + SAT score + Learning Community Model Fit: $F(4, 288) = 9.14, p < .001, R^2 = .11,$ F Change (1, 288) = 4.73, $p = .030$					
Gender (0 = Male, 1 = Female)	0.12	0.07	0.10	1.83	0.068
Ethnicity (0 = Other, 1 = White)	0.07	0.07	0.06	1.02	0.309
SAT Score	0.00	0.00	0.30	5.35	0.000
LC (0 = No LC, 1 = LC)	-0.14	0.07	-0.12	-2.18	0.030

For the Spring semester, there was a significant difference in GPA for participants in a learning community versus non-participants. SAT score also remained a significant variable. Results were similar to Fall in that students who participated in a learning community obtained lower GPAs than non-participants. Participation in a learning community found a Spring GPA 0.14 points lower than students who did not participate. As for Fall semester, a 1 point increase in the SAT score was found to have a 0.002 increase in GPA.

The R^2 for the Spring semester was slightly lower than Fall semester, indicating the model had a slightly poorer fit for this semester. The adjusted R^2 for Spring GPA was 0.10, thus indicating that the model explained 10% of the variation of the dependent variable. In conclusion, the answer to the research question was yes, there were significant differences in academic success for learning community participants as compared to non-participants. These differences, however, were negative and quite small. Learning-community participants were found to have a lower GPA than non-participants.

Research Question 3. The regressions employed for the third question examined whether a significant difference in academic success existed between different types of learning communities during students' first and second semesters of matriculation. For this question, the learning community data were divided into two types, namely science or arts. In order to address this question, a hierarchical regression was performed on Fall GPA, while controlling for gender, ethnicity, and converted SAT score. Only data from those students who participated in a learning community were included in the tests for research question 3. The results for Fall semester are found in **Table 5**.

Table 5

Hierarchical Regression Summary for Gender, Ethnicity, Converted SAT Scores, and Learning Community Type on Fall GPA (N = 142)

Source	<i>B</i>	<i>S.E.B.</i>	β	<i>t</i>	<i>p</i>
Block 1: Demographics Model Fit: $F(2, 139) = 1.60, R^2 = .02,$ F Change (2, 139) = 1.60, $p = .206$					
Gender (0 = Male, 1 = Female)	-0.04	0.10	-0.03	-0.41	0.680
Ethnicity (0 = Other, 1 = White)	0.18	0.11	0.14	1.68	0.095
Block 2: Demographics + SAT score Model Fit: $F(3, 138) = 13.46, p < .001, R^2 = .23,$ F Change (1, 138) = 36.37, $p < .001$					
Gender (0 = Male, 1 = Female)	-0.05	0.09	-0.04	-0.51	0.608
Ethnicity (0 = Other, 1 = White)	0.17	0.09	0.14	1.82	0.071
SAT Score	0.00	0.00	0.45	6.03	0.000
Block 3: Demographics + SAT score + LC type Model Fit: $F(4, 137) = 12.05, p < .001, R^2 = .26,$ F Change (1, 137) = 6.26, $p = .014$					
Gender (0 = Male, 1 = Female)	-0.03	0.09	-0.03	-0.35	0.728
Ethnicity (0 = Other, 1 = White)	0.17	0.09	0.13	1.80	0.074
SAT Score	0.00	0.00	0.43	5.76	0.000
LC type (0 = Science, 1 = Arts)	0.23	0.09	0.19	2.50	0.014

In this instance, learning communities were grouped according to type and students were placed into either arts or sciences. The results indicated that there was a significant difference in GPA when controlling for the aforementioned variables, where arts participants had significantly higher GPAs than science participants. Participants in an arts learning community were found to have a GPA 0.23 points higher than participants in a science learning community. As with previous models, a 1 point increase in SAT score indicated a 0.002 point increase in Fall GPA. The demographic variables were not significant at a 5% level.

The fit for this model was slightly improved over the models for the previous research questions, with an R^2 of .26. The adjusted R^2 was .23, showing that 23% of the variation in Fall GPA was explained by the model. Another regression was performed on Spring GPA and is shown in **Table 6**.

