2000

Effects Of A First Semester Learning Community On The Academic And Social Integration Of Nontraditional Technical Students At A Commuting Institution

Barbara M.I. Goldberg

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EFFECTS OF A FIRST SEMESTER LEARNING COMMUNITY ON THE
ACADEMIC AND SOCIAL INTEGRATION OF NONTRADITIONAL TECHNICAL
STUDENTS AT A COMMUTING INSTITUTION

BY

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Submitted in Partial Fulfillment
Of the Requirements for the Degree
Doctor of Philosophy
Seton Hall University

2000
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ACKNOWLEDGMENTS

I have many special people to thank for their help and support throughout the dissertation process.

First, I'd like to thank my mentor, Dr. Martin Finkelstein, for his guidance and constant encouragement. His insightful comments and brief yet motivating "Onward" prompted my steady progress. Thank you also to my other committee members, Dr. Joseph Stetar for challenging me to do my best and to Dr. John Collins for his help and support in statistical analysis.

Next, I am grateful to DeVry Institute for the opportunity to fulfill my dream of completing a doctoral degree. Specifically, I'd like to thank my dean, Mark Hinrichs, for his arranging my schedule and sabbatical to provide the time needed for my research and his willingness to listen. I also would like to thank my colleagues, especially Chris Grevesen and Charlie Sondik, for sharing their statistical expertise and Liz O'Shaughnessy, my cross-country friend for her constant feedback and interest. I could not complete this acknowledgment without especially thanking Tom Kist, my friend, colleague, and teaching partner, for his many hours of thoughtful conversation about the study and his willingness to share his technical talent.

Finally, I want to thank my family, my husband, Don, my daughters, Jodi and Rebecca, my mother, and my sister, Marie, for their loving encouragement and unquestioning acceptance that I would complete my degree and for the sacrifices my husband and daughters willingly endured to allow me the time I needed to complete my work.
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CHAPTER I

Introduction

In his examination of college attrition, Tinto (1987, p. 1) began *Leaving College* with the words, "More students leave their college or university prior to completion than stay." Today with enrollment fluctuating in institutions of higher education, decreasing in some private liberal arts colleges and also in community colleges and increasing in public universities, the trend of students exiting college before graduation continues. The problem is even more significant at the two-year college level. Today also, more nontraditional students, older, commuting, and part-time, are part of the many entering and leaving higher education than ever before. In fact, the number of nontraditional students increased from one in four undergraduates in 1986 to almost one in three in 1992 (NCES, 1996a).

Much of the research on retention has been based on Tinto's model drawn from Durkheim's theory of suicide (Halpin, 1990). This conceptualization focuses on the social and intellectual integration of individuals into the community, i.e., in this application, the college community (Tinto, 1987). How much college students feel connected to their school, to their peers, and to their instructors and how satisfied with these aspects of their college experience they are appear to be most significant in their decisions whether to stay or leave their institutions (Astin, 1993). Astin (1993) showed that factors affecting students such as commuting to campus and having heterogeneous backgrounds with
interest in vocational education lead to low involvement and resulting low student success.

The challenge, therefore, is to make the learning environment an environment in which students are actively involved both in the learning process itself as well as with those with whom they are learning: other students and faculty. When Chickering and Gamson (1991) reviewed research on how students learn and teachers teach, they identified the first three principles of good practice in undergraduate education as being student-faculty contact, encouragement of cooperation among students, and active learning. In their study, How College Affects Students, Pascarella & Terenzini (1991) also noted the importance of student-faculty interaction, student academic and social involvement, interdisciplinary learning, active student participation in higher order thinking activities such as problem-solving activities, and the restructuring of classes into learning communities. Just recently, the Carnegie Foundation for the Advancement of Teaching (Arcenson, 1998) called for the need for more undergraduate interdisciplinary courses and courses centered around research and problem-solving as part of an effort to improve undergraduate learning. Students need to be working together in collaborative settings engaging in shared discourse about their experiences. Also, they need to be involved in flexible curriculum relating to a wide range of disciplines causing them to think critically and apply what they are learning.

Higher education has responded by instituting a number of innovations: interdisciplinary learning, increased use of team-teaching, emphasis on problem-solving and critical thinking, and the establishment of learning communities, ranging from a coordination of two or more courses to a complete integration of entire programs. All of
these practices are designed to make education more meaningful and coherent as well as
to strengthen students’ ties to the learning community and, in fact, appear to achieve their
objectives (Anderson, 1991; Astin, 1993; Doebler & Smith, 1996; Gardner &
Southerland, 1997; Hatcher & Hinton, 1996; Hunter & Kochis, 1993; Lamb, Lee, &
Vinton, 1997; McKinley, 1996; Metheny & Metheny, 1997; Smith, 1991; Tinto, 1996a,
1997a, 1997b; Tinto, Goodsell-Love, & Russo, 1993; Tinto & Russo, 1994; Zea, Reisen,
Beil, & Caplan, 1997). In addition, not only do these innovations impact students
positively, they also appear to enhance the faculty’s experience in the teaching/learning
process. Faculty frequently report increased enthusiasm for teaching, pedagogical change,
and collegiality (Barwick, 1990; Doebler & Smith, 1996; Hatcher & Hinton, 1996;
Hunter & Kochis, 1993; Lamb, Lee, & Vinton, 1997; McKinley, 1996; Metheny &
Metheny, 1997; Mullins & Fukami, 1996; Smith, 1991; Tinto, 1997a). Thus, the need to
continue to strengthen students’ sense of belonging and involvement with learning is
clear. Recently, Tinto (1997b) called for more research into the ways curriculum structure
(e.g. learning communities) and pedagogy (e.g. cooperative teaching) shape both learning
and persistence on the college campus.

This study focused on nontraditional, commuting, full-time students at a
proprietary, technical, two and four year college of approximately 3600 students in a
large metropolitan area in central New Jersey and the impact of a problem-solving, team-
based, team-taught, interdisciplinary learning community on these students. Many of
these students are older than traditional college students, and many are minority and
international students. The study consisted of a cohort of 25 Electronic Technician
Certificate Program students which represented 25/26 students or 96% of the total
population eligible for the study. As part of their first term experience, 16 students in the experimental group were assigned to the newly designed Team 112 course in its team-taught learning community model while nine students in the control group experienced the same class in an unlinked model taught by one instructor. The experimental class was linked as a cohort to the same Computer Applications class, Comp.111, with the technical instructor of the Team 112 teaching team also teaching the linked Computer class. The control class taught by the General Education instructor of the Team 112 teaching team was an independent class not linked to any other class by means of a common instructor.

**Purpose of the Study**

It was the purpose of this study to compare two different teaching models of the same course, a team-taught, interdisciplinary learning community model and a model taught by one instructor unlinked to any other classes in an effort to compare students' social and academic integration; students' perceptions of their academic and social integration; and actual behaviors and outcomes such as academic performance, Team and Computer course grades and first semester grade point averages, both in-person and e-mail contact with classmates and instructors, commitment to the institution, and persistence into their second semester through the administration of a student self-reported survey at the end of the semester and also the examination of institutional data regarding course grades, grade point averages, and persistence.
The Research Question

The research question asked if participation in the team-taught learning community of Team 112 linked with Computer Applications 111 made a difference to students in both their perceptions of their first semester academic and social experiences as well as actual academic behaviors and outcomes. Did participation in the team-taught learning community of Team 112 and Computer Applications 111 improve student academic and social integration; perception of their first semester experience; and actual student behaviors and outcomes such as academic achievement, Team and Computer course grades and first semester grade point averages; amount of in-person and e-mail contact with their classmates and instructors; commitment to the institution; and persistence into the second semester?

Hypotheses

The research hypotheses tested were that first semester students in the team-taught learning community model of Team 112 would have significantly higher levels of academic and social integration and more positive perceptions of their academic and social experiences than the control class as well as higher Team and Computer course grades and grade point averages, more contact with their classmates and instructors, and greater commitment to the college and persistence into the second semester.

The two sets of research hypotheses underlying this study were as follows:

Hypothesis Set I – Student Attitudes and Perceptions

1. The experimental students experienced a higher level of academic and social integration than the control students.
2. The experimental students perceived their academic and social experiences more positively than the control students.

Hypothesis Set II – Academic Behaviors and Outcomes

1. The experimental students earned higher Team and Computer course grades than the control students.

2. The experimental students earned higher grade point averages than the control students.

3. The experimental students indicated a higher level of commitment to the college than the control students.

4. The experimental students persisted, i.e., continued into the second semester, at higher levels than the control students.

5. The experimental students worked with their classmates outside of class and e-mailed each other more often than the control students.

6. The experimental students interacted with their instructors, in-person and through e-mail, more than the control students.

Definition of Terms

Academic integration: student’s acceptance or membership into the formal and informal academic system of a particular institution as evidenced by successful academic performance and interactions with faculty and staff (Tinto, 1993); “The development of a strong affiliation with the college environment both in the classroom and outside of class includes interactions with faculty, academic staff, and peers but of an academic nature (e.g. peer tutoring, study groups)” (Nora, 1993, p. 235).
Collaborative Learning (CL): “emphasizes the ‘natural learning’ (as opposed to training resulting from highly structured learning situations) that [sic] occurs as an effect of a community in which students work together in unstructured groups and create their own learning situation” (Johnson, Johnson, & Smith, 1998, p. 1). “... an umbrella term for a variety of educational approaches involving joint intellectual effort by students or by students and teachers together” (Smith & McGregor, 1992, p. 10).

Cooperative Learning: requires that, “a group must have clear positive group interdependence and members must promote each other’s learning and success face to face, hold each other individually accountable to do his or her fair share of the work, appropriately use the interpersonal and small-group skills needed for cooperative efforts to be successful, and process as a group how effectively members are working together” (Johnson, Johnson, & Smith, 1991, p. 25). “Cooperative learning represents the most carefully structured end of the CL continuum. In cooperative learning the instructor retains a higher degree of authority and monitors group operations more strictly, more attention is given to individual accountability and personal responsibility to achieve the group’s roles, and group roles are more structured” (Thomchick, 1997, p. 3).

Interdisciplinary courses: “...those involving the subject matter and faculty of two or (usually) more disciplines or professional specializations” (Davis, 1995, p. 4). “If there is a key characteristic of interdisciplinary courses, it is ‘integration,’ scholars working together to pool their interests, insights, and methods, usually with the hope of gaining and presenting new understandings that could not be derived from working alone” (Davis, 1995, p. 6).
Learning community: "A learning community is any one of a variety of curricular structures that link together several existing courses or actually restructure the curricular material entirely so that students have opportunities for deeper understanding and integration of the material they are learning, and more interaction with one another and their teachers as fellow participants in the learning enterprise" (Gabelnick, MacGregor, Matthews, & Smith, 1990, p. 19); "a curricular restructuring approach that links or clusters classes around an interdisciplinary theme, and enrolls a common cohort of students" (Learning Communities, Jan. 1998); "Models range from clusters of loosely linked courses to single programs in which several courses have been so intertwined that course divisions are no longer apparent" (Rasmussen & Skinner, 1997). Learning community "pedagogy often includes team teaching, interdisciplinary content, integration of skill and content teaching, and active approaches to learning" (Smith, 1991, p. 1).

Linked courses: Linked courses simply involve pairing two courses and scheduling a specific cohort of students (Gabelnick et al., 1990).

Nontraditional student: In its studies of nontraditional students, the National Center for Educational Statistics (NCES, 1996a) based nontraditional status on the presence of one or more of the following characteristics: "delayed enrollment into postsecondary education, attended part-time, financially independent, worked full-time while enrolled, had dependents other than a spouse, was a single parent, or did not obtain a standard high school diploma." Nontraditional status is further classified according to the number of nontraditional characteristics with one as minimal, two or three as moderate, and four or more as high.
Persistence: (as defined in this study) continued full-time enrollment into the third week of the student's second semester.

Social integration: student’s acceptance or membership into the formal and informal social system of an institution as evidenced by successful peer-group interactions and participation in extracurricular activities (Tinto, 1993); “The development of a strong affiliation with the college social environment both in the classroom and outside of class. Includes interactions with faculty, academic staff, and peers but of a social nature (e.g. peer group interactions, informal contact with faculty, involvement in organizations).” (Nora, 1993, p. 237); participation in a learning community that causes social integration “helps students feel comfortable, make friends, and develop a support network” (Matthews, 1994, p. 189).

Team: “A team is a small number of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they hold themselves mutually accountable” (Katzenbach & Smith, 1993, p. 45).

Team 112: A required, first semester, General Education course in which students are introduced to problem-solving strategies in a collaborative environment and learn to evaluate their thinking processes and assume responsibility for their own learning and growth (DeVry Institute 1998-1999 Academic Catalog).

Team-based, team-taught course: In this study, a class in which students are placed in groups or teams to work both cooperatively and collaboratively and are taught by a team of two instructors, one a technical instructor and the other a General Education instructor.
Team-teaching: "... all arrangements that involve two or more faculty in some level of collaboration in the planning and delivery of a course" (Davis, 1995, p. 8). In this study, two instructors worked closely together as a team integrating their multiple perspectives, planning instruction, intermingling their teaching activity, and grading and evaluating student work.

Traditional student: student with none of the nontraditional characteristics identified by the NCES (NCES, 1996a).

Limitations

Because of the experimental design of the study, individuals were assigned randomly from a stratum of all non-developmentlal, full-time Electronic Technician students registered for the Spring 2000 semester to the experimental and control sections. As enrollment for the semester was smaller than usual, the sample size was also small. Even with this random assignment, some differences in student characteristics occurred due to no-shows, initial changes in scheduling, official and unofficial withdrawals, study ineligibility due to part-time student status, and last minute inclusion of non-electronic technician students into the experimental class. The total population of the study, though, did represent 25/26 or 96% of the students eligible for the study.

A second limitation involved the mortality rate of the sample as well as the sample size. The number of students in each class varied because of the reasons cited in the first limitation. All students present for the Solicitation/Informed Consent Form explanation did, however, participate in the study (Appendix A).
Finally, another limitation concerned external validity and the ability to generalize from the results of this study. First, a single cohort of Electronic Technician certificate students from a single proprietary institution was used as a sample. Thus, any findings can only be generalized to similar populations at similar institutions. Next, the study was restricted to students in a problem-solving class with the experimental class linked to an introductory computer class. Finally, the treatment outcomes could be limited to the selection of the instructors; that is, the results of the treatment might vary depending on the individual instructors as well as the combination of instructors in the teaching team.

Study Summary

This study focused on nontraditional, commuting, full-time students at a proprietary, technical, two and four year college in a large metropolitan area in central New Jersey and the impact of a problem-solving, team-based, team-taught, interdisciplinary learning community on these students. Many of these students are older than traditional college students, and many are minority and international students.

The study consisted of a cohort of 25 students in the Electronic Technician (ET) Certificate Program that represented 25/26 students or 96% of the total population eligible for the study. As part of their first term experience, an experimental class of 16 students was part of the newly designed course Team 112 in its team-taught learning community model while a control group of nine students experienced the same class in the model taught by one instructor unlinked to any other class. The research hypotheses tested were that first semester students in the team-taught learning community model of Team 112 would have significantly higher levels of academic and social integration and
more positive perceptions of their academic and social experiences than the control class as well as higher Team and Computer course grades and grade point averages, more contact with their classmates and instructors, and greater commitment to the college and persistence into the second semester. Both quantitative and qualitative research methodologies analyzing data from a student self-reported survey as well as institutional data were employed to compare the academic behaviors and outcomes of learning community and non-learning community students and to understand from the students’ point of view their perception of the program.

Study results indicated that the team-taught learning community of Team 112 did, indeed, make a difference to the students in the experimental class. Study results yielded both quantitative and qualitative support for the hypotheses dealing with student perceptions of their experiences. Experimental students indicated that they experienced higher levels of academic and social integration than did the control students. Study results failed, however, to provide support for most of the hypotheses dealing with actual student behaviors and outcomes with the exception of strong statistical and qualitative support for student commitment to the college.

Recommendations for further research include a longitudinal follow-up study to track student behaviors and outcomes, additional research to determine the reasons for second semester attrition, and studies both replicating the original design with the same student population and studies extending the research to other student cohorts with both the same and also different teaching teams in the same institution as well as other technical and non-technical colleges with similar student populations to confirm or refute the findings of this study and to determine their value in other settings.
CHAPTER II

Review of the Literature

Introduction

Today the American system of higher education with its more than 3800
ingstitutions is both "the largest and most diverse system of postsecondary education in the
world" (Trow, 1997, p. 571) offering access to anyone wishing to enter its system. This
system consists of both private and public colleges and universities, two-year community
colleges, proprietary colleges, and graduate and professional schools. From its inception,
American higher education has transformed itself from a system of elite education to
mass education to the predominant model of today, universal education (Trow, 1973).

According to the National Center for Education Statistics (1997, p. 173), even
though higher education enrollment increased by 9% between 1975 and 1985, enrollment
increased at even a faster rate (16%) from 12.2 million to 14.3 million between 1985 and
1995. Female and part-time students contributed to much of this growth. While the
number of men rose 9%, the number of women increased 23%. Both full-time and part-
time enrollments rose, but the number of part-time students increased 19% compared to
an increase of 15% for full-time students. Also, the number of older students has
generally been growing more rapidly than younger students, although the pattern is
changing somewhat. Between 1985 and 1995, enrollment of students 25 and under
increased by 13% compared to a 22% increase for those over 25. The number of
students is expected to continue to increase; NCES projects an increase of 20% for students under 25 and an increase of 4% for those over 25 from 1995 to 2007. The proportion of minority college students has also been increasing with the percentage going from almost 16% in 1976 to more than 25% in 1995 as seen in Figure 1.