The model for Spring GPA yielded somewhat different results from the model for Fall GPA. The type of learning community was not a significant variable for this semester. The only significant variable was SAT score, again indicating that a 1 point increase in SAT score indicated a 0.002 point increase in GPA. The R^2 for Spring GPA was also significantly smaller than the R^2 for Fall GPA. Adjusted R^2 was .12; hence the model explained 12% of the variation in the dependent variable. In conclusion, the results for answering the third research question, whether there was a significant difference in academic success by type of learning community, was mixed. For Fall semester, the model showed that participation in an arts learning community indicated a higher GPA than participation in a science learning community. The model for Spring

Table 6

Hierarchical Regression Summary for Gender, Ethnicity, Converted SAT Scores, and Learning Community Type on Spring GPA (N = 142)

Source	<i>B</i>	<i>S.E.B.</i>	β	<i>t</i>	<i>p</i>
Block 1: Demographics Model Fit: $F(2, 139) = .342, R^2 = .01,$ F Change (2, 139) = .342, $p = .711$					
Gender (0 = Male, 1 = Female)	-0.02	0.10	-0.02	-0.22	0.829
Ethnicity (0 = Other, 1 = White)	-0.08	0.10	-0.07	-0.82	0.415
Block 2: Demographics + SAT score Model Fit: $F(3, 138) = 7.26, p < .001, R^2 = .14,$ F Change (1, 138) = 20.98, $p < .001$					
Gender (0 = Male, 1 = Female)	-0.02	0.09	-0.02	-0.27	0.788
Ethnicity (0 = Other, 1 = White)	-0.09	0.09	-0.07	-0.92	0.359
SAT Score	0.00	0.00	0.36	4.58	0.000
Block 3: Demographics + SAT score + LC type Model Fit: $F(4, 137) = 46.63, p < .001, R^2 = .14,$ F Change (1, 137) = .776, $p = .380$					
Gender (0 = Male, 1 = Female)	-0.02	0.09	-0.02	-0.21	0.836
Ethnicity (0 = Other, 1 = White)	-0.09	0.09	-0.07	-0.94	0.349
SAT Score	0.00	0.00	0.35	4.42	0.000
LC type (0 = Science, 1 = Arts)	0.08	0.09	0.07	0.88	0.380

semester, however, showed no difference in GPA between the two types of learning communities.

Research Question 4. For the fourth question, tests were designed to investigate whether a significant difference in academic success existed between students according to their time of participation in a learning community. The students who participated in learning communities were divided into three groups. Students who were first year students in the years 2005-2007 and participated in a learning community during their first year at the college were referred to as Group 1. Students who were first year students and participated in a learning community in 2008 were Group 2. Group 3 was comprised of students who were first year students, as well as participated in a learning community, in 2009. Previous tests utilized a single group of students during the same year. For the tests run for Research Question 4, the students in the data were first year students in different years. In order to address this question, a hierarchical regression was performed on Fall GPA with a new independent variable showing the year in which the student participated in a learning community. Results are found in **Table 7**.

The time of participation in a learning community was not a significant predictor of Fall semester GPA. The only significant variable was SAT score, whose coefficient illustrated that a 1 point increase in SAT score indicated a 0.003 point increase in GPA. The R^2 was larger than some of the previous models, but there was no change in R^2 resulting from the addition of the learning community time variable. Adjusted R^2 was .21, thus showing that the model explained 21% of the variation in Fall GPA. A similar regression was run on Spring GPA with similar results. Results are found in **Table 8**.

Table 7

Hierarchical Regression Summary for Gender, Ethnicity, Converted SAT Scores, and Time of Participation in Learning Community on Fall GPA (N = 142)

Source	<i>B</i>	<i>S.E.B.</i>	β	<i>t</i>	<i>p</i>
Block 1: Demographics Model Fit: $F(2, 139) = 1.60, R^2 = .02,$ F Change (2, 139) = 1.60, $p = .206$					
Gender (0 = Male, 1 = Female)	-0.04	0.10	-0.03	-0.41	0.680
Ethnicity (0 = Other, 1 = White)	0.18	0.11	0.14	1.68	0.095
Block 2: Demographics + SAT score Model Fit: $F(3, 138) = 13.46, p < .001, R^2 = .23,$ F Change (1, 138) = 36.37, $p < .001$					
Gender (0 = Male, 1 = Female)	-0.05	0.09	-0.04	-0.51	0.608
Ethnicity (0 = Other, 1 = White)	0.17	0.09	0.14	1.82	0.071
SAT Score	0.00	0.00	0.45	6.03	0.000
Block 3: Demographics + SAT score + LC period Model Fit: $F(4, 137) = 10.07, p < .001, R^2 = .23,$ F Change (1, 137) = .134, $p = .714$					
Gender (0 = Male, 1 = Female)	-0.05	0.09	-0.04	-0.50	0.620
Ethnicity (0 = Other, 1 = White)	0.18	0.10	0.14	1.85	0.066
SAT Score	0.00	0.00	0.45	6.00	0.000
LC Time (1= 05-07, 2 = 08, 3 = 09)	0.02	0.06	0.03	0.37	0.714