Higher education promises many rewards to those earning degrees: personal, societal, and, of course, monetary. Specifically, postsecondary degree attainment is closely associated with better access to “employment and higher earnings” (NCES, 1997). In fact, according to NCES (July 1997), “In 1995, on average, male bachelor’s degree recipients aged 25-34 earned 52% more, and female bachelor’s degree recipients 91% more than their counterparts with a high school diploma.” Thus, the monetary benefit alone to college graduates is substantial.

However, despite the increasing number of students entering higher education and in spite of the myriad benefits of earning degrees, many students are leaving higher education before degree completion. In his examination of college attrition, Tinto (1993) asserts that of the nearly 2.4 million students who entered college in 1993 for the first time, over 1.5 million will leave before earning degrees, and out of that number, over 1.1 million will leave higher education altogether.
Figure 1. Percentage of White and Minority Fall Enrollment Students in Colleges and Universities (1976-1995)

Note. Adapted from the US Department of Education, National Center for Education Statistics, Higher Education General Information Survey (HEGIS), Table 206, “Fall Enrollment in Colleges and Universities” surveys, and Integrated Postsecondary Data System (IPEDS), “Fall Enrollment” surveys. (Table prepared January 1997.)
Attrition of Nontraditional Students

As indicated by NCES statistics, more students entering higher education today are female, older, part-time, and minority, students often termed nontraditional. In its studies of nontraditional students, the Department of Education based nontraditional status on the presence of one or more of the following characteristics: "delayed enrollment into postsecondary education, attended part-time, financially independent, worked full-time while enrolled, had dependents other than a spouse, was a single parent, or did not obtain a standard high school diploma." (NCES, 1996a). Significantly, the 1994 follow-up of the Beginning Postsecondary Student (BPS) cohort indicates a negative association between degree attainment and the presence of any nontraditional characteristics as can be seen in Table 1 (NCES, 1996b).

While 64% of traditional students earned some type of postsecondary degree, only 43% of the nontraditional cohort was able to accomplish the same. This same study found that while one in five traditional students leaves college without earning a degree, one in three nontraditional students does the same (NCES, 1996b). The problem then of students leaving higher education is clearly of particular consequence to nontraditional students.

As this trend of students exiting college before graduation continues, it is especially important to know exactly when students leave school in order to increase nontraditional student retention. The NCES analyzed students’ persistence track, their first departure from their initial enrollment by classifying departure as a downward transfer, stopping out for more than 4 months and then returning to the same or higher level institution, or leaving without returning by 1994 (NCES, 1996b).
Table 1

Percentage Distribution of All 1989-90 Beginning Postsecondary Students Who Had the Intention of Earning a Degree according to their Persistence and Attainment, by Nontraditional Status

<table>
<thead>
<tr>
<th></th>
<th>Attained any degree</th>
<th>No degree attained, enrolled in 1994</th>
<th>No degree attained, not enrolled in 1994</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>52.3</td>
<td>13.1</td>
<td>34.7</td>
</tr>
<tr>
<td>Traditional</td>
<td>63.8</td>
<td>14.1</td>
<td>22.1</td>
</tr>
<tr>
<td>Nontraditional*</td>
<td>43.3</td>
<td>12.2</td>
<td>44.5</td>
</tr>
<tr>
<td>Minimally nontraditional</td>
<td>51.8</td>
<td>13.3</td>
<td>34.8</td>
</tr>
<tr>
<td>Moderately nontraditional</td>
<td>40.6</td>
<td>10.9</td>
<td>48.5</td>
</tr>
<tr>
<td>Highly nontraditional</td>
<td>33.3</td>
<td>12.3</td>
<td>54.3</td>
</tr>
</tbody>
</table>

Note. Details may not add to 100% due to rounding.

*Nontraditional status refers to the presence of one or more nontraditional characteristics: minimal=1, moderate=2 or 3, high=4 or more. Nontraditional characteristics include delayed enrollment, part-time attendance, being independent, working full time while enrolled, having children, being a single parent, or being a recipient of a GED or high school completion certificate.

Table 2 shows the percentage and college year both traditional and nontraditional students leave school (NCES, 1996b).

Table 2

Percentage of 1989-90 Beginning Postsecondary Students according to their Enrollment Continuity, by Nontraditional Status and Initial Degree Objective

<table>
<thead>
<tr>
<th></th>
<th>Attained any degree or still enrolled with no interruption/1</th>
<th>Annual rates of attrition (first enrollment interruption)/2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>First year</td>
</tr>
<tr>
<td>Total</td>
<td>45.3</td>
<td>28.4</td>
</tr>
<tr>
<td>Traditional</td>
<td>56.8</td>
<td>16.2</td>
</tr>
<tr>
<td>Nontraditional/3</td>
<td>36.0</td>
<td>38.3</td>
</tr>
</tbody>
</table>

Initial degree objective/4

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>First year</th>
<th>Second year</th>
<th>Third year</th>
<th>Fourth year or later</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor's degree</td>
<td>52.3</td>
<td>19.1</td>
<td>12.5</td>
<td>17.3</td>
<td>10.8</td>
</tr>
<tr>
<td>Traditional</td>
<td>58.9</td>
<td>13.6</td>
<td>10.0</td>
<td>15.8</td>
<td>10.0</td>
</tr>
<tr>
<td>Nontraditional/3</td>
<td>42.3</td>
<td>27.2</td>
<td>17.0</td>
<td>20.1</td>
<td>12.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>First year</th>
<th>Second year</th>
<th>Third year</th>
<th>Fourth year or later</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associate's degree</td>
<td>32.2</td>
<td>39.2</td>
<td>24.0</td>
<td>30.5</td>
<td></td>
</tr>
<tr>
<td>Traditional</td>
<td>52.3</td>
<td>23.1</td>
<td>17.3</td>
<td>17.8</td>
<td></td>
</tr>
<tr>
<td>Nontraditional/3</td>
<td>23.1</td>
<td>46.4</td>
<td>28.7</td>
<td>40.0</td>
<td></td>
</tr>
<tr>
<td>Certificate</td>
<td>45.3</td>
<td>39.8</td>
<td>18.3</td>
<td>7.8</td>
<td></td>
</tr>
<tr>
<td>Traditional</td>
<td>52.3</td>
<td>23.1</td>
<td>23.2</td>
<td>11.5</td>
<td></td>
</tr>
<tr>
<td>Nontraditional/3</td>
<td>43.9</td>
<td>43.2</td>
<td>17.0</td>
<td>14.9</td>
<td></td>
</tr>
</tbody>
</table>
1. Had either attained a degree or were still enrolled in 1994 and had never had an enrollment interruption.

2. An interruption is defined as leaving without returning, a downward transfer (e.g., 4-year to 2-year institution with or without an interruption), or a period of interruption of more than 4 months (stopout) and then returning to the same level or higher institution. It is possible for some students who had an interruption to have returned and either attained or still be enrolled. The percentages represent annual rates (i.e., base includes only students still enrolled at the beginning of the year).

3. Nontraditional status refers to the presence of one or more nontraditional characteristics including delayed enrollment, part-time attendance, being independent, working full time while enrolled, having children, being a single parent, or being a recipient of a GED or high school completion certificate.

4. It is possible that the degree attained was not the initial objective. For example if a student initially had a BA objective but earned an AA and had no enrollment interruption (defined in footnote 2), that student would appear in column 1 under bachelor's degree objective.


An examination of this table clearly indicates that nontraditional students are at greatest risk of leaving during their first year. Although nontraditional students are more
than twice as likely to leave than traditional students (38% to 16%) during the first year, the difference between the two cohorts narrows substantially from the second year on. Figure 2 indicates the same pattern (NCES, 1996b).

Thus, the timing of retention programs is crucial to their success; it appears obvious that such programs ought to be implemented at the very beginning of postsecondary education.
Figure 2. Percentage of 1989-90 Beginning Postsecondary Students according to their Enrollment Continuity 5 Years after Beginning (as of 1994), by Nontraditional Status and Initial Degree Objective

1. Had either attained a degree or were still enrolled in 1994 and had never had an enrollment interruption. It is possible that the degree attained was not the original objective. For example if a student has a BA objective but earned an AA and had no enrollment interruption (defined in footnote 2), that student would be classified as persisted under bachelor's degree objective.

2. "Left" is defined as leaving without returning, a downward transfer (e.g., 4-year to 2-year institution with or without an interruption), or a period of interruption of more than 4 months (stopout) and then returning to the same or higher level of institution. It is possible for some students who had an interruption to have returned and either attained or still be enrolled.

3. Nontraditional status is based on the presence of one or more of seven possible nontraditional characteristics. These characteristics include delayed enrollment, part-time attendance, being independent of parents, working full time while enrolled, having dependents, being a single parent, and being a recipient of a GED or a high school completion certificate.

Source. U.S. Department of Education, National Center for Education Statistics. 1989-90 Beginning Postsecondary Students Longitudinal Study (BPS:89/94), Data Analysis System, Figure 8.
Tinto's Model of Student Departure

Although the issues of college retention and the impact of the various components of a college education have been studied and researched extensively since the late 1960s, there are still many gaps in the literature. Because so many non-traditional students, older, commuting, and part-time, are part of the many entering and leaving college, many researchers have attempted to identify and isolate variables affecting these at-risk students and their decision to leave college (Astin, 1993; Pascarella & Chapman, 1983; Pascarella, Duby, Miller, & Rasher, 1981; Pascarella & Terenzini, 1980, 1991; Spady, 1970; Terenzini, Lorang, & Pascarella, 1981; Tinto, 1987, 1993; Tinto & Russo, 1994; Zea, Reisen, Beil, & Caplan, 1997).

Many studies have examined the issue of student attrition in relation to students' academic and social integration (Bean & Metzner, 1985; Pascarella & Chapman, 1983; Pascarella, Duby, & Iverson, 1983; Pascarella, et al., 1981). Much of the research on retention has been based on Tinto’s interactional model drawn from Durkheim’s theory of suicide (Halpin, 1990). Until 1975 when Tinto published his model on student/college interaction, the vast majority of research on retention had no conceptual framework (Halpin, 1990). Based on Durkheim’s classic theory of suicide, Tinto (1987) focused on one of the four types of suicide, egotistical suicide, a form of suicide arising when individuals are unable to become integrated, socially and intellectually, with the community. He then applied Durkheim’s work to the study of persistence in college and began to examine the way the social and intellectual communities of colleges encouraged or discouraged staying in school. An integral part of the model is that colleges are interactive systems and the impact of the person/environmental fit is critical.
Tinto (1987, 1993) also builds on the work of Arnold Van Gennep, a Dutch anthropologist, and his study of the rites of passage in tribal societies. Van Gennep focused especially on the movement of individuals in society from youth to adult status and on the movement from membership in one group to another. He asserted that the process was marked by three distinct stages of separation, transition, and incorporation. Tinto (1987, 1993) argued that the process of student persistence was similar in that it, too, had stages of passage and that student departure reflected the difficulties students faced in managing those passages. In separation, the first stage, students must dissociate themselves from their communities of the past. The transition stage requires the adoption of new norms and patterns in order to become integrated into the life of the college. Tinto (1993, p. 97) notes that “disadvantaged students, persons of minority origins, and the physically handicapped are more likely than others to experience such problems than are other students” because their past experience may not have prepared them to successfully enter their new communities. The final stage, incorporation, is accomplished not by specific rituals but rather by the “daily personal contacts with other members of the college, in both the formal and informal domains of institutional life” (Tinto, 1993, pp. 98-99).

A number of other studies followed based on the Tinto model. Pascarella and Terenzini (1980) proved the model's predictive validity when dealing with private, selective, residential universities. Later, Terenzini, Lorang, and Pascarella (1981) found similar results when studying public universities. Pascarella and Chapman (1983) studied commuter schools and found that in commuter colleges, academic integration had the strongest influence but that at residential institutions, social integration was more
important. Pascarella, Duby, and Iverson (1983) applied Tinto’s model to a nonresidential commuter campus and found those students less involved in the nonacademic social environment of the school. What was lacking in the literature were studies examining non-residential two year colleges.

In 1987, Tinto published his classic work on college retention, *Leaving College: Rethinking the Causes and Cures of Student Attrition*. He focused on two different but related goals. First, he expanded his adaptation of Durkheim’s theory of suicide and its applicability to college persistence and added this model to the large body of research on retention. Next, he focused on what could be done to improve retention by suggesting a series of specific procedures and strategies, a problem-solving approach to the problem itself.

**Faculty/Student Involvement**

Of all the factors affecting retention, however, what appears to be most significant is how much college students feel connected to their school, to their peers, and to their instructors, and how satisfied with these aspects of their college experience they are (Astin, 1993; Levin & Levin, 1991). So it is involvement and interaction that are critical. As Kuh, Schuh, Whitt, and Associates (1991, p. xi) have noted in *Involving Colleges*, “The research is unequivocal: Students who are more involved in both academic and out-of-class activities gain more from the college experience than those who are not so involved.” In fact, a substantial amount of evidence demonstrates the “strong relationship between student involvement and student achievement” (Friedlander &
McDougall, 1992, p. 20). Bean and Bradley (1986) also found that student satisfaction also influenced student performance.

In 1993, Astin published *What Matters in College?* as a follow up to his earlier work, *Four Critical Years*. In this classic study of traditional college age students, he endeavored to explore how undergraduates are affected by their college experiences. He focused on how environmental characteristics and experiences of involvement affected students. Part of what he discovered was that the single most important environmental influence on students' development was the peer group and that the type of institution was not necessarily important, but rather that it was the environment created by the faculty and students that mattered. He found that next to the peer group, the faculty influenced undergraduates' development most significantly and that the category of student orientation of faculty which included team-teaching, interdisciplinary courses, general education courses produced more substantial direct effects on student outcomes than almost any other environmental factor. However, he also found that lack of student community had stronger direct effects on student satisfaction than any other factor; a finding which certainly supports the movement to create stronger undergraduate college communities.

In a follow-up study examining his earlier finding that colleges emphasizing research tend to produce negative student outcomes while colleges emphasizing students and teaching tend to have a positive impact on undergraduate students, Astin and Chang (1995) examined the possibility that some institutions might be able to successfully combine the two. The results of this study involving 193 institutions suggested that selective residential liberal arts colleges came closest to achieving a balance between
encourage and facilitate each other's progress to reach group goals. More frequent student helping and tutoring take place in cooperative situations along with more effective and efficient exchange and processing of information. Anxiety about public speaking can be reduced by providing students with the opportunity to speak in a small group setting (Neer, 1987). Additionally, promotive interaction provides students with personal rather than impersonal feedback with a greater effect on performance as well as the opportunity to engage with controversy in a positive process. Thus, student anxiety is reduced, and trust is increased.

Not only does cooperative learning promote an open attitude to new ideas, it results in “intrinsic motivation, high expectations for success, high incentive to achieve based on mutual benefit, high epistemic curiosity and continuing interest in achievement, high commitment to achieve, and high persistence” (Johnson et al., 1991, p. 35). At the same time, in contrast to competitive or individualistic learning strategies, cooperative learning promotes increased use of higher-level reasoning strategies and critical thinking (Gabbert, Johnson, & Johnson, 1986). Students also exhibit more positive attitudes toward subject areas and instructional experience that, no doubt, contribute to a higher retention rate. Faculty report knowing their students better, and students are able to develop stronger peer relationships as well as understand others’ perspectives. Thus, through a generally more positive interpersonal environment, cooperative learning supports a higher level of self-esteem and a higher level of psychological health than other methods of instruction.
research and teaching. While these colleges did spend substantially more money per student than other schools, they spent a good proportion more on student services. Also even though their students scored higher on entrance tests than students at other schools, they were far less competitive about their grades which appears to be a result of the institutional climate. These students also were more likely to major in traditional liberal arts fields, take interdisciplinary courses, engage in independent research or in research with their professors, and have high student-faculty contact. Faculty at these institutions more often engaged in team teaching, interdisciplinary courses, and the development of new courses as well as other practices such as emphasizing writing with multiple drafts. The study revealed that most of the characteristics that distinguish these institutions are practices identified in What Matters in College (Astin, 1993); that is, practices such as frequent student-faculty interaction, interdisciplinary courses, and others. Some of the principle generalizations from the study are that these institutions use practices that have proven to have positive student outcomes and that although some of these practices are resource-intensive, many others such as faculty interaction with students and more student-to-student interaction can be emulated almost anywhere.

Retention Initiatives

Because of this interest in not only keeping students in college but also involving them in the college community, schools have continued to develop many different types of retention initiatives and programs. Orientation sessions, peer and faculty mentoring, academic advising, counseling, academic support programs as well as Freshman seminar and orientation classes are some of the many options available (Upcraft, Gardner, &
Associates, 1989). In an effort to clarify what various retention strategies have in common and how these strategies can be applied in colleges, Beatty-Guenter (1994) developed a structure and typology of retention strategies. The four types of retention strategies identified are: sorting (of students into homogeneous subgroups), supporting (of students in dealing with life’s problems and responsibilities), connecting (of students to each other and the institution), and transforming (of students and/or the community college).

Sorting and supporting are the first two strategies identified. Sorting includes strategies designed to place students into programs most suited to their academic and vocational goals and academic abilities. Entry assessment and placement, best-fit admissions, program/course planning, and early academic warning alert are examples of sorting strategies. In his discussion of “good colleges”, Boyer (1987, p. 288) notes the importance of the first few weeks on campus and the need to offer well planned orientation programs as well as to consider the entire first year as “something special.” Supporting involves providing assistance with regard to financial, family, or housing considerations. Child-care, financial aid, health and wellness programs, security and transportation fall into this category.

The last strategy, transforming, involves changing students from being uncommitted to committed, uninvolved to involved, passive to active, and from failure threatened to achievement motivated (Beatty-Guenter, 1994). Actually, many of the strategies in the connecting part of the typology also influence transforming. Programs such as developmental education, tutoring, learning assistance, and counseling can help
students develop the skills and motivation to succeed. Finally, curricular change such as student success courses can also be an effective method to reduce student attrition.

However, of all of the four strategies, it is connecting which includes techniques designed to create a bond between the students and the institution that reflects Tinto’s model and attempts to link the student with the college community and to feel membership in the community. Orientation, faculty advisers and mentors, student activities, work-study, and attendance monitoring are strategies that connect and involve students. Forming study groups and creating block programming can also create cohesive student groups (Beatty-Gunter, 1994). Supplemental instruction, too, can increase both academic achievement and retention while promoting a learning community and connections between peers (Perez, 1998).

Beatty-Gunter (1994) asserts, however, that in order to be effective, any comprehensive retention program contain must some strategies from each category of the typology. Brawer (1996), too, suggests that since different students require different approaches, colleges consider persistence more holistically and implement multiple intervention strategies. In their teleconference, “Meeting the Challenge of Student Retention,” Rendon, Terenzini, and Gardner once again emphasize the importance of social and academic integration along with a host of strategies to prevent attrition (March 18, 1999).

The need to create community within the classroom is, perhaps though, most important. Ritschel (1995) maintains that because the community college today is composed of so many individuals with nothing in common, that it is virtually impossible to create a sense of community within the entire college population. Community colleges
students face many obstacles as they continue through their coursework, not the least of which are their multiple life roles (Grosset, 1993). Many studies have noted the manifold external commitments of community college students such as work and family commitments as well as time and money problems as being responsible for nonpersistence (Bean & Metzner, 1985; Bonham & Luckie, 1993; Cohen & Brawer, 1996; Conklin, 1993; Opp & Colby, 1986; Tinto, 1987). This disconnect seems to occur especially at commuting schools.

Effective Teaching Practices

Research regarding effective teaching increased substantially in the 1990s. Possibly this increase has been the result of heightened discussion about the changing purposes of higher education and changing faculty roles. Certainly the change in focus from teaching to learning and change in the nature and structure of knowledge from disciplinary to interdisciplinary have affected higher education (Instruction, Aug. 1997). What has increasingly become more important is knowledge of teaching strategies to foster learning rather than discipline expertise (Gent, Johnston, & Prosser, 1999). As a result, a number of trends in the literature point to the integration of technology, more interdisciplinary teaching and learning, active learning, and emphasis on quality (Instruction, Aug. 1997). All of these trends support learning for a student population more diverse than in the past and may have, in fact, fostered the development of learning communities and the use of collaborative learning.

This increased emphasis on the learner has resulted also in an increased awareness of the importance of teaching in higher education. As McKeachie (1997) states, “Good
Teaching Makes a Difference—And We Know What It Is.” He notes that one continuing impediment to improved teaching is the enduring belief that only discipline knowledge is necessary for good college teaching. Teachers can learn to be more effective, and the use of student ratings can affect such change, especially if the faculty are to be rewarded for more effective teaching. In considering progress in the theoretical development of teaching, he points to three major areas. The first is the importance of context in which feedback and type of organization are key. The second area is one of cognitive processes and how teacher enthusiasm can affect student attention and learning. Finally, he discusses motivation and the importance of student/teacher interaction to students’ self-efficacy and expectations of success based on ability and effort.

In his examination of the literature on teacher effectiveness, Murray (1997) details the characteristics of effective college teaching behaviors and reports that “there are specific, concrete teaching behaviors that make a difference in the college classroom” (p. 195). Moreover, the review deals only with teaching activities occurring within the classroom and “low interference” behaviors, concrete observable instructional behaviors that can be easily recorded without inference. By far, the behaviors most strongly associated with instructional outcomes are teacher enthusiasm, teacher clarity, and teacher/student interaction. The first dimension, teacher enthusiasm, includes vocal variation, gesture and movement, facial expression and use of humor. Cognitive psychology research indicates that the importance of teacher enthusiasm for learning appears to be the role attention plays in information processing; that is, if the learner fails to pay attention in the early stages of information processing, the information is lost and not available for subsequent retrieval. Teacher clarity consists of using concrete
examples, providing an outline, repeating difficult points, and clearly noting transitions from one topic to another. The third dimension, teacher/student interaction, encompasses asking and soliciting questions and comments, addressing students by name, and praising students for good ideas. In addition to enthusiasm, clarity, and interaction, task orientation, rapport, and organization are also identified as major factors. A study of one-on-one vocational and technical teaching in high schools, technical schools, and community colleges also indicated high teaching effectiveness as being associated with teacher enthusiasm and rapport, factors earlier identified in lecture based studies (Roberts & Becker, 1976).

Thus, the literature indicates clear support for the relationship between teaching behaviors and instructional outcomes. Additionally, Murray (1997) asserts that enthusiastic teaching is in no way incompatible with traditional criteria of effective teaching of content and posits that, “the best instructors are those who excel in both ‘content’ and ‘delivery’ aspects of instruction” (p. 196). Indeed, if facilitating conditions conducive to learning is the responsibility of the instructor, then teaching clearly with enthusiasm and promoting greater interaction in the classroom is a necessity in the college classroom.

Cooperative Learning

Indeed, because in the past, individual excellence defined academic achievement, cooperative learning was not generally accepted, but with current emphasis on teamwork in the work world, cooperative learning is returning to higher education. Many argue that this type of learning is more effective with nontraditional populations such as women and
minorities (Collaborative Learning, Jan. 1998). In their meta-analysis of research on cooperative learning since 1924, Johnson, Johnson, and Smith (1998) affirmed the benefits of cooperative learning compared to competitive, individualistic learning. Their findings indicate that cooperative learning promotes higher individualistic achievement than do competitive approaches, greater liking among students than does competing with others, and higher self-esteem than competitive or individualistic efforts. Springer, Stanne, and Donovan (1999), too, reviewed research on undergraduate education in science, mathematics, engineering, and technology (SMET) since 1980 and found that "the main effect of small-group learning on achievement, persistence, and attitudes among undergraduates in SMET was significant and positive" (p. 8). They did not, however, find any significant differences in the positive effects of various types of small group learning, collaborative, cooperative, or mixed forms, but did note different results depending on the location of the group work. In-class meetings resulted in more favorable effects on student attitudes than out-class work, but out-class work had greater effects on student achievement than in-class collaboration. Their finding that small-group learning leads to greater self-esteem was consistent with previous research.

Actually, because of the great volume of research on cooperative learning, probably more is known about its effects than almost any other aspect of education. In fact, during the past 90 years, over 575 experimental studies and 100 correlational studies have been conducted on various aspects of cooperative learning (Johnson et al., 1991). In their review of this literature, Johnson et al., (1991) summarize the effectiveness of cooperative learning in the college classroom. Most importantly, faculty must carefully structure students' interdependence to achieve promotive interaction where students
Learning Communities

The conceptualization of learning as a social act strongly influenced the emerging models of education in learning communities (LC). Although many types of learning communities developed, the term generally refers to “any one of a variety of curricular structures that link together several existing courses—or actually restructure the curricular material entirely—so that students have opportunities for deeper understanding and integration of the material they are learning, and more interaction with one another and their teachers as fellow participants in the learning enterprise” (Gabelnick, et al., 1990, p.19). Learning communities usually involve both student and faculty collaboration (often some form of team teaching), curricular coordination, a shared setting, and interactive pedagogy (Levine, Feb. 1999). The five major models of learning communities in order of their structural connectedness are linked courses, learning clusters, freshman interest groups (FIGS), federated learning communities, and coordinated studies (Gabelnick et al., 1990). Linked courses simply involve pairing two courses and scheduling a specific cohort of students while learning clusters link three or four courses for a specific period of time. Freshman Interest Groups link three or four courses around pre-major topics but have also a peer-advising component. Federated Learning Communities consist of three courses and a seminar led by a faculty member termed a master learner who fulfills all of the academic responsibilities along with the students. Finally, the most ambitious model, coordinated studies, involves a radical curricular structuring resulting in team-taught, interdisciplinary, active learning around themes.
History of Learning Communities

Learning community structural and pedagogical foundations, however, can be traced to the work of Alexander Meiklejohn and John Dewey in the 1920s (Gabelnick et al., 1990). Meiklejohn, considered to be the father of the learning community movement, viewed the reorganization of the structure of the curriculum as a necessity. The first learning community began as the Experimental College at the University of Wisconsin in 1927 and was an integrated, lower division program involving discussion-centered pedagogy based on the “great books” (Gabelnick et al., 1990, p. 11). Meiklejohn emphasized the importance of structure, curricular coherence, and community in his college. Dewey, too, is considered to be another father of learning communities for his insights about the teaching and learning process, especially student-centered and active learning. He viewed education as an inherently social process and was particularly interested in collaborative and cooperative approaches to education in which the teacher is viewed as a partner in learning rather than a transmitter of knowledge.

The learning community movement was continued some 30 years later at the University of California at Berkeley by Joseph Tussman (Gabelnick et al., 1990). Tussman structured the curriculum around programs rather than individual courses and required the creation of communities since the programs were taught by faculty teams. In her study of the long-term effects of the program, Trow (1991) found “evidence of a wide range of effects of the Program, some quite deep and lasting” (p. 6). Students reported about belonging to a community after studying together for two years with a coherent curriculum and the same team of faculty. Trow (1991) called the program a “model for
curricular reform" and a "real learning community where students play an equal part with faculty" (p. 8).

**Learning Community Models**

In the mid to late 1980s the University of Washington, a large residential public university, and Seattle Central Community College, a nonresidential, open-door, two-year community college, began to cluster classes to create smaller, more connected learning environments. These linked studies and, at Seattle Community College, the Coordinated Studies Program became learning communities which allowed students to become active participants in the learning process. At that time, the US Department of Education's Office of Educational Research and Improvement awarded a five year grant to The National Center on Postsecondary Teaching, Learning, and Assessment and initiated studies of collaborative learning in higher education. Tinto and Russo (1994) studied the Coordinated Studies Program at Seattle Central Community College; they, along with others, have documented and described the program (Hunter & Kochis, 1993; Tinto, Goodsell-Love, & Russo, 1993, 1994; Tinto, Russo, & Kadel, 1994; Tinto, Russo, & Kadel-Taras, 1996).

The Coordinated Studies Program linked a number of thematically related interdisciplinary courses. Course activities included team teaching, collaborative learning, group projects, and student involvement in constructing class knowledge as well as lectures, discussions, seminars, speakers, and films. The results of the study indicated greater student involvement in both academic and social activities along with more positive student views of the college, its classes, their involvement, and the faculty. What
was particularly significant was that these findings proved that it was possible to increase student involvement and achievement in settings where such success is not usually attained in an urban, nonresidential, two-year community college with a diverse working student body of varying ages, ethnicities, and backgrounds. Also, the findings indicated the importance of creating educational settings causing students to want to become involved rather than just focusing on student behaviors. Gabelnick et al. (1990) affirmed the "impressive record" of learning communities in retaining students along with producing higher student performance, involvement, and satisfaction. Many others have acknowledged the impact of learning communities on both retention and student learning (Lenning & Ebbers, 1999; Matthews & Smith, 1996; Matthews, Smith, MacGregor, & Gabelnick, 1996; Smith, 1993).

Much research continues to be undertaken on active learning, interdisciplinary learning, the development of critical thinking, and use of problem-based learning to increase student learning. At Pace University, Brown and Salisch (1996) in looking for new models of teaching oral and written communication established the Freshman Thinking Project, an interdisciplinary course using a cluster structure. By clustering a group of students, instructors, and classes, they were able to integrate curriculum and actively engage students in the learning process. The results of the program showed that students who completed a year in the Freshman Project were more likely to stay in school and graduate than those who were not in the program. The students identified the sense of community with both students and faculty and a feeling of connectedness as being most significant. The model emphasized collaboration, cooperation, and mutual support and a high level of student interaction in class. The major benefit for the faculty was renewed
enjoyment of teaching. Thus, this model provided a fairly low-cost solution to improved academic life for both students and faculty and improved retention.

McDaniel and Colarulli (1997) recently explored two collaborative models of learning communities using team coordination; the first are team coordinated models of paired or linked courses, integrated clusters of independent courses, and freshman interest groups; and the second consist of collaborative models using team teaching such as federated learning communities and coordinated studies. In the first model where students are brought together for common academic experiences, students must integrate knowledge themselves, and faculty have little interaction with each other. The second model results in greater involvement of both students and faculty with each other and with the learning process as well as increased connectedness of knowledge and integrative learning. In order to meet the challenge facing institutions to create conditions resulting in improved learning while still maintaining costs, the authors suggest a variation of the existing collaborative models: the dispersed team model, a model in which faculty team teach only once or twice a week, not at all class meetings and in this way, meet increasing expectations for improved learning outcomes.

Many other interdisciplinary, team-based courses with problem-solving continue to be developed in a myriad of academic disciplines. Courses in business education, educational psychology, world affairs, humanities, accounting, and engineering as well as restructuring of entire MBA programs have successfully incorporated collaborative team-based learning into their course design and increased student learning and enjoyment of learning (Anwar & Rothwell, 1997; Doebler & Smith, 1996; Dunn, 1992; Jessup, 1995; Lewis, Aldridge, & Swamidass, 1998; McKinley, 1996; Mullins & Fukami, 1996;

Tinto and Love's "Longitudinal Study of Learning Communities at La Guardia College" (1995) compared the experience of LC students to students in traditional programs. Both learning and persistence behaviors were tracked. Students at La Guardia Community College are extremely diverse for the college has a history of providing access to higher education for the "City's under-served populations: the poor, ethnic minorities, women, the disabled and recent immigrants" (Tinto & Love, 1995, p. 63). Study findings indicated that LC students were generally more positive than their traditional counterparts regarding their perceptions of classes, other students, faculty, counselors, campus climate, and their own involvement.

Recently Tinto discussed the results of his 1994 study on the effectiveness of a learning community with developmental students (Tinto, 1998a). The program, New Student House, at LaGuardia Community College, involves six courses with any given developmental student taking four of the six courses. Student Affairs is also involved with the program in that a trained counselor works with the students. The program's pedagogy stresses collaborative learning. The results of the study indicate that the program enabled students to form a network of supportive peers who helped ease the transition to college and promoted involvement in both social and academic activities. Students reported a high level of satisfaction with their experiences at LaGuardia College, and, not surprisingly, they persisted at a higher rate than comparison students.
The learning community movement continues to expand and develop. A recent article in the "Boston Globe" (Yemma, 1997, page A, 1:1) reported the national increase of learning communities, and Jean MacGregor, director of the National Learning Community Dissemination Project at Evergreen State College in Olympia, Washington cited a 10 - 15% increase in retention and higher grades by the participating students. Also, Zelda Gamson, director of the New England Resource Center for Higher Education at the University of Massachusetts at Boston (Yemma, 1997) reported that students attending learning communities often develop "social and emotional bonds with the institution and with each other ... and become an intellectual community centered around academic issues" (p. A, 1:1).

In an effort to better serve its more than 60% entering developmental student population, Sandhills Community College in North Carolina initiated a learning communities program serving about 36% of its developmental population (Adams & Honeycutt, 1997). Students at the school are 31% ethnic minorities and 64% female with a median age of 26.5. A study of the program indicated positive results delivered in a cost-effective manner. Retention and persistence rates for learning community students were 88% and 85% compared to 82% and 56% for the general college population with satisfaction ratings in the 90th percentile.

Temple University, a large urban university, launched yet another learning communities program in fall 1993 to increase students' sense of belonging and community, to help students connect with peers for academic and social purposes, to increase faculty/faculty and faculty/student interaction, and to create interdisciplinary links between courses. Research for Action (Reumann-Moore & El-Haj with Gold, 1997)
evaluated three Fall 1996 learning communities in three different schools and found generally very positive results to the program. Students spoke about the connections fostered by the learning community and their enhanced engagement with academics as well. Faculty reported that teaching in the learning community had affected their perspective on learning and teaching. Results indicated that LC students earned higher grades and stayed in school longer, and students described learning communities as “the best way to make the transition from high school to college” (Ketcheson & Levine, 1999, p. 107). The study concluded with a number of recommendations; some of which were to experiment on a small scale with some innovations of the learning community model, to continue with group work, and to find ways to meet the needs of commuting students. Of particular interest was the assertion that because often commuters do not often seem interested in establishing social connections, that “the program could refine its message related to the academic benefits of Learning Communities and the ways that social connections within a class support learning and academic achievement” (Reumann-Moore & El-Haj with Gold, 1997, p. 42).

In the fall semester 1997, three University of Arkansas at Little Rock (UALR) professors started a learning community linking three classes, Composition I, Speech Communication, and Cultural Anthropology, in an effort to enable students to feel part of a community, connect the core courses thematically, and impact retention (Raymond, 1999). UALR, an urban university, consists of about 11,000 students, mostly nonresidential and nontraditional, for most average 27 years of age and work full- or part-time. At the end of one semester in an attitude survey, the learning community students indicated general endorsement of the learning community concept and particularly
credited their learning community for “increasing their number of friends” (Raymond, 1999, p. 399). The faculty involved in the project spoke of their becoming professional friends and their belief that “A fragmented faculty will almost certainly teach a fragmented curriculum” (Raymond, 1999, p. 401). The number of linked classes has continued to increase on campus because of the faculty’s firm belief that learning communities are not only possible on nonresidential campuses but necessary.

Commuting Students, College Community, and the Classroom

Tinto (1993, 1996a, 1996b), too, points to classrooms and laboratories as often being the only places where commuting students and faculty actively engage with one another. For commuting students the educational experiences that are most likely to impact students are most likely those that will take place within the college classroom itself, for “the classroom may be the only places where students and faculty meet” (Tinto, 1997, p. 599). Recently at the DeVry 1998 Teaching and Learning Faculty Symposium in Long Beach California, Tinto (1998b) spoke about the type of learning we offer our students and how involvement is probably the most important factor in student learning.