Table 8

Hierarchical Regression Summary for Gender, Ethnicity, Converted SAT Scores, and Time of Participation in Learning Community on Spring GPA (N = 142)

Source	<i>B</i>	<i>S.E.B.</i>	β	<i>t</i>	<i>p</i>
Block 1: Demographics Model Fit: $F(2, 139) = .342, R^2 = .01,$ F Change (2, 139) = .342, $p = .711$					
Gender (0 = Male, 1 = Female)	-0.02	0.10	-0.02	-0.22	0.829
Ethnicity (0 = Other, 1 = White)	-0.08	0.10	-0.07	-0.82	0.415
Block 2: Demographics + SAT score Model Fit: $F(3, 138) = 7.26, p < .001, R^2 = .14,$ F Change (1, 138) = 20.98, $p < .001$					
Gender (0 = Male, 1 = Female)	-0.02	0.09	-0.02	-0.27	0.788
Ethnicity (0 = Other, 1 = White)	-0.09	0.09	-0.07	-0.92	0.359
SAT Score	0.00	0.00	0.36	4.58	0.000
Block 3: Demographics + SAT score + LC period Model Fit: $F(4, 137) = 5.41, p < .001, R^2 = .14$ F Change (1, 137) = .01, $p = .915$					
Gender (0 = Male, 1 = Female)	-0.02	0.09	-0.02	-0.26	0.792
Ethnicity (0 = Other, 1 = White)	-0.08	0.10	-0.07	-0.87	0.383
SAT Score	0.00	0.00	0.36	4.56	0.000
LC Time (1= 05-07, 2 = 08, 3 = 09)	0.01	0.06	0.01	0.11	0.915

As was the case with Fall GPA, the learning community time period variable was not a significant predictor of Spring GPA. In fact, once again the SAT score was the only significant predictor of the dependent variable. A 1 point increase in SAT score indicated a 0.002 point increase in Spring GPA. The R^2 was also somewhat lower than for Fall GPA. Adjusted R^2 was .11; 11% of the variation in Spring GPA was accounted for by the model. Additionally, the adjusted R^2 statistic fell from .12 to .11 after the addition of the learning community time period variable, further illustrating that this variable did not have any type of relationship with Spring GPA.

In conclusion, Research Question 4 was answered in the negative. There was no significant difference in the academic success of students according to their time of first year participation in a learning community.

Additional Statistics. A further breakdown of the statistics shows the means of the dependent variables under the different values of the treatment variables. The differences in the means between the treatment (learning community) and non-treatment GPAs should be greater for those cases where the learning community variable was significant in the regressions. The means of these are shown in **Table 9**.

Fall GPA was higher for those students who did not participate in a learning community as compared to those students who did participate. It is interesting to note the difference in the means of Spring GPA; the difference between participants and non-participants was smaller. As shown in the regressions for Research Question 2 also, the influence of the learning community variable was smaller in the students' second semester at the college. The difference in Fall GPAs compared to Spring GPAs is also greater for arts learning communities than science learning communities. This was

Table 9

Means, Standard Deviations, Analysis of Covariance (ANCOVA) Adjusted Means and Effect Sizes for All Comparisons

Outcome	<i>M</i>	<i>SD</i>	<i>Adj M</i>	<i>M</i>	<i>SD</i>	<i>Adj M</i>	<i>g</i>
	<u>Non-Participant in LC</u> (<i>n</i> = 151)			<u>Participant in LC</u> (<i>n</i> = 142)			
SAT intake	1217.4	115.79	1216.6	1228.5	105.97	1229.4	-0.12
Fall GPA	3.18	0.52	3.18	2.95	0.61	2.95	0.39
Spring GPA	3.20	0.59	3.20	3.06	0.57	3.06	0.25
	<u>Science-Focused LC</u> (<i>n</i> = 81)			<u>Arts-Focused LC</u> (<i>n</i> = 61)			
Fall GPA	2.82	0.66	2.85	3.12	0.49	3.08	-0.38
Spring GPA	3.00	0.52	3.02	3.13	0.63	3.10	-0.14
	<u>Earlier Participants in LC</u> (<i>n</i> ₁ = 42, <i>n</i> ₂ = 56, <i>n</i> ₃ = 44)			<u>Later Participants in LC</u> (<i>n</i> ₁ = 42, <i>n</i> ₂ = 56, <i>n</i> ₃ = 44)			
F GPA 1 v 2	3.04	0.59	2.98	2.80	0.65	2.87	0.19
F GPA 1 v 3	3.04	0.59	2.98	3.05	0.55	3.02	-0.06
F GPA 2 v 3	2.80	0.65	2.87	3.05	0.55	3.02	-0.25
S GPA 1 v 2	3.05	0.50	3.05	3.03	0.58	3.06	-0.02
S GPA 1 v 3	3.05	0.50	3.05	3.10	0.64	3.06	-0.02
S GPA 2 v 3	3.03	0.58	3.06	3.10	0.64	3.06	0.00