In a reexamination of the data of his study on the "Coordinated Studies Program at Seattle Community College", Tinto (1997b), again, explored the educational character of persistence. He (1997b) suggests that we need to consider the social and academic systems of colleges not as two separate entities but as "two nested spheres, where the academic occurs within the broader system that pervades the campus" (p. 619). Because social and academic life is interwoven, social communities emerge out of academic activities. He (1997b) further suggests that we supplement use of "path analysis" with
"Network analysis and/or social mapping of student interaction patterns" (p. 619).

Finally, he calls for more research into the ways curriculum structure (e.g. learning communities) and pedagogy (e.g. cooperative teaching) shape both learning and persistence on the college campus. No doubt, additional research would enrich our understanding of student success in college.

The immediate question, however, that higher education faces is how to make use of the attrition research available and how to implement curricular innovations to retain students. Tinto (1997b; 1998a) clearly points to the classroom as the place of interaction and intervention. Recently, he challenged college faculty when he said, “The question we must ask is not how we should teach our students, but what types of learning settings should we construct in which we ask our students to learn” (Tinto, 1998a). He called for high expectations, support, feedback, and involvement: contact with faculty, students, and staff, and time on (learning) task. The settings he proposed to involve students were learning communities and cooperative/collaborative learning with frequent classroom assessment as feedback. It is this type of involvement and learning that will affect student learning and persistence. What needs to be done then is to create this type of community and this type of learning within the college classroom.

Conceptual Framework and Need for Further Research

Although many have examined curricular innovations and persistence in college, gaps in the literature still exist. Most research is based on white male, traditionally aged college students from Western cultures (Moore, Lovell, McGann, & Wyrick, 1998). Studies focusing on the retention of commuter students and nontraditional students are far
fewer than studies focusing on traditional residential students (Johnson, 1997). Also only recently are studies employing multivariate statistical procedures rather than only descriptive statistics beginning to be conducted in colleges today (Johnson, 1997). Kraemer (1997) in her study of Hispanic students at two-year colleges notes the importance of studying individual institutions in order to correctly operationalize academic and social integration for each student population. Mow and Nettles (1990), too, suggest that single-institution studies, in addition to providing insights to help explain the college experience of minority students “may help the institutions address their own unique challenges” (p. 48).

Until 1975 when Tinto published his model on student/college interaction, the vast majority of research on retention had no conceptual framework even though the issues of college retention and the impact of the various components of a college education had been studied and researched extensively since the late 1960s (Halpin, 1990). Earlier Spady (1970) had first suggested a model based on Durkheim’s theory of suicide as a method of analyzing student attrition. Further, he assumed that the dropout process could be best explained by examining the interaction between students and their college environment that provided opportunity for academic and social integration with the college (Spady, 1970). Based on Durkheim’s classic theory of suicide, Tinto (1987) focused on one of the four types of suicide, egotistical suicide, a form of suicide arising when individuals are unable to become integrated, socially and intellectually, with the community. He then extended Spady’s model and applied Durkheim’s work as well as that of Van Gennep to the study of persistence in college to examine the way the social and intellectual communities of colleges encouraged or discouraged staying in school. An
integral part of the model is that colleges are interactive systems and the impact of the person/environmental fit is critical.

While most researchers today appear to agree that Tinto's model provides the best explanation of student departure from higher education (Moss & Young, 1995), some have criticized his model. Tinto, himself, has acknowledged the shortcomings of his model regarding students of different gender, race, and social status backgrounds as well those at two-year college colleges and commuting institutions (Moss and Young, 1995; Tinto, 1982, 1987). Adult students, too, may not fit into his schema (Tierney, 1992). Attinasi (1989) and Tierney (1992) have questioned the nature of integration and the application of Durkheim's and Van Gennep's anthropological theories to different cultural contexts and along with Braxton, Sullivan, and Johnson (1997) and Bers and Smith (1991) have also criticized the applicability of the model to students of diverse backgrounds as well as those in commuter institutions and two-year schools. Tierney (1992), too, criticizes Tinto's theory for its focus on individualistic college attendance rather than on the role of groups. Moss and Young (1995) also suggest that "the diversity that exists in the urban college is not addressed in a meaningful way in Tinto's model of departure" (p. 7) and assert that what Tinto seems to be suggesting is that all individuals, no matter what race, class, or gender, must affiliate with the institution's academic and social systems. If however, the college's framework represents the dominant culture of society, those not within the dominant culture could be presented with a barrier to success. Misconceptions about these students' academic and social integration could occur because of a cultural variable that should be further examined. While Tinto has considered many of these criticisms in the revision of the rationale supporting his model,
often researchers have not included these in the framework guiding their empirical work (Hurtado & Carter, 1997). Further research is needed to explore racial and ethnic minority students’ view of their participation in college.

Hurtado and Carter (1997) contend that although social and academic integration have received much attention in replication studies of Tinto’s model, the conceptualization of the constructs has varied. Bollen and Hoyle (1990) maintain that Durkheim’s presentation of social integration theory is unclear. According to Spady (1970), students’ interactions in the social and academic systems influence social integration that has to do with belonging and fitting in; thus, Spady distinguishes a separate and distinct dimension, student interaction, in social integration. However, some have criticized both Spady’s attempt to make direct parallels between students’ interactions in college social systems and Durkheim’s theory of integration used to describe suicide and Van Gennep’s rite of passage as applied to college students (Attinasi, 1989; Darden & Kuhn, 1985; Hurtado & Carter, 1997; Tierney, 1992). In particular, Hurtado and Carter (1997) question whether Van Gennep’s separation stage, that is, separation from prior communities in order to become part of the college community, occurs for a growing number of nontraditional students today, especially part-time students, and posit also that for academically talented Latino students, family support is a key component facilitating these students adjustment to college (Hurtado, Carter, & Spuler, 1996). Gatz and Hirt (2000), too, in their study of student academic and social integration as demonstrated by e-mail use, report “that students communicate extensively with family and friends at least into the 11th week of class (when data collection commenced)” (p. 313) and note that for these students the separation stage
which Tinto asserts is necessary for integration into college “...had not yet begun for the participants, or that they were still struggling with that stage” (p. 313). They raise the possibility that perhaps students from cultures with more collective identities might, indeed, benefit from continued contact with family and home friends. Hurtado and Carter (1997) contend also that researchers seem to have abandoned the difficult to measure component of social integration as indicated by compatibility with contextual norms in favor of constructs favoring students' participation in a college's social and academic systems.

Tinto has, though, improved upon Spady’s application of Durkheim by more carefully modeling the social and academic systems in which students interact, but, yet, the distinction between student interaction and sense of identification is still ambiguous (Hurtado & Carter, 1997). Tinto (1993) posits that participation varies from academic and social integration but doesn’t describe the distinction that could be used in empirical tests. Hurtado and Carter (1997) assert further that many researchers have reflected their own views of integration when operationalizing Spady’s and Tinto’s concepts.

Perhaps the major criticism of Tinto’s model is its assumption that in order to be successful, minority groups must accept the dominant culture of the institution and the cultural differences of ethnic groups should be diminished (Attinasi, 1989; Tierney, 1992). In response, Tinto (1993) maintains that the assumption of conformity is not always associated with integration and that “the concept of ‘membership’ is more useful than ‘integration’ because it implies a greater diversity of participation” (p. 106). Further, he asserts that “college is an individual experience, one that is similar but never exactly the same for different individuals regardless of attributes that can be attached to group
labels” (Tinto, 1993, p. 181) and posits that institutions with a history of successful
retention of students of color have “paid particular attention to issues of diversity and
cultural awareness and the development of inclusive campus climates” (p. 185).

Braxton et al.’s (1997) literature review suggests that a reformulation of Tinto’s
model may be necessary because the model and prior research have not adequately
addressed the racial-ethnic dimension of “integrating experience” for minority students.
Hurtado and Carter (1997) suggest that the further development of the concept of
membership through identification of activities causing greater affiliation with the college
would be helpful.

In their study, Hurtado and Carter (1997) developed the concept of membership
as not just reflecting behavior, participation or nonparticipation, but as students making
sense of their environments through memberships in multiple peer groups helping them
acquire skills necessary for college. The best example they cite is that students who
frequently discuss coursework with other students outside of class (in their second and
third years) had a higher sense of belonging during their third year of college. Their
conclusion is that specific activities may promote a “broader sense of group cohesion and
enhance an individual’s sense of affiliation and identification with college” (p. 4). They
suggest that further research might determine whether certain variables such as college
major, use of study groups in classrooms, and institutionally based structures such as
specific programs requiring students to discuss coursework outside of class might effect
students’ sense of belonging.

Although Hurtado and Carter (1997) question Tinto’s (1993) model, they do note
its contribution as being its emphasis on the importance of the college environment and
the importance of student engagement in college life. Thus, they suggest that Tinto’s model be used as a “springboard for theory and empirical study” (Hurtado & Carter, 1997, p. 6). Among their suggestions for further research are consideration of the effect of student multiple responsibilities, investigation of students’ sense of belonging from other racial/ethnic groups, and whether affiliation with small groups rather than the entire campus community is important to student persistence. Also, they propose that further research may determine sub-environments contributing to a high sense of member belonging “allowing researchers to understand how such communities can foster educational outcomes” (p. 17). Braxton et al. (1997), too, recommend not the “total abandonment” (p. 159) of Tinto’s formulations but rather a revision and suggest a series of studies to enhance the theory’s explanatory powers by combining new disciplinary perspectives as well as examining minority groups and students at two-year colleges. Thus, many have suggested the continued study of Tinto’s model of social and academic integration in college.

This study, then, proposes to continue the study of Tinto’s model and examine its application to a diverse cohort of nontraditional commuting students. The study’s participants are exactly those students, minority students, students with multiple responsibilities, and students at two-year colleges, whom critics have suggested need to be further studied in order to enhance the theory’s explanatory powers. It is the purpose of this study to examine two models of the course Team 112: one a team-based, team-taught, interdisciplinary, and linked learning community model and the other an individually taught model unlinked to any other course. The study will compare both models of the course with a cohort of electronic technician certificate program students to
explore creating academic and social integration among students whose main source of identification lies outside of the academic world. The question is "Does the team-taught learning community of Team 112 make a difference to its students?"
CHAPTER III
Methodology

Research Design

This study employed both quantitative and qualitative research methodologies to compare the perceptions and behaviors of learning community and non-learning community students and also to understand from the students’ point of view their perception of the program. Both methods should provide insights that no one method could provide. As Krathwohl (1998) suggests, “Every experimental study should include an element of qualitative research to help understand the point of view of the subject...Interviewing subjects...often reveals that the treatment was perceived quite differently from what was intended...and leads to new and important rival explanations. It also provides anecdotes that help verify the phenomenon being studied and makes the statistics more meaningful” (pp. 546-547).

The study employed a posttest only control group design comparing groups only at the posttest, assuming randomization to make groups comparable (Krathwohl, 1998). The total number of participants represented 25/26 or 96% of the population eligible for the study. Both groups of students were asked to complete the First Semester Student Experience Survey (FSSES) (Appendix B), a student self-reported questionnaire containing 44 survey items with two open-ended questions for the control group and 44 survey items with five open-ended questions for the experimental group (Appendix C). Section I - Student Information contained 16 items, Section II - Social Experience contained 11 Likert-like items and one open-ended question, Section II - Academic
Experiences contained also 11 Likert-like items and one open-ended question, and Section IV- Additional Student Information contained six items for the control group and nine items including three open-ended questions for the experimental group. The survey was administered at the end of the semester during Weeks 13 and 14 from June 5 to June 16, 2000. In addition, institutional data regarding Team and Computer course grades, grade point averages, and persistence into the third week of the second semester were also collected.

The survey instrument was field-tested earlier in the semester with a randomly selected group of first-semester ET students not included in the study’s population to ensure that the survey items conveyed what was intended and that the questions were clear to the students. As a result, a few survey items were modified slightly.

The students involved in the study were first semester day full-time ET students randomly assigned to two classes. The experimental class was the team-taught learning community Team class linked to a Computer Applications class, and the control class was the group assigned to an individually taught Team class unlinked to any other class. The experimental learning community class was taught by both a General Education professor, the researcher, and a technical professor who also taught the linked computer class. The control class was taught by the General Education professor of the learning community teaching team. Both the experimental and control classes experienced the same curriculum and were required to fulfill the same course requirements. The format of both groups included small group collaborative learning activities, a cooperative learning capstone project (written and oral), individual assignments and reflections, some lectures, and class discussion as well as individual and group conferences. Team 112 syllabi for
both the experimental section and the control section can be found in Appendix D and E respectively.

Study Participants

Population

The mission of the technical proprietary college is to provide high quality career oriented higher education programs to a diverse student population. The specific student body of approximately 3600 students in central New Jersey consists of many non-traditional students, i.e., students who are older and returning to school as well as minority and international students. Figure 3 presents the approximate student ethnic profile in 1999 (DeVry NJ Office of the Registrar). The ethnicity of the 1999 ET population closely reflects the ethnicity of the general student population (DeVry NJ Office of the Registrar, Figure 4).

The approximate student age profile in 1999 was almost equally divided between those in the under 18-24 category and the over 24 category (DeVry NJ Office of the Registrar, Figure 5). As shown in Figure 6, the 1999 ET population age profile was considerably younger than the general student age profile. Of the general population, 52% were in the under 18-24 category while 73% of the ET students were 24 or younger (DeVry NJ Office of the Registrar).

The population of the institution has been and continues to be predominately male. The 1999 breakdown is displayed in Figure 7 (DeVry NJ Office of the Registrar). The Electronic Technician (ET) program population, though, continues to be even more predominately male than the general student population.
Figure 3. Population Ethnicity Profile
Figure 4. Electronic Technician (ET) Population Ethnicity Profile
Figure 5. Population Age Profile
Figure 6. ET Population Age Profile
Figure 7. Population Gender Profile
The 1999 male/female ET distribution is indicated in Figure 8 (DeVry NJ Office of the Registrar).

Approximately 28 – 36% of freshmen do not persist for a second semester (DeVry NJ Office of the Registrar). Although the rate of persistence varies from program to program and semester to semester, generally students persist with a general graduation rate of approximately 37% within five semesters and about 42% within six semesters (DeVry NJ Office of the Registrar).

All students commute to the college; some from student housing but most from their own residences. Many students travel a considerable distance to school, and many rely on public transportation. Also, the majority work in either part-time or full-time positions in addition to being students. These students are, in fact, the students that Astin and many others have identified as being the most at-risk students, those students with the least involvement with school and so those students with the lowest success rate. These are also adult learners who learn best when actively involved in learning that relates to their life experiences.

The college offers a full-time certificate degree program in Electronics Engineering Technology during the day and a part-time Communications and Computer certificate degree program in addition to two Associates in Applied Science Degree programs, Business Administration and Computer Information Systems for full-time day students and also part-time evening students. In addition, two majors, Electronics Engineering Technology and Telecommunications, are offered as a two-plus-two degree programs; that is, students must first earn an Associates Degree and can then continue in the program to complete a Bachelors Degree. The college is in the process of changing its
Female
6%

Male
94%

Figure 8. ET Population Gender Profile
mission from that of being an Associate Degree institution to that of a baccalaureate granting institution and was granted program approval in January 2000 for a BA program in Telecommunications Management for the summer of 2000. Also, the college offers weekend programs, regular and accelerated, for Computer Information Sciences, Information Technology, and Telecommunications. All full-time certificate and Associate degree programs are five semester programs and the baccalaureate electronics engineering technology and telecommunications programs are two plus two programs consisting of 120 credits each. The college operates on a trimester schedule with continuous fall, spring, and summer 15 week semesters and one week breaks between semesters as well as two two-week summer and Christmas holiday breaks.

Sample

A full-time student cohort of Electronic Technician (ET) certificate program students participated in this study in the Spring 2000 semester that began on March 13, 2000 and ended on June 23, 2000. In 1999, electronic technician majors represented about 11% of the student body and have been the largest predominantly male student population in the school (DeVry NJ Office of the Registrar). ET students are block scheduled; that is, all students are given the same schedule so that most students are in the same classes. The experimental class was assigned to the same Computer Applications class with the technical instructor of the team-taught Team class who reinforced coursework from both classes in both classes while the control class experienced the same Computer class with the same technical instructor without any reinforcement of course content. A typical first semester course load consists of 16
credits with five courses: electronics with lab, math, psychology, computer applications, and Team. Developmental students, entering students with deficiencies in reading, writing, mathematics, or algebra as indicated by placement test scores, were not included in the study.

The cohort which represented 96% or 25/26 of the eligible population consisted of 25 full-time students with 16 students in the experimental class and nine in the control class. Some differences in student characteristics occurred due to no-shows, initial changes in scheduling, official and unofficial withdrawals, study ineligibility due to part-time status, and last minute inclusion of non-electronic technician students into the experimental class. Also, as a result, the actual number of students on the roster of the experimental class was 23. Of that number, seven students were not included in the study for the following reasons: no show, one student; unofficial withdrawal, one student; part-time status, one student; non-ET majors, three students; and ET student with control class schedule placed in the experimental Team class, one student.

Student demographic data was provided by the students in Section I – Student Information of the First Semester Student Experience Survey. All students commuted to school either from home or student housing as no housing is available on campus.

According to the criteria established by the National Center for Educational Statistics (1996a), all of the students in the study were classified as nontraditional (Figure 9).
Figure 9. Nontraditional Status of Sample
Because of the presence of two or three nontraditional characteristics, the majority of students in both the experimental class, 68.8% or 11/16, and the control class, 77.8% or 7/9, were categorized as moderately nontraditional.

Of the total of 25 students, only two or .08% were female, and both of these students were in the control class. As a result, the experimental class consisted of 16 male students while the control class was made up of seven male students and two female students.

Although the student cohort was composed of students of varying ages, the experimental class was a much younger class than the control class with a mean age of 21.8 compared to a mean of 29.4 for the control class. Of the experimental class, 81.4% or 13/16 were between the ages of 18 and 23 while 55.5% or 5/9 in the control class were under the age of 23. Also, the oldest students in the experimental class were 27 (n=2) while the oldest students in the control class were 33, 43, and 45. This age distribution is shown in Figure 10.

The ethnicities of the entire sample (N=25) reflect the ethnicities of the entire college population, even with the exclusion of developmental students in the study (Figure 11).

The ethnicities of the two classes also varied as a result of both random selection and withdrawals and no-shows, students not present at the end of the semester, and, therefore, not included in the study (Figure 12).
Figure 10. Sample Age Profile
Figure 11. Sample Ethnicity Profile
Figure 12, Sample Ethnicity Profile Comparison
While 84% of the total cohort worked during the semester, more students in the experimental class, 94%, 15/16, worked compared to 66.6%, 6/9, in the control class. Also, more of the experimental students, 62.5% or 10/16, indicated that their reason for working was to support themselves in contrast to 55.6% or 5/9 of the control class.

However, in spite of working less than the experimental class, more students in the control class, 66.7%, 6/9, indicated that they found balancing their class, work, and family responsibilities difficult in contrast to 43.8%, 7/16, of the experimental class.

Faculty

Both of the instructors involved in the study, a female General Education instructor and a male technical instructor, came to the study with many years of both teaching and administrative experience. The technical instructor, a senior professor at the college since 1972, has taught electronics, computer science, math, and physics courses, managed the Electronics program until 1980, and directed all academic programs as the Dean of Academic Affairs, the chief academic officer of the Institute, from 1980 to 1995. The General Education instructor, a full professor and also the researcher, began teaching full-time at the college in 1992 and has taught developmental classes as well as composition and college success classes. While the General Education professor had been one of the coordinators of the Team class since late 1997, both instructors have been involved with the development of the class since its introduction. Also, both instructors have volunteered to work together as a teaching-team for five semesters, including the Spring 2000 semester.
Hypotheses

The research question asked if participation in the team-taught learning community of Team 112 linked with Computer Applications 111 made a difference to students in both their perceptions of their first semester academic and social experiences as well as actual academic behaviors and outcomes. The research hypotheses tested were that first semester students in the team-taught learning community model of Team 112 would have significantly higher levels of academic and social integration and more positive perceptions of their academic and social experiences than the control class as well as higher Team and Computer course grades, grade point averages, commitment to the college, and persistence into the second semester.

The two sets of hypotheses underlying this study were as follows:

Hypotheses Set I – Student Attitudes and Perceptions

1. The experimental students experienced a higher level of academic and social integration than the control students.

2. The experimental students perceived their academic and social experiences more positively than the control students.

Hypotheses Set II – Academic Behaviors and Outcomes

1. The experimental students earned higher Team and Computer course grades than the control students.

2. The experimental students earned higher grade point averages than the control students.

3. The experimental students indicated a higher level of commitment to the college than the control students.
4. The experimental students persisted, i.e., continued into the second semester, at higher levels than the control students.

5. The experimental students worked with their classmates outside of class and e-mailed each other more often than the control students.

6. The experimental students interacted with their instructors, in-person and through e-mail, more than the control students.

Data Collection

Introduction

To answer the questions posed in this study, two forms of inquiry, quantitative and qualitative, were used to examine the experiences and perceptions of a sample of first semester students to ascertain how program participation shaped their academic and social integration, their perception of their academic and social experiences, academic achievement, commitment to the college, persistence, and number of times students interacted with other students and instructors in and outside of class.

Variables

Because of the nature of the experimental design, random assignment should have controlled for confounding variables, such as pre-college characteristics that might result in non-experimental differences between the two groups. Therefore, because of random assignment, both the treatment and control groups were assumed to be similar in terms of pre-college characteristics.
The primary independent variable in this study was the composite variable of the learning environment and team-teaching. The environment for the experimental group was the learning community taught by a team of two professors: one a General Education professor and the other a technical faculty member. The environment for the control group was a stand-alone class taught only by the General Education professor. Both the experimental and control groups experienced the same curriculum and were required to fulfill the same course requirements. The format of both the experimental and control classes included small group collaborative learning activities, a cooperative learning capstone project (written and oral), individual assignments and reflections, some lectures, and class discussion as well as individual and group conferences. Other independent variables were student background characteristics such as gender, age, ethnicity, experience at another college, full-time student status as well as number of hours per week worked, reason for employment, place of employment (on- or off-campus), single parent status, type of family responsibility, scheduling priorities (work, school, or family), living arrangements, and ability to balance their schedule.

The primary dependent variables or outcomes were academic and social integration, perception of first-semester experiences, Team and Computer course grades, first-semester grade point average, commitment to the college, and persistence to the second semester. Additional dependent variables were the number of times students met outside of class to work on course assignments, the number of times students and instructors interacted individually in class throughout the semester, and the amount of student/student and student/faculty e-mail.
The first two variables, academic and social integration, were measured by student responses to the Academic and Social Experiences sections of the First Semester Student Experience Survey. The students’ perceptions of their academic and social experiences were examined through the analysis of their responses to the open-ended questions at the end of the Academic and Social Experience sections. Student responses to five open-ended questions were analyzed and coded thematically. The experimental and control class responses to questions #12 in both Section II, Social Integration, and Section III, Academic Integration, were compared while the experimental section’s responses to questions #7, 8, and 9 were analyzed to examine the students’ perceptions of their experience. Students’ commitment to the college was measured by a comparison of their responses to two questions, #5 and 6 at the end of the survey under Additional Student Information through t-tests and by their actual persistence to the second semester.

The other dependent variables, Team and Computer course grades, first-semester grade point averages, persistence to the second semester, and number of times students met outside of class and e-mailed to work on course assignments, and number of times students and instructors interacted individually in class and e-mailed throughout the semester were measured by comparing the grades and levels of persistence of the two groups, their responses to the Section IV, Additional Student Information, questions #1, 2, 3, and 4 through a series of t-tests. Also, student commitment to remain at the college was compared with actual subsequent second semester enrollment. All experimental variables including the primary independent variables, student background characteristics, and the primary dependent variables or outcomes are summarized in Table 3.
Table 3
Summary of All Experimental Variables

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<thead>
<tr>
<th>Independent Variables/Background</th>
<th>Dependent Variables/Outcomes</th>
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<td>Characteristics:</td>
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<td>Full/part-time status</td>
<td>Academic integration</td>
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<td>Gender</td>
<td>Social integration</td>
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<td>Age category</td>
<td>Team course grades</td>
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<td>Ethnicity</td>
<td>Computer course grades</td>
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<td>Prior college experience</td>
<td>Commitment to college</td>
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<td>Work status</td>
<td>Persistence to second semester</td>
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<td>On- or off-campus work</td>
<td>Interaction with faculty in class</td>
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<td>Number of hours worked</td>
<td>Interaction with classmates about</td>
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<td>Reason for employment</td>
<td>coursework outside of class</td>
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<td>Single parent status</td>
<td>Amount of e-mail to classmates</td>
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<td>Type of family responsibility</td>
<td>Amount of e-mail to faculty</td>
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<td>Perception of first semester experiences</td>
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<td>Composite of learning environment:</td>
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<td>community and team-</td>
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**Instrument**

The First Semester Student Experience Survey, FSSES, was developed by the researcher from a number of sources. The first source is a University of Arkansas at Little Rock (UALR) student attitude survey constructed in order to study a UALR learning community (Raymond, 1999). UALR researchers constructed the survey to measure both academic and social integration as well as institutional commitment at the end of program and non-program students' first semester. FSSES Section II, items #3, 4, 5, 6, 7, 10, and 11 and Section III, items #4, 5, 6, 9, and 10 were derived or adapted from the UALR survey.

In addition, Scale I: Peer-Group Interactions, Scale II: Interactions with Faculty, Scale III: Faculty Concern for Student Development and Teaching, Scale IV: Academic and Intellectual Student Achievement, and Scale V: Institutional and Goal Commitments developed by Pascarella and Terenzini (1980) provided FSSES Section II items #1, 2, 8, and 9, Section III, items #1 and 8 to measure students' academic and social experiences as well as institutional commitment. These items were utilized also in other studies: FSSES, Section II, item #1 (Bers & Smith, 1991; Cabrera, Castenada, Nora, & Hengstler, 1992); Section II, item #2 (Bers and Smith, 1991; Braxton, Vesper, & Hossler, 1995; Cabrera et al., 1992; Terenzini, Lorang, & Pascarella, 1981); Section II, items #8 and 9 (Bers & Smith, 1991); Section III, item #1 (Bers & Smith, 1991); Section II, item #8 (Bers & Smith, 1991; Braxton et al., 1995). Again, some items were modified for the FSSES.

Pascarella & Terenzini (1980) report alpha reliability scales of .84 for the Peer-Group Interactions Scale, .83 for the Interactions with Faculty Scale, and .74 for the
Academic and Intellectual Scale (p. 66). Support for the use of the Interactions with Faculty Scale is provided by Nettles, Thoeney, and Gosman (1986), who reported that measuring students’ perceptions of the quality of their interactions with faculty were more predictive of academic performance for both African-Americans and Caucasians than measures assessing the actual frequency of faculty/student interaction. Bers and Smith (1991) and Cabrera et al. (1992) noted evidence of the predictive validity of the Interactions with Peers Scale designed to measure students’ social involvement consisting of five items similar to the seven-item Peer-Group Interaction Scale.

Also, a few items, FSSES Section III, items #3 and 7, were derived from the University of Washington’s Beginning Student Questionnaire developed for the Collaborative Learning Project, “Building Learning Communities for New College Students,” a series of collaborative learning in higher education projects by Tinto, Goodsell-Love, and Russo (1994) at the University of Washington, the Coordinated Studies Program at Seattle Central Community College, and the Learning Communities at LaGuardia College. Additional items, FSSES, Section I, items #11, 13, 14, 15, and 16; Section III, items #3 and 7; Section IV, items #5 and 6, were selected from the Temple University Student Experience Survey, an adaptation of the University of Washington Survey (Temple University Student Experience Survey, 1997). Finally, Section III, item #11, was chosen from the Academic Motivation and Goal Commitment Scales (Baker & Siryk, 1984), and another FSSES item selected from other sources was Section III, item #2 (Cabrera et al., 1992).

The remaining FSSES items, Section I, items #1-10 and Section IV, items #1-4, dealing with student demographic data and number of in-person and e-mail contacts with
faculty and students and the five open-ended questions, Section II, item #12; Section III, item #1; and Section IV, items #7, 8, and 9, were developed by the researcher. A SPSS reliability analysis of Section IV, items #1-6, yielded an alpha of .59.

The First Semester Student Experience Survey consisted of four sections: Student Information, Social Experiences, Academic Experiences, and Additional Student Information to measure institutional commitment and the number of student/student and student/faculty interactions. The number of items each section contained was as follows: Section I - Student Information, 16 items; Section II - Social Experiences, 11 Likert-like items and one open-ended question; Section III - Academic Experiences, 11 Likert-like items and one open-ended question; Section IV - Additional Student Information, six items with three additional open-ended questions for the experimental group. This last section contained three additional open-ended questions for the experimental group to elicit their perceptions about the learning community.

A five-response Likert scale was developed for the 22 survey items used in this analysis. The range of values for each survey item was as follows: 1 as Strongly Agree, 2 as Agree, 3 as Undecided, 4 as Disagree, and 5 as Strongly Disagree.

Collection Procedures

Study participants were randomly assigned to either the experimental or the control classes. Later in the semester, the students eligible for the study, 16 in the experimental class and nine in the control class, were invited to be part of a research study and asked to sign solicitation/informed-consent forms acknowledging their permission to be included in the study (Appendix A). They were also informed that they
could elect not to participate in the study and not complete the FSSES without penalty. All students present for the informed solicitation/consent explanation agreed to participate in the study.

The student experience survey had been field tested in the beginning of the Spring 2000 semester with a randomly selected group of first-semester electronic technician students not included in the study to ensure that the survey items conveyed what was intended and that the questions were clear to the students. Data from the pilot testing was utilized to modify the survey slightly.

Then at the end of the Spring semester in June 2000 in Weeks #13 and 14, the First Semester Student Experience Survey was administered in class to both the experimental and control groups. The surveys were coded by the assignment of random numbers corresponding to the subjects' names. Because follow-up was included in the design of the study, a master key was maintained with each subject's name and social security number. In addition to 16 demographic questions, six additional information questions, and 22 Likert-like response survey items, the questionnaire also contained two open-ended questions for the control group and five open-ended questions for the experimental group about their academic and social experiences to obtain insights into their perceptions. Also, at the end of the semester and the beginning of the Summer semester, institutional records were examined to determine first semester Team and Computer grades and student grade point averages as well as second semester enrollment into the third week of the semester.
Data Analysis

Many studies have examined student persistence, and academic and social integration and analyzed the data utilizing various methods. Pascarella and Terenzini (1980) in their longitudinal study of college persistence began with factor analysis and the multivariate analysis of covariance and discriminant analysis. In their consideration of race and gender in the influence of college on self-concept, Pascarella, Smart, Ethington, and Nettles (1987) utilized multiple regression analysis to arrive at their findings. Tinto and Russo (1994) used factor analysis and simple comparisons to describe and compare student activities, perceptions, and persistence. In their longitudinal study of learning communities at LaGuardia College, Tinto and Love (1995) employed descriptive statistics, discriminant and regression analysis, and logit regression analysis. Hurtado and Carter (1997) conducted a factor analysis to reduce the number of measures in their construct, principal-axis factoring to obtain start values for their measurement model, two-tailed tests of significance differences and partial correlations to assess students' sense of belonging.

For this study, several forms of analysis were performed on the data. The statistical techniques used were selected because they provided a way to measure differences between two groups. The posttest control group design enabled the researcher to measure differences between groups for treatment effects and key outcomes.

First, descriptive statistics, simple frequency, percentage, and cross-tabular calculations, were employed to describe and compare the characteristics, experience, and outcomes of students in the experimental and control classes. As Krathwohl (1998) notes, it is often preferable to use the simplest applicable analysis, for it “will require fewer
assumptions and be understood by a wider audience" (p. 371). Much of the data is presented in graphic form to facilitate data interpretation. Tufte (1983) describes the optimum presentation of charts and graphs to avoid misconceptions: "Graphical excellence is that which gives the viewer the greatest number of ideas in the shortest time with the least ink in the smallest space" (p. 51).

Then, using the statistical functions built into Excel 2000, t-tests were performed on Survey Section II - Social Experiences, Section III - Academic Experiences, and Section IV - Additional Student Experiences as well as on student team and Computer grades, grade point averages, and persistence into the second semester to look for significant differences between the experimental and control classes. Section II consisted of a scale of 11 items and one open-ended question designed to measure students’ social integration. Means and standard deviations were calculated for the eleven Likert-like items after the responses were recorded. A series of one-tailed t-tests for independent samples assuming equal variances with two degrees of freedom were then performed on the 11 items to test for statistical significance at the .05 level of significance between the experimental and control classes’ responses. One-tailed tests with the lower tail critical were performed on all items except for item #6 on which an upper tail critical test was calculated.

Section III, also, consisted of a scale of 11 items and one open-ended question designed to measure students’ academic integration. As for Section II - Social Experiences, means and standard deviations were calculated for the eleven Likert-like items and a series of one-tailed t-tests with lower tail critical for independent samples assuming equal variances with two degrees of freedom were then performed on the 11
items to test for statistical significance at the .05 level of significance between the
experimental and control classes’ responses.

Section IV, the last section of the survey, contained four items about the amount
of contact students experienced throughout the semester with both their peers and
instructors and also two items concerning their level of commitment to the institution.
Means and standard deviations were calculated for all of the Likert-like items. One-tailed
$ t $ -tests for independent samples assuming equal variances with two degrees of freedom
were performed on all of the test items in this scale. Before, however, carrying out $ t $ -tests,
student responses to items #1-4 were recoded so that upper tail critical $ t $ -tests could be
calculated. Lower tail critical $ t $ -tests were performed on items #4 and 5.

Finally, at the end of the semester, institutional records were examined to record
and analyze students’ Team and Computer course grades as well as their first semester
grade point averages. Persistence into the next semester was measured at the end of the
third week of the Summer semester. Means and standard deviations were calculated for
both the experimental and control classes, and again a series of one-tailed $ t $ -tests for
independent samples assuming equal variances with two degrees of freedom were then
performed.

After analyzing the quantitative data, the researcher developed a coding system to
organize the responses to the five open-ended questions on the survey. Bogdan and
Biklen (1998) suggest searching through the data for regularities and patterns as well as
for topics, writing words and phrases to represent patterns and topics which become the
coding categories. The coding families that proved most valuable were “Perspectives
Held by Subjects” to capture “ways of thinking all or some subjects share” (Bogdan &
Biklen, 1998, p. 173) towards the setting or some aspect of it, the "Subjects Way of Thinking about People and Objects" to "gain understandings of each other, of outsiders, and of the objects that make up their world" (Bogdan & Biklen, 1998, p. 173), "Activity Codes" to track regularly occurring behavior, and "Strategy Codes" to examine the tactics, methods, techniques, maneuvers, ploys, and other conscious ways people accomplish various things" (Bogdan & Biklen, 1998, p. 175). Bogdan and Biklen (1998) discuss two methods of data analysis: variations of the "cut-up-and-put-in-folders approach" and use of computer software (p. 186). As Behrens and Smith (1996 as cited in Krathwohl, 1998, p. 321) note using computer programs "does not render one's assertions more valid than using the time-honored method of cutting up fieldnotes and putting sections in file folders. All qualitative analysis is a cognitive process, and all such programs can do is to facilitate clerical and indexing tasks so the researcher has more time to think about the data" (p. 984). Because of the relatively limited amount of qualitative data, the researcher elected to utilize the "time-honored" non-computerized method of data analysis.