similar to the regression results, where participation in an arts learning community higher GPA in the fall, but the difference was insignificant in the spring. Finally, the similarity of the means for learning community period coincides with the regression results that indicated the time period was insignificant.

Conclusion

All research questions were answered using hierarchical multiple regression analysis to assess the influence of learning community participation on academic performance, as measured by GPA and converted SAT scores. Research Question 1 focused on converted SAT scores in order to establish whether freshman entering the college with higher scores tended to gravitate to the learning communities. According to the analysis, there was no relationship between SAT scores and learning community participation.

The remaining three research questions used both Fall GPA and Spring GPA as dependent variables. For Research Question 2, whether a student participated in a learning community or not was the major independent variable of interest. Participation in a learning community was a significant variable for both the Fall and Spring GPA regressions; its coefficient was, however, negative. Hence learning community participation was shown to indicate lower levels of GPA at Study College.

The analysis for Research Question 3 yielded mixed results. While participation in an arts-type learning community demonstrated higher GPA as compared to a science-type learning community in the fall semester, for the spring semester the variable was insignificant. Finally, the time of participation in a learning community had no influence

on GPA, answering Research Question 4. The time period variable was insignificant in both the Fall GPA and Spring GPA regressions.

Chapter 5

Discussion

Previous studies researching the link between learning communities and academic success at medium to large sized institutions of higher education have yielded mixed results. While some studies found a positive link between grades and learning community participation, other studies found no link. No prior published research has been conducted at a small liberal arts college in the southeast. This dissertation was a quantitative study utilizing hierarchical multiple regression analyses on academic performance in terms of grade point average (GPA), and SAT scores at a small liberal arts college in the southeast, called Study College. Learning community participation, as well as the type (arts or science), and period of learning community participation, were the major independent variables of interest in the study. Demographic variables and SAT scores were included as control variables in those regressions where GPA was the dependent variable.

The following research questions drove this study and were focused on answering the overarching question as to whether participation in a learning community influenced student academic performance at Study College:

- **Research Question 1.** Are there significant differences in converted SAT scores (college intake) between learning community participants and learning community non-participants, when controlling for gender and ethnicity?
- **Research Question 2.** Are there significant differences in academic success (semester GPA) between learning community participants and learning community non-participants in the first and second semesters of matriculation

at the college, when controlling for gender, ethnicity, and converted SAT scores?

- **Research Question 3.** Are there significant differences in academic success (semester GPA) by type of learning community as science- or arts- related in the first and second semesters of matriculation at the college, when controlling for gender, ethnicity, and converted SAT scores?
- **Research Question 4.** Are there significant differences in academic success (semester GPA) by time of learning community participation—2005-2007, 2008, 2009—in the first and second semesters of matriculation at the college, when controlling for gender, ethnicity, and converted SAT scores?

The purpose of this study was to determine the effectiveness of the learning community program at Study College on educational outcomes as measured by differences in semester GPA between learning community participants and non-participants, as well as differences between types of learning communities, time of participation in learning communities, and the effect of demographic variables and prior attainment (converted SAT scores). The intent of the study was to address two gaps in the existing literature related to learning communities at colleges and universities. The first gap was that there appeared to be no formal studies regarding the efficacy of learning communities for small liberal arts colleges. The existing literature seemed to only address large and mid-sized regional universities and did not include small liberal arts colleges. The second gap in the literature was that there were only a few formal studies indicating that participation in learning communities resulted in an increase in GPA (Inkelas & Soldner, 2011). While some studies indicated a small improvement in

GPA, some, such as Pascarella and Terenzini (1980), Potts and Schultz (2008), and Guy and Levine (2011) did not. Consequently, there were not enough studies to ascertain whether learning communities contribute to an increase or decrease in GPA. This chapter provides a summary of the research conducted, summary and discussion of results, and presents the implications of this study and recommendations for future research.