Summary

This chapter included a discussion of the experimental research design, study hypotheses, independent and dependent variables, and the quantitative and qualitative research methodologies utilized in the study. Also, the survey instrument used, the First Semester Student Experience Survey, was described along with the field testing of the instrument, the procedures for data collection, and the actual data analysis. In addition, the general student population of the institution, the electronic technician population, and
to understand from the students’ point of view their perception of their first semester experience.

The research question asked if participation in the team-taught learning community of Team 112 linked with Computer Applications 111 made a difference to students in both their perceptions of their first semester academic and social experiences as well as actual academic behaviors and outcomes. The research hypotheses tested were that first semester students in the team-taught learning community model of Team 112 would have significantly higher levels of academic and social integration and more positive perceptions of their academic and social experiences than the control class as well as higher Team and Computer course grades, grade point averages, commitment to the college, contact with students and faculty, and persistence into the second semester.

The two sets of hypotheses underlying this study were as follows:

Hypotheses Set I – Student Attitudes and Perceptions

1. The experimental students experienced a higher level of academic and social integration than the control students.

2. The experimental students perceived their academic and social experiences more positively than the control students.

Hypotheses Set II – Academic Behaviors and Outcomes

1. The experimental students earned higher Team and Computer course grades than the control students.

2. The experimental students earned higher grade point averages than the control students.
the study population were described using data from both the FSSES and the Office of the Registrar. Ethnicity, age, gender, and the nontraditional status of the sample were presented. A description of the two faculty members involved in the study was also included.
CHAPTER IV

Data Analysis and Findings

Introduction

The purpose of this study was to examine the impact of a problem-solving, team-based, team-taught, interdisciplinary learning community on first semester, nontraditional, commuting, full-time students at a proprietary technical college. The study consisted of a cohort of 25 Electronic Technician students that represented 25/26 or 96% of the total population eligible for the study. The study participants were randomly assigned to two Team classes: one, the experimental class, a team-taught learning community model linked to a Computer class, and the other, the control class, an individually taught unlinked model of the same class. The study compared students' perceptions of their academic and social integration, academic performance, commitment to the college, contact with students and faculty, and persistence into the second semester through the administration of a student self-reported survey, the First Semester Student Experience Survey, with both Likert-like items and open-ended questions as well as the examination of institutional data regarding course grades, grade point averages, and second semester persistence. The study employed both quantitative and qualitative research methodologies to describe and track the behaviors and outcomes of the experimental learning community and the control non-learning community students and
3. The experimental students indicated a higher level of commitment to the college than the control students.

4. The experimental students persisted, i.e., continued into the second semester, at higher levels than the control students.

5. The experimental students worked with their classmates outside of class and e-mailed each other more often than the control students.

6. The experimental students interacted with their instructors, in-person and through e-mail, more than the control students.

Quantitative Findings

First Semester Student Experience Survey

Following a posttest-only control group design (Krathwohl, 1998), the First Semester Student Experience Survey was administered to both the experimental and control classes in the 13th and 14th weeks of the 15-week semester. The First Semester Student Experience Survey consisted of four sections: Student Information, Social Experiences, Academic Experiences, and Additional Student Information to measure institutional commitment and the number of student/student and student/faculty interactions. The number of items each section contained was as follows: Section I - Student Information, 16 items; Section II - Social Experiences, 11 Likert-like items and one open-ended question; Section III - Academic Experiences, 11 Likert-like items and one open-ended question; Section IV - Additional Student Information, six items with three additional open-ended question for the experimental group. This last section
contained three additional open-ended questions for the experimental group to elicit their perceptions about the learning community.

A five-response Likert scale was developed for 22 survey items used in this analysis. The range of values for each survey item was as follows: 1 as Strongly Agree, 2 as Agree, 3 as Undecided, 4 as Disagree, and 5 as Strongly Disagree.

The FSSES was completed by all of the students invited to be part of the study. Because Section I - Student Information has already been presented in Chapter Three, the remaining three sections of the survey, Section II - Social Experiences, Section II - Academic Experiences, and Section IV - Additional Student Information regarding contact with classmates and faculty and institutional commitment will be discussed here.

Section II - Social Experiences.

Section II consisted of a scale of 11 items and one open-ended question designed to measure students' social integration. As can be seen in Table 4, the results of the t-tests revealed differences of statistical significance on two of the 11 items, item #1 and item #6.

Item #1 was found to be significant at the alpha level of .05. Because the Likert scale was constructed with response #1 being Strongly Agree, the t-test value for item #1 was -2.984 which indicated that a significantly higher number of experimental students agreed with the item than did the control students. Item #6 questioning students about the level of difficulty they encountered scheduling meetings with fellow students to complete assignments was also revealed to be significant at the .05-level with a p-value of .048. Thus, the students in the experimental class indicated strongly that they found it easier to meet and make friends during the semester in comparison to the control class and also
### Table 4

**Indicators of Social Integration by Treatment**

**FSSBS – Section II – Social Experiences**

<table>
<thead>
<tr>
<th></th>
<th>Experimental Class (n=16)</th>
<th>Control Class (n=9)</th>
<th>t-test</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It has been easy for me to meet</td>
<td>1.438 0.629</td>
<td>2.333 0.866</td>
<td>-2.984</td>
<td>0.003**</td>
</tr>
<tr>
<td>and make friends with other students</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>this semester at this campus.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Since coming to college here, I</td>
<td>2.250 0.683</td>
<td>2.667 1.000</td>
<td>-1.238</td>
<td>0.114</td>
</tr>
<tr>
<td>have developed close personal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>relationships with other students.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I am most comfortable in class</td>
<td>2.000 1.095</td>
<td>1.889 0.601</td>
<td>0.280</td>
<td>0.609</td>
</tr>
<tr>
<td>when I know other students.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*(table continues)*
### Table 4

**Indicators of Social Integration by Treatment**

**FSSES – Section II – Social Experiences**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Experimental Class (n=16)</th>
<th>Control Class (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>4. In this class, I have made good friends who supported</td>
<td>1.875</td>
<td>0.619</td>
</tr>
<tr>
<td>each other through the academic challenges.</td>
<td>2.125</td>
<td>1.025</td>
</tr>
<tr>
<td>5. I like working with others rather than working alone.</td>
<td>2.750</td>
<td>1.125</td>
</tr>
<tr>
<td>6. With my commitments off-campus, I have difficulty</td>
<td>1.750</td>
<td>0.683</td>
</tr>
<tr>
<td>finding time to schedule meetings with the group to complete assignments.</td>
<td>1.750</td>
<td>0.683</td>
</tr>
</tbody>
</table>

* (table continues)
**Table 4**

**Indicators of Social Integration by Treatment**

**FSSES – Section II – Social Experiences**

<table>
<thead>
<tr>
<th></th>
<th>Experimental Class (n=16)</th>
<th>Control Class (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>8. I am satisfied with the opportunity to meet and interact</td>
<td>1.625</td>
<td>0.619</td>
</tr>
<tr>
<td>9. My interaction with professors has had a positive influence on my growth and attitudes.</td>
<td>2.125</td>
<td>0.719</td>
</tr>
<tr>
<td>10. I am more comfortable on campus because of the experiences I had this semester.</td>
<td>2.000</td>
<td>0.516</td>
</tr>
<tr>
<td>11. Because of my experiences this semester, I feel like a part of the campus community.</td>
<td>2.250</td>
<td>0.856</td>
</tr>
</tbody>
</table>

**Note.** One-tailed t-tests with the lower tail critical were performed on all items except for #6 which was analyzed with a
$t$-test with the upper tail critical.

* $p < .05$.

** $p < .01$. 
that they found it easier to schedule out-of-class meetings with their peers to complete coursework. The positive t-test value for item #6 was 1.727 which here indicated that a significantly higher number of experimental students disagreed with the negatively worded item than did the control students.

Of the remaining nine items, the experimental group responded more positively than the control group on seven of the nine items, items #2, 4, 5, 7, 8, 10, and 11, although the differences did not prove to be of statistical significance. The control class responded slightly more positively than the experimental class on only items #3 and 9.

Section III – Academic Experiences.

Section III, too, consisted of a scale of 11 items and one open-ended question designed to measure students’ academic integration. Table 5 showing the results of the tests indicates that four of the 11 items, items #5, 8, 10, and 11, were shown to be of statistical significance at the alpha level of .05.

Item #11 tested the students’ perceptions that they would do well at the college; item #10 dealt with looking forward to taking classes next semester; item #5 asked about the importance of application of knowledge from one class to another; and, finally, item #8 questioned the ease with which students feel they can ask professors for help. Again, because the Likert scale was constructed with response #1 being Strongly Agree, the t-test values for these items were negative which indicated that a significantly higher number of experimental students agreed with the items than did the control students. Although the experimental class responded more positively than the control class on all of the other items, items #1, 2, 3, 4, 6, 7, and 9, these differences did not prove to be of statistical significance.
<table>
<thead>
<tr>
<th>Question</th>
<th>Experimental Class</th>
<th>Control Class</th>
<th>t-test</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I have performed academically as well as I anticipated I would.</td>
<td>2.250</td>
<td>2.556</td>
<td>-1.050</td>
<td>0.152</td>
</tr>
<tr>
<td>2. I am satisfied with my academic experience.</td>
<td>2.000</td>
<td>2.222</td>
<td>-0.695</td>
<td>0.247</td>
</tr>
<tr>
<td>3. During this past semester I have been involved in my coursework.</td>
<td>1.938</td>
<td>2.000</td>
<td>-0.200</td>
<td>0.422</td>
</tr>
<tr>
<td>4. I learn the most when I study with a group of students taking the same class.</td>
<td>2.125</td>
<td>2.222</td>
<td>-0.269</td>
<td>0.395</td>
</tr>
<tr>
<td></td>
<td>Experimental Class</td>
<td>Control Class</td>
<td>t-test</td>
<td>p-value</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------</td>
<td>---------------</td>
<td>--------</td>
<td>---------</td>
</tr>
<tr>
<td>5. It is important for me to apply what I'm learning from one class to another.</td>
<td>1.625</td>
<td>0.806</td>
<td>2.333</td>
<td>0.707</td>
</tr>
<tr>
<td>6. It is important to apply what I'm learning to the real world.</td>
<td>1.563</td>
<td>0.629</td>
<td>1.889</td>
<td>0.782</td>
</tr>
<tr>
<td>7. My classes have been involving and stimulating.</td>
<td>2.188</td>
<td>0.750</td>
<td>2.333</td>
<td>0.866</td>
</tr>
<tr>
<td>8. It is easy to ask my professors for help when I need it.</td>
<td>1.813</td>
<td>0.834</td>
<td>2.556</td>
<td>1.014</td>
</tr>
</tbody>
</table>

(table continues)
Table 5

*Indicators of Academic Integration by Treatment*

**FSSBS – Section III – Academic Experiences**

<table>
<thead>
<tr>
<th></th>
<th>Experimental Class</th>
<th>Control Class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n=16)</td>
<td>(n=9)</td>
</tr>
<tr>
<td>9. I am the most satisfied at the end of the semester when I truly believe that I learned something important during the semester.</td>
<td>1.688 0.479</td>
<td>1.778 0.972</td>
</tr>
<tr>
<td>10. I am looking forward to taking classes next semester at this campus.</td>
<td>1.688 0.602</td>
<td>2.444 1.130</td>
</tr>
<tr>
<td>11. I feel I will do well here at this college.</td>
<td>1.563 0.512</td>
<td>2.556 1.014</td>
</tr>
</tbody>
</table>

*Note.* *p* < .05.

***p* < .01.
Section IV - Additional Student Information.

Section IV, the last section of the survey, contained four items about the amount of contact students experienced throughout the semester with both their peers and instructors and also two items concerning their level of commitment to the institution. Items #1 and 2 dealt with contact with classmates in after-class meetings and by e-mail while items #3 and 4 dealt with in-person or e-mail contact with faculty. The last two items, #5 and 6, questioned the students' commitment to the college.

Table 6 details the results which indicated that item #6 dealing with institutional commitment asking if students would enroll at the campus if they were able to reregister for college proved to be significant at the .05 level. The negative t-test value of -2.686 once again indicated the overwhelmingly positive response of the experimental students to the item because of the construction of the Likert scale with response #1 being Strongly Agree. All students in the experimental class responded that they would reenroll whereas 33.3 %, 3/9, of the control students indicated that they would not. Differences in items #1-5 proved to be of no statistical significance.
Table 6

Degree of Student/Student/Faculty Contact and Institutional Commitment

FSSES – Section IV – Additional Student Information

<table>
<thead>
<tr>
<th>Question</th>
<th>Experimental Class (n=16)</th>
<th>Control Class (n=9)</th>
<th>t-test</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. About how many times did you meet with your classmates outside of class to work on class projects or assignments?</td>
<td>2.00 ± 1.32</td>
<td>3.11 ± 0.93</td>
<td>-2.222</td>
<td>0.082</td>
</tr>
<tr>
<td>2. About how many times did you e-mail your classmates to work on class projects or assignments?</td>
<td>0.88 ± 1.20</td>
<td>0.56 ± 1.33</td>
<td>0.616</td>
<td>0.272</td>
</tr>
<tr>
<td>3. About how many times did you talk with an instructor about coursework or personal matters?</td>
<td>2.25 ± 1.39</td>
<td>1.67 ± 1.22</td>
<td>1.044</td>
<td>0.154</td>
</tr>
</tbody>
</table>

(table continues)
Table 6

Degree of Student/Student/Faculty Contact and Institutional Commitment

FSSES – Section IV – Additional Student Information

<table>
<thead>
<tr>
<th>Question</th>
<th>Experimental Class</th>
<th>Control Class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n=16)</td>
<td>(n=9)</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>4. About how many times did you e-mail an instructor about coursework or personal matters?</td>
<td>0.75</td>
<td>1.24</td>
</tr>
<tr>
<td>5. Do you plan to continue next semester here at this campus?</td>
<td>1.00</td>
<td>0.00</td>
</tr>
<tr>
<td>6. If you could start over again, would you enroll at this campus?</td>
<td>1.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Note. One-tailed t-tests with the upper tail critical were performed on items #1-4, and one-tailed t-tests with the lower tail critical were performed on items #5-6.

*p < .05.

**p < .01.
Analysis of Team and Computer Course Grades, Grade Point Averages, and Persistence into the Second Semester

At the end of the semester, institutional records were examined to record and analyze students’ Team and Computer course grades as well as their first semester grade point averages. Persistence into the next semester was measured at the end of the third week of the Summer semester. The results of these tests indicated no statistically significant differences between the two groups in any of the areas as shown in Table 7. In fact, the two classes performed and persisted at very similar levels with the smaller control class achieving very slightly higher scores.
### Table 7

**Institutional Data: Course Grades, GPA, and Persistence**

<table>
<thead>
<tr>
<th></th>
<th>Experimental Class (n=16)</th>
<th>Control Class (n=9)</th>
<th>t-test</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>1. Team grades</td>
<td>3.50</td>
<td>0.73</td>
<td>3.56</td>
<td>0.73</td>
</tr>
<tr>
<td>2. Computer grades</td>
<td>3.13</td>
<td>0.89</td>
<td>3.22</td>
<td>0.83</td>
</tr>
<tr>
<td>3. Term GPA</td>
<td>3.12</td>
<td>0.84</td>
<td>3.23</td>
<td>0.63</td>
</tr>
<tr>
<td>4. Persistence into second semester</td>
<td>0.81</td>
<td>0.40</td>
<td>0.89</td>
<td>0.33</td>
</tr>
</tbody>
</table>

*Note. Numeric value of grades are as follows: 4 = A, 3 = B, 2 = C, 1 = D, 0 = F*

* *p < .05.*

** *p < .01.*
Qualitative Findings

Both the experimental and control groups responded to a number of open-ended questions in the First Semester Student Experience Survey. Each group completed one question at the end of both Section II - Social Experiences, and Section III - Academic Experiences, while the experimental group responded to an additional three questions at the end of the survey. As the total number of study participants was 25, the researcher elected to analyze the data without the use of a computer software program. After a thorough reading and rereading of the data, the researcher coded the responses and identified general themes. As Bogdan and Biklen (1998) indicate, the use of inductive analysis enables the researcher to build theory from the “bottom up” (p. 6) and so ground the theory in the data.

The dominant theme that emerged as a result of the analysis of the two open-ended questions at the end of the Social Experiences and Academic Experiences sections was that of social and academic support expressed by the experimental group. The experimental group cited the network of people available to them at school as helping them feeling comfortable and becoming part of the college. They mentioned both professors and students equally; many also wrote of people generally, and one mentioned the “open environment.” While the control group also cited teachers and friends as being significant, the frequency of this response was far lower than that of the control group, and perhaps, even more significantly, 44.4% (n = 4) wrote no response at all in contrast to 6.3% (n = 1) of the experimental group. Also 18.8% (n = 3) of the experimental group spoke of confidence in their ability to succeed while no one in the control group
mentioned this aspect at all. The clearly positive responses (93.8%) to the experimental group’s experiences are indicated in Table 8.

Table 8

Factors Affecting Level of Comfort at College by Treatment

<table>
<thead>
<tr>
<th>FSSES – Section II – Social Experiences</th>
<th>Experimental Class</th>
<th>Control Class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n=16)</td>
<td>(n=9)</td>
</tr>
<tr>
<td></td>
<td>#</td>
<td>%</td>
</tr>
<tr>
<td>1. Feeling of community: students,</td>
<td>12</td>
<td>75%</td>
</tr>
<tr>
<td>professors, people, environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Perceived likelihood of success</td>
<td>3</td>
<td>18.8%</td>
</tr>
<tr>
<td>3. No response</td>
<td>1</td>
<td>6.3%</td>
</tr>
</tbody>
</table>

Note. Totals may not equal 100% because of rounding.