Summary of Findings

The analysis undertaken for Research Question 1 yielded no evidence that converted SAT scores (college intake) were either higher or lower for learning community participants as compared to non-participants. The learning community variable was not significant at a 5% level. The answer to Research Question 1 was that there were not significant differences in converted SAT scores (college intake) between learning community participants and learning community non-participants, when controlling for gender and ethnicity.

Research Question 2 centered on the question of whether there was a difference in academic success for participants versus non-participants of a learning community. Academic success was measured by GPA. Hierarchical regressions were run on both Fall GPA and again on Spring GPA using SAT score, gender, and ethnicity as control variables. The R^2 and adjusted R^2 statistics were low, accounting for little variance in the model. In both cases, the learning community variable was significant, but negative. Participation in a learning community indicated lower GPA in both semesters. The influence, especially in the spring semester, though, appeared to be relatively small. The answer to Research Question 2 was yes, there were significant differences in academic success (semester GPA) between learning community participants and learning

community non-participants in the first and second semesters of matriculation at the college, when controlling for gender, ethnicity, and converted SAT scores. However, those differences were negative, meaning that learning community participants earned lower GPA scores.

The statistical tests run in order to answer Research Question 3 yielded mixed results. According to the Fall GPA regressions, participation in an arts learning community had a higher GPA, as compared to a science learning community. In the spring semester, however, the variable of learning community type was not significant.

Finally, Research Question 4 centered on whether there was a relationship between academic success and the time period of learning community participation. Again, hierarchical regressions were run on data using Fall GPA and Spring GPA figures. Learning community year was not significant at a 5% level; it did not matter whether the participant was a first year student in a learning community in the years 2005-2007, the year 2008, or the year 2009. The answer to Research Question 4 was negative, there were no significant differences in academic success (semester GPA) by time of learning community participation—2005-2007, 2008, 2009—in the first and second semesters of matriculation at the college, when controlling for gender, ethnicity, and converted SAT scores.

Implications

One of the strengths of the study was the richness and uniqueness of the data set available for analyses. The data included GPAs directly compiled by the college, rather than using students' recollections of their academic performance. It was unique in that

this type of data on learning communities had not previously been compiled for a small liberal arts college.

The learning community program at Study College was created in an ad-hoc manner (Haynes, 2011). Originally, faculty wanting to imitate other schools initiated it and it did not have the purpose of improving semester GPA. Later learning communities were deployed, and none of them were designed for the purpose of improving semester GPA (Haynes, 2011). Consequently, it is hardly surprising that the learning community program, at the time this study was conducted, was not improving semester GPA, as it was not designed to do so.

The context of the learning communities was unusual. Virtually all learning communities are currently at major universities and have the aim of making the freshman experience more like that of a smaller community or college. The learning community program at Study College, however, is different, as the environment is already that of a small college. This does not mean, however, that learning communities do not have a place at small colleges such as Study College.

Over the time period that the data were collected, evidence that students in learning communities have greater academic success was not found. In fact, although the evidence was somewhat mixed, most of the evidence indicated that students participating in learning communities had slightly lower GPAs than non-participating students.

One factor that was not accounted for in the research was the underlying reason that students choose to participate in learning communities. Did students join learning communities with the hope of earning better grades? Or did students choose to participate in learning communities for social reasons? Maybe students joined learning

communities for security reasons, feeling uncomfortable being away from home for the first time.

Another possibility existed that those students joining learning communities were those in more difficult majors, or those taking more difficult classes. This in itself would tend to lower the GPAs of those students involved in the learning communities. These divergent reasons could potentially lead to very different types of students with very different motivations joining learning communities.

Study College, at this time, did not have lengthy experience with learning communities. The learning communities were still relatively new at the college. It would be expected that a learning curve would exist in the implementation of these communities and related practices. The college also needed to focus more on the goals of the learning communities. Although the current research did not show an improvement in GPA from participation in a learning community over time, it was also true that, even by the final year of the study (2009), the college was still adjusting the learning community experience. A strong possibility exists that, sometime in the future when the learning curve in implementing these communities is overcome, GPA will begin to increase with participation.

Future Research

The following recommendations are based on the findings of this research, as well as on the limitations and gaps noted in conducting this research. Possible practical changes that could be made based on the knowledge gained from this work are also discussed. While some of these recommendations utilize the existing data set, others suggest ideas for additional data that could be gathered to gain deeper insight into the

success or failure of learning communities at Study College. These recommendations are focused on additional types of data and programs that could be gathered and implemented in order to gain an even greater insight into these diverse interrelationships.

1. Add additional demographic variables to the statistical model. The study included two demographic variables, but there are other demographic variables that may be available in the future that could improve the data. Some possible variables that could be included in the study are: international students, work status of students (whether the student also works, part-time or full-time), income status of students, type of home community (urban or rural), time spent studying (this is sometimes available from student satisfaction surveys). Include information about the students' majors or classes in the statistical models, as this was not available in this study.
2. Obtain student satisfaction survey data from the college to add to the existing data set. Most colleges use their own surveys to measure student satisfaction and this information is sometimes available to researchers with proper permissions. The current research did not find a positive correlation with academic success and learning communities, but the possibility exists of a positive relationship with student satisfaction. A higher level of satisfaction with the college may lead to greater academic success eventually. It could also lead to more satisfied alumni, which would benefit the college in the future.
3. Create a qualitative study at the school. Case studies on some of the students in different types of learning community at the college could also be designed.

An important question to investigate would be, “Why do students join learning communities at Study College?”

4. Examine participation in a learning community that could help students in other ways (socially, adjusting to the college), which may result in greater academic success in later years.
5. Survey students in learning communities utilizing existing examples or develop a custom one. This survey would focus on the motivations that lead to student participation in the learning communities. Ideally, the survey would be administered when students first join the learning community and then at the end of the student’s first year of matriculation. The results from these surveys could then be used for mixed qualitative and quantitative research. The qualitative research could focus on the open-ended questions of the survey, to find common themes and motivations of students. Likert-type and demographic questions could also be used to conduct a quantitative study that would examine the motivations of students, as well as their satisfaction or dissatisfaction with the learning community at the end of the academic year.

Implementing at least some of these recommendations would lead to an even greater understanding of the relationships between learning community participation and academic performance. The research would also examine the motivations behind participation in learning communities in more depth to determine what type of students are drawn to a learning community at a small liberal arts college such as Study College. These recommendations would support the analysis of the other effects and consequences of learning community involvement, such as a potential increase in student satisfaction,

which could eventually lead to more satisfied alumni, leading to additional positive feedbacks for the college.

Practically speaking, small college administrators should carefully plan the design and implementation of learning communities with clearly stated goals. If improved GPA is a goal for learning community participation, then motivations for participation should be researched and the design and implementation of the learning community program should address participants' motivations and needs. In this way, administrators of small liberal arts colleges looking to justify the expense of learning communities may realize improved academic effectiveness.

Conclusion

The evidence gained from the current research indicating the effectiveness of learning communities on improving student academic performance did not support any of the research questions. None of the analyses showed any type of positive influence of the learning communities at Study College on semester GPA. In fact, the hierarchical multiple regressions on Fall GPA and Spring GPA both showed that participation in a learning community indicated lower semester GPA. This result was more pronounced in the fall than in the spring. This may be an indication that students join a learning community for other than academic reasons; perhaps many students join learning communities for social reasons. Discovering the reasons and motivations for learning community participation was beyond the scope of the dissertation, but leave a potentially fruitful, open area for future research.

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Appendix

THE UNIVERSITY OF MEMPHIS

Institutional Review Board

To: Paul Watkins
Leadership

From: Chair or Designee, Institutional Review Board
For the Protection of Human Subjects
irb@memphis.edu

Subject: Learning Community Participation and Grade Point Average (#2427)

Approval Date: November 1, 2012

This is to notify you that the Institutional Review Board has designated the above referenced protocol as exempt from the full federal regulations under category 4. This project was reviewed in accordance with all applicable statuses and regulations as well as ethical principles.

When the project is finished or terminated, please submit a Human Subjects Research Completion Form (COMP) to the Board via e-mail at irbforms@memphis.edu. This form can be obtained on our website at <http://www.memphis.edu/irb/forms.php>.

Approval for this protocol does not expire. However, any change to the protocol must be reviewed and approved by the board prior to implementing the change.

Digitally signed by Jacqueline Y. Reid
DN: cn=Jacqueline Y. Reid, o=The
University of Memphis, ou=Institutional
Review Board,
email=jreid@memphis.edu, c=US
Date: 2012.11.06 13:20:37 -06'00'

Chair or Designee, Institutional Review Board
The University of Memphis

Cc: Dr. Patricia Murrell