Students in the experimental section wrote responses such as “Interaction with professors and other students helped me to feel comfortable and becoming (sic) part of this college,” “having friends to support you” and “Same people in most classes, to get to know them better. Work in teams [sic].” Some of the control group also wrote about contact with professors and friends, but this type of comment was far less frequent.

Again, in response to the question about what had helped students the most in achieving their grades, the experimental group listed the academic support from the college from professors, students, and tutors as being significant. While the control group also mentioned some of the same support, only 33% (3/9) as compared to 62.5% (10/16) of the experimental students responded in this manner. Also, significantly, only one
student in the control group wrote that his peers in class had contributed to his success. The experimental group seemed to feel more empowered and confident that their attitude and hard work had produced strong academic results than the control group did. Of the experimental group, 75% (n=12) attributed their success to their motivation and effort compared to 55.5% (n=5) of the control group. Finally, once again, some members, 22.2% (n=2) of the control group failed to respond at all while only one experimental student, 6.3%, wrote no response. Table 9 presents a summary of the students’ responses.

Table 9
Factors Affecting Grade Achievement by Treatment

<table>
<thead>
<tr>
<th>FSSS - Section III - Academic Experiences</th>
<th>Experimental Class (n=16)</th>
<th>Control Class (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
</tr>
<tr>
<td>1. Academic support: students, professors, tutoring</td>
<td>10</td>
<td>62.5%</td>
</tr>
<tr>
<td>2. Own attitude and hard work</td>
<td>12</td>
<td>75%</td>
</tr>
<tr>
<td>3. No response</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

Note. Totals are greater than 100% because of multiple responses.

Examples of experimental student responses as to what had contributed to their academic success are “Getting help from other students and what the professors have taught us,” “helpful and caring faculty and students,” and “self motivation and hard work.” Students in the control group wrote more about self-motivation such as “Striving for the best”, and, once again, two students wrote nothing at all.
The final three open-ended questions in the survey were presented only to the experimental group because these questions addressed the students' perceptions of the effect of being in a learning community in the same Team and Computer classes as well as their response to the team-teaching aspect of the class. Again, themes of positive support emerged from the data. Of the experimental students, 87.5% (n = 14) felt that their semester's experience provided them with opportunities to enable each other to succeed. They wrote of being able to "discuss both classes," doing both Team and Computer homework together in groups and helping each other, and being able to get insights into class projects and understanding concepts better. In addition, they spoke of being able to ask more questions and understanding questions that they did not understand during class. The theme of "They help me and I help them" appeared over and over again. Clearly, being placed with the same students in at least two classes with integration and reinforcement of material from both classes in both classes provided an environment of support and success for these students. Table 10 presents these responses.

Table 10

Academic and Social Effect of Learning Community Participation

<table>
<thead>
<tr>
<th>FSSES – Section IV – Additional Student Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental Class</td>
</tr>
<tr>
<td>(n=16)</td>
</tr>
<tr>
<td>#</td>
</tr>
<tr>
<td>1. Positive effect: supportive environment</td>
</tr>
<tr>
<td>2. Not much effect</td>
</tr>
<tr>
<td>3. No effect</td>
</tr>
</tbody>
</table>

Note. Total may not equal 100% because of rounding.
The final two questions dealt with the team-teaching aspect of the study. Although it appeared that some students responded both to team-teaching and team participation, their reactions were once again extremely positive. A strong majority, 81%, (13/16), wrote about the benefits of having two instructors in the class as well as the benefits of working on a team (Table 11). Students liked having two professors with different professional backgrounds and hearing two different points of view. One student wrote, “I enjoyed the team-teaching aspect. I was interested in other points of view (Different opinions).” Another responded with “I liked the fact that we had 2 professors and they were of two different backgrounds or majors. Because they had more knowledge to answer questions from [sic].” Students felt that they received more help and had more of their questions answered. In addition, they spoke of the benefits of learning to work in a team with different types of people. One student noted that he “learned their can be ups and down to teamwork, it did lead to very interesting problems [sic].”

Table 11

Student Response to Team-teaching

<table>
<thead>
<tr>
<th>FSSES – Section IV – Additional Student Information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Experimental Class</td>
</tr>
<tr>
<td>(n=16)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>#</td>
</tr>
<tr>
<td>1. Positive benefits</td>
</tr>
<tr>
<td>2. Ok response</td>
</tr>
</tbody>
</table>
When asked about how the team-teaching aspect affected their understanding of problem-solving and team participation, the emergent theme was that of having a different perspective: being able to look at and approach problems differently with more ideas and possibilities to try and with which to succeed (Table 12). Some responses were: “I look at things differently,” “I look at problems in a different way. I can make a better choice...,” “… it taught me to look at problems in all different possible ways,” and “…now I understand how work groups operate.” Students wrote about understanding how work groups operate and being able to analyze “problems and work them through effectively” and “in all possible ways.” Again, 81% (13/16) responded positively.

Table 12

Effect of Team-teaching on Problem-solving and Team Participation

<table>
<thead>
<tr>
<th>Experimental Class (n=16)</th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Positive effect</td>
<td>13</td>
<td>81.3%</td>
</tr>
<tr>
<td>2. No effect</td>
<td>2</td>
<td>12.5%</td>
</tr>
<tr>
<td>3. No response</td>
<td>1</td>
<td>6.3%</td>
</tr>
</tbody>
</table>

Note. Total may not equal 100% because of rounding.

In conclusion, when asked about what contributed to their becoming part of the college and to their academic success as well as the effect of being team-taught in a learning community, the experimental students expressed far more enthusiastic support
for their experience and indicated higher levels of both social and academic integration than did the students in the control group.

Summary of Results

The research question asked if participation in the team-taught learning community of Team 112 linked with Computer Applications 111 made a difference to students in both their perceptions of their first semester academic and social experiences as well as actual behaviors and outcomes. As such, the two-part research question underlying the study was divided into two sets of hypotheses: Hypotheses Set I dealing with students' perceptions of their experiences and Hypotheses Set II dealing with actual student behaviors and outcomes. The results of the study yielded both quantitative and qualitative support for the first set of hypotheses; in other words, students in the experimental section indicated that they had experienced higher levels of both academic and social integration than did the students in the control section. Table 13 presents a summary of the FSSES items of significance. As previously discussed, $t$-test values for FSSES Section II item #1; Section III items #5, 8, 10, and 11; and Section IV item #6 were negative because of the construction of the Likert scale with response #1 being Strongly Agree and thus indicated the overwhelmingly positive response of the experimental students to the item. In contrast, the $t$-test value for Section II #6 was positive, but this result indicated that a significantly higher number of experimental students disagreed with the negatively worded item than did the control students.

Two key items in the FSSES Section II - Social Experiences were found to be of statistical significance, item #1 dealing with the ease students made friends during the
Table 13

Summary of FSSES Items Attaining Statistical Significance

<table>
<thead>
<tr>
<th></th>
<th>t-test</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Section II – FSSES – Social Experiences</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. It has been easy for to meet and make friends with other students this semester at this campus.</td>
<td>-2.984**</td>
<td>0.003**</td>
</tr>
<tr>
<td>6. With my commitments off-campus, I have difficulty finding time to schedule meetings with the group to complete course assignments.</td>
<td>1.727*</td>
<td>0.049*</td>
</tr>
<tr>
<td><strong>Section III – FSSES – Academic Experiences</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. It is important to me to apply what I am learning in one class to another.</td>
<td>-2.199*</td>
<td>0.019*</td>
</tr>
<tr>
<td>8. It is easy to ask my professors for help when I need it.</td>
<td>-1.980*</td>
<td>0.030*</td>
</tr>
<tr>
<td>10. I am looking forward to taking classes next semester at this campus.</td>
<td>-2.202*</td>
<td>0.019*</td>
</tr>
<tr>
<td>11. I feel I will do well here at this college.</td>
<td>-3.278**</td>
<td>0.002**</td>
</tr>
<tr>
<td><strong>Section IV – FSSES – Additional Student Information</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. If you could start over again, would you enroll at this campus?</td>
<td>-2.686**</td>
<td>0.007**</td>
</tr>
</tbody>
</table>

*Note. One-tailed t-tests with the lower tail critical were performed on all items except for Section II - #6 which was analyzed with a t-test with the upper tail critical.*

*p < .05.

**p < .01.
semester and item #6 questioning the difficulty and/or ease with which students could schedule out-of-class meetings to complete course assignments with their peers. Since a primary objective of the learning community was to provide both an academic and social community for commuting students in an institution where students usually attend classes and return to their out-of-school communities and commitments, providing a venue for students to become connected was critical. Item #6 was significant at the .05-level, as was item #1 which strongly supported the research hypothesis that the experimental students would experience a higher level of social integration than the control students. Along with connecting with each other during class, though, students needed to continue the connection outside of class to complete course requirements. The experimental students clearly indicated that they were able to accomplish such meetings.

FSSES Section III - Academic Experiences yielded four items of statistical significance at the .05-level. Item #5 queried the students about how important it was to them to apply what they learned in one class to other classes. The learning community connecting the Team class with Computer Applications was designed to allow for reinforcement of concepts learned in one class to the other and opportunities to practice application of newly learned skills in settings other than the original one. The experimental students strongly indicated that they were cognizant and appreciative of the opportunity to do exactly that. In addition, the team-taught learning community was also planned to encourage the students to connect with their professors by providing more opportunities within the academic environment for them to interact. Again, student responses to item #8 indicated that they felt it easy to seek out their professors for help when they needed to do so. The remaining two items of significance, items #10 and 11,
dealt with students' perceptions of how much they looked forward to continuing their studies the following semester and how well they thought they would do at the college. Clearly, students in the experimental section felt academically successfully connected to the college.

Qualitative data, too, supported the quantitative results. Student responses to the five open-ended survey questions exploring what made them comfortable about becoming part of the college and what helped them to succeed academically as well as their responses to being part of the team-taught learning community indicated a much more positive response from the experimental students than the control students.

Study results did not, however, provide support for most of the hypotheses in Set II dealing with actual student behaviors and outcomes. Of the six subsidiary questions, only question #6 dealing with student commitment to the college yielded a statistically significant result at the .05-level. Item #6 dealing with institutional commitment asked students if given the opportunity if they would reenroll at the college. Again, since a key goal of the learning community was to establish a connection to the school, this result supports the research hypothesis that the experimental students would feel a higher level of both academic and social integration. FSSES items #8 and 10 in Section II – Academic Experiences discussed earlier provided additional support for the level of institutional commitment indicated by the experimental students as did the experimental students' qualitative responses to the open-ended questions asked them. Student integration and commitment to the college did not, though, translate into measurable student behaviors such as the outcomes investigated in questions #1, 2, 4, 5, and 6 in Hypotheses Set II. No significant differences were found in Team and Computer course grades, grade point
averages, actual persistence to the second semester, and amount of in-person and e-mail contact with classmates and instructors between the experimental and control sections.

Summary

The results of the First Semester Student Experience Survey and an analysis of institutional data regarding grades and persistence indicated that the team-taught learning community of Team 112 did, indeed, make a difference to the experimental class. After performing a series of $t$-tests for the items in the Social and Academic Experience and the Additional Student Information sections, the null hypothesis was rejected for two out of eleven items measuring social integration, four out of eleven items measuring academic integration, and for one of the two items measuring institutional commitment. The experimental class felt very strongly that they had been able to make friends easily and also were able to schedule out-of-class meeting to work on class assignments. They also noted how important it was for them to apply what they were learning in one class to another and found it easy to ask their professors for help. They were very positive about looking forward to the next semester's classes and felt very strongly that they would do well at the college. Finally, if given an opportunity to start over at the college, they very strongly indicated that they would do so. Their responses to the five open-ended survey questions also demonstrated strong support for the social and academic community they experienced and sufficient evidence to reject the research hypotheses concerning perceptions of first semester experiences. Furthermore, their responses corroborated the earlier quantitative findings to reject the null hypotheses for the above survey items.
Not all of the hypotheses could be rejected though. Results for many items in both the Social and Academic Experience Scales failed to show statistical significance. The t-test analyses of institutional data regarding Team and Computer course grades, grade point averages, in-person and e-mail contact with students and professors, and persistence into the second semester also failed to yield results of significant difference.

However, the combined total of qualitative and quantitative evidence does support the finding that the team-taught learning community of Team 112 did, indeed, make a difference to its students.
CHAPTER V

Discussion, Conclusions, and Recommendations

Introduction

Because the American system of higher education is today, as Trow (1997, p. 571) has said, both “the largest and most diverse system of postsecondary education in the world” offering access and opportunity to all interested, more students are entering higher education than ever before. Much of the growth in enrollment is a result of more female, older, part-time, and minority students; many of whom are nontraditional. Although more students are entering the system, many more nontraditional students are leaving before completing degrees. In fact, while one in five traditional students leaves college without earning a degree, one in three nontraditional students does the same (NCES, 1996b).

The challenge then is to make the learning environment one which actively involves students in the learning process while involving them as well with whom they are learning: other students and faculty. In response, higher education has instituted a number of innovations including interdisciplinary learning, team-teaching, emphasis on problem-solving and critical thinking, and the establishment of learning communities utilizing many of the above pedagogical practices.

Much of the research on retention has focused on students’ academic and social integration based on Tinto’s (1975, 1987, 1993) interactional model examining the ways
college social and intellectual communities either encouraged or discouraged staying in school. Implicit in the model are the concepts of college as an interactive system and the importance of a person/environmental fit. Astin, too, in *What Matters in College* (1993) posited that it was the environment created by students and faculty that most affected students’ college experiences and that lack of student community had stronger direct effects on student satisfaction than any other factor.

The necessity to involve students is especially acute on commuting campuses for the educational experiences most likely to impact commuting students are those taking place in the college classroom. Tinto (1997b, p. 559) clearly points to the college classroom as the place of interaction and intervention by acknowledging that “the classroom may be the only places where students and faculty meet.” What needs to done then is to create this type of community within the college classroom.

The purpose of this experimental study was to examine the impact of a team-taught learning community on nontraditional, commuting, full-time students at a proprietary technical college. The research question asked if participation in the team-taught learning community made a difference to students in both their perception of their first semester academic and social experiences as well as actual academic behaviors and outcomes.

Discussion of Results

The two-part question underlying the study was divided into two sets of hypotheses: Hypotheses Set I dealing with student perceptions of their experiences and Hypotheses Set II dealing with actual behaviors and outcomes. The research hypotheses
tested were that first semester students in the team-taught learning community model of Team 112 would have significantly higher levels of academic and social integration and more positive perceptions of their academic and social experiences than the control class as well as higher Team and Computer course grades, grade point averages, commitment to the college, and persistence into the second semester.

To answer the questions posed in the study, both quantitative and qualitative methodologies were employed to describe and track the behaviors and outcomes of learning community and non-learning community students and also to understand from the students' point of view their perception of the program. Study participants, Spring 2000 non-developmental, first-semester, full-time, day electronic technician students were randomly assigned to either the experimental or control classes. The 25 students eligible for the study agreed to participate in the study and completed the First Semester Student Experience Survey at the end of the semester in June 2000. The FSSES was developed by the researcher from a number of sources to measure students' social and academic experiences, commitment to the college, and actual behaviors such as contact with other students and faculty. Also, two open-ended questions concerning social and academic experiences were asked of all study participants while the experimental section was asked to complete three additional open-ended questions regarding their reactions to the team-taught learning community. In addition, institutional data were examined to compare first semester Team and Computer grades and student grade point averages as well as student persistence.

Study results indicated that the team-taught learning community of Team 112 did, indeed, make a difference to the students in the experimental class. Study results yielded
both quantitative and qualitative support for the first set of hypotheses, Hypotheses Set I, dealing with students’ perceptions of their experiences. Students in the experimental section indicated that they experienced higher levels of academic and social integration than did the student in the control section. Study results failed, however, to provide support for most of the hypotheses in Set II dealing with actual student academic behaviors and outcomes. Only the FSSES item concerning student commitment to the college yielded statistically significant results which was further supported by the experimental students’ qualitative responses to the open-ended questions asked them.

What is significant to note is that in spite of the experimental section having indicated a higher level of academic and social integration than the control section on the FSSES and in their open-ended responses, both sections responded very positively and in like manner to an end-of-the-semester teaching and course feedback form. In fact, although the total average for both classes was almost identical, half way between the very good and excellent categories, the control class’s score was slightly higher. This unexpected similarity suggests that both classes did, indeed, find the class to be of value and interest to them, regardless of the teaching model they experienced. Perhaps the students’ positive response reflects the skill and expertise of the two instructors along with an appreciation of the value of the concepts and skills presented in the course.

Nevertheless, it was, however, only the experimental group that experienced a sense of community, higher academic and social integration as well as commitment to the college. Thus, it seems apparent that the team-taught learning community was able to provide its students with a more involving and connecting environment than the individually taught traditional model of the class.
Hypotheses Set I – Student Attitudes and Perceptions

Social Integration.

Although of the 11 survey items in FSSES Section II - Social Experiences, only two were found to be of statistical significance, these two items were, because of the objectives of the learning community, particularly important. These questions dealt with the ease students made friends throughout the semester and the ease with which they scheduled out-of-class meetings to complete course work. Research has indicated that the amount of involvement and the amount of connection students feel with their classmates is key in terms of their commitment to the institution. Since all of the students in the study commute to campus, their main opportunity to establish connections lies within the classroom. Support for the presence of this opportunity was shown by the .05-level of significant response to survey item #1.

Before continuing discussion of this finding, a more specific snapshot of the electronic student population is in order. While the ET ethnicity profile closely reflects the ethnicity of the college’s population, its age and gender profiles are markedly different. In general, the ET population has tended to be younger and much more male than the rest of the school. This trend is even more extreme in the study’s sample. In other words, the sample was comprised of a much younger and almost all-male group of students. Only the control class contained two female students. In an interview with the technical instructor of the experimental class and former dean of the Electronic program and Dean of Academic Affairs, Professor Kist (August 30, 2000), described ET students as a group tending to have an independent work-style with a “natural disinclination” to group and teamwork. As a result, they are usually skeptical and reluctant to work and
study together. Therefore, for the experimental group to so strongly indicate that they could make friends, form groups, and work together after class was particularly significant.

Of additional interest are the results of a focus group on women's issues at the college conducted on September 21, 2000. The purpose of the group was to explore female students' experience and particularly the sense of community that they felt at the predominantly male institution. What the discussion indicated was a clear lack of community and lack of support among female students. This finding highlights the need for supportive learning communities at the college and the significance of having created a sense of community at the college, especially among a male population unaccustomed to working together.

Further support for the degree of social integration the experimental students indicated was provided by Team faculty observations regarding the efficacy of student groups in the class. Since Team 112 was a team-based as well as a team-taught class, all students in both the experimental and control classes were required to form self-selected teams for the semester. The 22 students in the experimental class, not all of whom were eligible for the study, divided into four diverse groups or teams consisting of five or six students. Of the four teams, only one consisted totally of study participants, students with a learning community schedule. Two of the other teams each had one non-learning community student while the last team of six students was composed of only three learning community students. In addition, one learning community student from the last team unofficially withdrew from school later in the semester. In an initial informal assessment of the groups, the two instructors of the experimental class felt that the last
team consisting of slightly older students was probably the strongest team of the four and expected that they would become the class leaders. What, in fact, occurred was quite the opposite. Of all of the groups, the last team produced the weakest final project in spite of very academically strong individual members. When questioned about their performance, members talked about the difficulty of meeting and the fact that since so many had no other classes together, they felt as if they didn’t know each other, even after having been in the same class for the semester. In effect, the absence of a sense of community seems to have produced poor results in marked comparison to the rest of the class.

Interestingly, another group with one non-learning community student also experienced some difficulty resulting also from the fact that although all students were electronic technician students, one had originally been scheduled for the control Team class but due to a work conflict elected to attend the experimental section. This particular student complained often of his sense of being “left out and not knowing the other students.” He, too, spoke of the difficulty meeting his teammates outside of class and of the “unfairness” of his position. He, in fact, felt deprived at not having been a part of the learning community. Again, a lack of community, a lack of social integration resulted in not only student dissatisfaction, but also, for some students, poor academic performance.

The experimental students’ responses to the open-ended question regarding what factors affected their comfort level at college were also clearly more positive than the control students’ responses were. In fact, of the control students, 44.4% elected not to respond at all. For the experimental students to have responded positively certainly supported the quantitative results. Their responses are, however, even more noteworthy when considering a characteristic typical of the ET student profile. In his description of
the ET population, Professor Kist (August 30, 2000) noted also that ET students tend generally to relate to "what's physical and can be touched rather than abstract ideas." As such, they also tend to be weaker in verbal skills and may be "disinclined to write." Even when the students completed the survey, some asked about how much writing they would have to do, and one student announced quite loudly that he "hated to write." Yet, in spite of this reticence, the experimental students did, indeed, write about their general satisfaction with their team experiences.

**Academic Integration.**

Results of Section III - Academic Experiences in the FSSES produced more items of statistical significance than did Section II - Social Experiences. Section III yielded four out of eleven items statistically significant at the .05-level. The first two items dealt with the application of learning from one class to another and the ease with which students felt they could ask their professors for help. Research clearly points to the necessity of student/faculty interaction in creating both academic and social integration and also the benefits of interdisciplinary learning. Since some of the goals of the learning community were to promote transference of knowledge from one class to another and also to create a stronger sense of involvement with faculty, significant results on these items indicated that the program had, indeed, met these goals. The final two items in this section explored how much students looked forward to the next semester and how well they felt they would do at the college. Their strong positive responses to both items but particularly to the final item predicting their level of academic success indicated a high level of academic integration.
The experimental section’s responses to the open-ended question asking about what factors affected their grade achievement strongly supported the quantitative results. Almost twice as many of the experimental students wrote about the academic support they received than did the control students. In fact, 22.2% of the control students wrote no response at all.

Additionally, experimental student responses to the final three open-ended questions asking about their reactions to being in the team-taught learning community indicated a high level of support. Students wrote about how their experience helped them to achieve more academically; they felt they were able to receive more help from both their professors and classmates, view their work from different perspectives, and understand concepts better. In sum, both the quantitative and qualitative results support the finding that the experimental students experienced a higher level of academic integration than the control students.

**Hypotheses Set II – Academic Behaviors and Outcomes**

This set of hypotheses dealt with actual student behaviors and outcomes. At the end of the semester, institutional records were examined to compare students’ Team and Computer course grades as well as their first semester grade point averages. Persistence into the next semester was measured at the end of the third week of the Summer semester. Additionally, FSES Section IV - Additional Student Information questioned the students about specific behavioral outcomes such as the amount of in-person and e-mail contact with classmates and faculty. Study results did not provide support for most of the hypotheses in Set II. However, one item, item #6 concerning institutional commitment in Section IV- Additional Student Information proved to be statistically
significant at the .05-level. Experimental students clearly indicated that if given the chance to start over in college that they would reenroll at the college. Interestingly, the previous item, item #5 asking about plans to continue at the campus next semester did not yield significant results. Both experimental and control students indicated a commitment to continue their education in their program on campus. Evidently, the control students who wouldn’t reenroll at the campus felt that since they were already in the program, they might as well continue. The experimental students’ high degree of commitment to their program was also evidenced by the statistically significant results to Section II - Academic Experiences items #10 and 11 concerning their looking forward to the next semester and their feeling of strong academic achievement as well as their positive responses to the open-ended questions asked them.

Conclusions

The results of this study indicated that it is indeed possible to create a sense of community within the classroom for commuting nontraditional students, students for whom connection within the classroom is probably their main and, in some cases, only contact with faculty and other students. The team-taught learning community of Team 112 provided an environment able to create a level of academic and social integration and also commitment to the college significantly higher than the control section experienced. What the study results did not, however, indicate was a significant effect on actual student academic behaviors and outcomes during the first semester.

Why the statistically significant quantitative and also positive qualitative support for the first set of hypotheses, Hypotheses Set I - Student Attitudes and Behaviors did not
translate into the specific measurable academic behaviors and outcomes of Hypotheses
Set II is a question of some concern. The most obvious explanation is that one semester is
too soon to expect to affect perceptions, attitudes, and also behaviors and outcomes in a
student population unaccustomed to the pedagogical practices of a team-taught learning
community; in fact, in a population unaccustomed to higher education. Most students are
first-generation college students with working class backgrounds. Students entering the
ET program are generally students with similar academic and life experiences, students to
whom education has not been a particularly high priority in the past. To expect a dramatic
change in their academic achievements after only one semester is, perhaps, premature at
best. To have been able to positively affect their sense of belonging to a specific
community at the college and to have affected their expectations about academic success
and their levels of academic commitment when many ET students, in fact, have not
experienced a high level of academic commitment and success in the past is, to be sure,
an accomplishment.

In her presidential address at the annual conference of the Association for the
a model of research she is developing, “Academics of the Heart.” In this model, she
challenges the separateness of reason and emotion and calls for an “integrated,
humanistic view of research” (p. 2). She spoke of Greenspan’s (1997) assertion that
“emotional experience is in fact the basis of the mind’s growth” (p. 308). These concepts
can help frame the impact of having affected the attitudes, the emotions of a group of ET
students. Hopefully, following the “emotional experience” of participation in a first-
semester learning community, student behaviors and outcomes will show significant change further along in the students’ academic careers.

What this study has done is to contribute to the literature examining curricular innovations, specifically learning communities, and persistence in college based on nontraditional commuting students. The study’s findings corroborated earlier findings confirming the importance of academic integration to students at commuter institutions in contrast to the influence of social integration at residential colleges (Pascarella & Chapman, 1983; Pascarella, Duby, & Iverson, 1983; Pascarella, Duby, Miller, & Raiser, 1981). In addition, this single institution experimental design study has advanced study on minority student populations to support institutions to “address their own unique challenges” (Mow & Nettles, 1990, p. 48) and to correctly operationalize academic and social integration for each student population (Kraemer, 1997).

Tinto’s theory of student departure provided a theoretical framework for the study, and the results of the study affirm the validity of Tinto’s work. Importantly, the study with its emphasis on a population often underrepresented in studies of higher education addressed some of the criticisms of Tinto’s model.

Tinto (1982, 1987) has along with others acknowledged the shortcomings of his model regarding students of different gender, race, and social status backgrounds as well as adults and those at two-year and commuting institutions (Bers & Smith, 1991; Braxton et al., 1997; Moss & Young, 1995; Tierney, 1992). Other major criticisms of Tinto’s model have been its assumption that in order to be successful, minority groups must accept the dominant culture of the institution (Attinasi, 1989; Tierney, 1992) and that the model has not addressed the racial-ethnic dimension of “integrating experience” for
minority students (Braxton et al., 1997). Tinto (1993) has maintained that the concept of membership is more useful than integration because of its implication of participation. Additionally, Hurtado and Carter (1997) point to the concept of membership as students in peer groups acquiring skills necessary for college such as use of study groups in and outside of the classroom as promoting a "broader sense of group cohesion" and "enhancing an individual's sense of affiliation and cohesion with college" (p. 4).

This study examined the application of Tinto's model to nontraditional commuting students of different ages and ethnicities and affirmed its applicability to a diverse student population. Its findings have added support for Tinto's assertion concerning commuting students that "if academic and social involvement or integration is to occur, it must occur in the classroom" (1997b, p. 599). Because of the college's multicultural nature, pluralism rather than an abandonment of minority culture is the dominant force on campus. Minority students in the study did not have to accept a particular culture dominant in the college, for, in fact, none exists. What they did do was to create their own culture and community within the classroom.

Also, all study participants were assigned membership in one of two models of a first-semester class in which participation was an essential requirement, but it was membership in the learning community that produced academic and social integration and commitment to the college. Thus, the study also provided support for Hurtado and Carter's (1997) concept of membership theory as promoting students' affiliation with the college.

Additionally, the study's findings supported earlier learning community research about the affective benefits of learning community membership, that is, of what students
value about their experiences and what differences such programs make to them. The students involved in this study clearly indicated that they felt more comfortable and a part of the college, had friends to support them, and were able to approach problems from a broader perspective. Their responses echoed the responses of students in earlier studies (Belton, 1998; Brown & Salisch, 1996; Dogen, 1993; Gabelnick et al., 1990; Hunter & Kochis, 1993; Ketcheson & Levine, 1999; Lenning & Ebbers, 1999; Matthews et al., 1996; Reumann-Moore & El-Haj, 1997; Schaad, 1997; Tinto, 1997b, 1998a; Tinto, Goodsell-Love, & Russo, 1993; Tinto & Love, 1995; Tinto & Russo, 1994; Tinto, Russo, & Kadel, 1994; Tinto, Russo, & Kadel-Taras, 1996).

Where the results of this study diverge, however, from most of the earlier research is in the area of specific gains in student academic behaviors and outcomes. Most of the literature has indicated that participation in learning communities positively affects students’ academic outcomes and persistence (Gabelnick, et al., 1990; Ketcheson & Levine, 1999; Lenning & Ebbers, 1999; Tinto, 1997b; Tinto & Love, 1995; Tinto & Russo, 1994). Perhaps, greater gain in academic achievement in other studies could have been a result of more tightly structured learning communities; in other words, a higher level of coordination among several classes along with additional support from other programs in the college such as the Advising Office, First Year Experience Programs, Student Personnel and Counseling Office, and Student Peer Advising and Mentoring Programs. In comparison, the learning community in this study involved only two loosely connected classes with two professors – a curricular restructuring which may not have provided sufficient academic support to affect higher grades and persistence. Perhaps also the treatment outcomes were limited to the selection of the instructors, so that another
study with other instructors might result in different academic outcomes. Not all other studies have shown positive student academic achievement and persistence though (Bohl-Fabian, 1997; Dochen, 1993). Therefore, additional research examining student academic behaviors and outcomes in differently structured learning communities is certainly warranted. Also, even though the study participants represented, in essence, the entire population of electronic technician students eligible for the study, the total sample was small which is yet another factor supporting the need for additional research.

Recommendations for Further Research

The study’s findings suggest opportunities for additional research in the fields of pedagogical innovations and learning communities, especially for nontraditional commuting students. The following are areas warranting further examination.

1. As the study’s findings indicated that the experimental students experienced a higher degree of academic and social integration and commitment to the college than the control students but did not provide support for particular behaviors and outcomes, a longitudinal follow-up study to track students’ progress, specifically to track behaviors and outcomes such as grades and persistence, is warranted.

2. Next, further research to determine exactly why students did not register for their second semester would provide insight as to the efficacy of the learning community model of Team 112 to influence persistence, especially in light of the overwhelmingly significant institutional commitment indicated by the experimental students.
3. A follow-up study with other ET students would test the model’s application to other ET cohorts at the college, particularly since one of the study’s limitations was its small sample size.

4. Also, an expansion of the program to include other majors, both associate degree majors as well as baccalaureate students and more female students would verify its generalizability to other populations in the college.

5. Replicating the study with the same faculty would add validity and be valuable to test if the findings could be repeated.

6. As one of the study’s limitations was that the outcomes could be limited to the selection of instructors, replicating the study with other faculty would examine whether the study’s findings were dependent on a particular faculty team or if other faculty might evoke the same response.

7. Additional studies examining different types of learning communities with different classes linked together or a different number of linked classes with additional types of institutional support would extend the learning community research.

8. Finally, additional studies at both other technical and non-technical colleges with similar student populations would confirm or refute the findings of this study and determine their value in other settings.

Today universal access to higher education promises a vast array of benefits to its participants, but the large number of students, particularly nontraditional students, leaving higher education before the completion of their degrees gives pause to how available higher education truly is to these students. In order to affect genuine opportunity, higher education must actively involve students in their learning and enable
them to connect with both their classmates and their instructors. Learning communities are one avenue to support our students. Continued research into better serving the needs of our students, especially first-semester students, may lead us to yet many more.
References


Available: Proquest


Appendix A

Solicitation/Informed Consent Form
Dear First Semester Student:

Because I am committed to improving the academic experience of first year students, I am attempting to evaluate the effectiveness of different teaching methods, courses and course combinations. As an Electronics Technician student, you are being invited to participate in an important research study on this campus. If you choose to participate in this study, you must, however, be 18 years of age or older by the beginning of June 2000.

This research is being undertaken by Barbara Goldberg in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Higher Education Administration and Supervision at Seton Hall University.

Your participation in this study is entirely voluntary, and you have the right not to participate. If you choose to participate, you will be asked to complete a survey, the First Semester Student Experience Survey, in class at the end of the semester. The survey will explore your reactions to your semester's experiences and should take no more than one class period to complete. No personally identifying information will be disclosed, and all your responses will be kept completely confidential. You are free to stop participating in the research at any time or to decline to answer any specific survey question without penalty. If you experience any undue stress or anxiety during the completion of the survey, just stop and inform the survey administrator. Your participation will not affect your grades in any way nor place any extra responsibility on you. If you choose not to participate in completing the survey, you will work individually in class on course material while the other students complete the survey. Also, your participation in the study will authorize the accessing of your Team and Computer grades for use in the research study, but all data will be reported in group form; that is, individual grades will not be identified.

If you choose to participate in this study, please sign and date this letter to indicate your willingness to be part of this study.

If you have any other questions or would like to know the results of the study after this semester, please meet with me in my office, #936, or e-mail at bgoldberg@admin.nj.devry.edu, or telephone me at (732) 435-4862, Ext. 3936.

This project has been reviewed and approved by the Seton Hall University Institutional Review Board for Human Subjects Research. The IRB believes that the research procedures adequately safeguard the subjects' privacy, welfare, civil liberties, and rights. The Chairperson of the IRB may be reached through the Office of Grants and Research Services. The telephone number of the Office is (973) 275-2974.

I have read the material above, and any questions I asked have been answered to my satisfaction. I agree to participate in this activity, realizing that I may withdraw without prejudice at any time.

Subject or Authorized Representative __________________ Date ____________

Sincerely,

Barbara M.L. Goldberg
Appendix B

First Semester Student Experience Survey (FSSES)
Dear First Semester Student:

We are committed to improving the academic experience of first year students, but to do so, we need your assistance. Please take a few minutes to give us YOUR input by completing this survey. No personally identifying responses will be disclosed, and all of your responses will be kept completely confidential. This survey is separate from and not to be confused with the regular end-of-the-semester course evaluation form. THANK YOU for your time and thoughtful participation.

FIRST SEMESTER STUDENT EXPERIENCE SURVEY

Date:

Class & Section:

Directions: For each question, please circle the number of your response, unless further directions indicate otherwise.

I. Student Information

1. Are you a full-time student with 12 or more credits?
   1. Yes       2. No

2. Circle your gender.
   1. Male       2. Female

3. How old will you be on July 1, 2000?

4. Circle the choice that best describes your ethnicity/race.
   1. African American   2. American Indian or Alaskan Native
   3. Asian or Pacific   4. Caucasian/White       5. Hispanic
   6. Other             7. Prefer not to respond
5. What kind of high school diploma do you have?

1. Standard  
2. GED  
3. Other

6. Did you begin this program directly after you completed high school?

1. Yes  
2. No

7. Have you ever completed work at another college?

1. Yes  
2. No

1. Did you work during this semester?

1. Yes  
2. No  (If no, skip questions #9, 10, & 11)

2. Where did you work?

1. Off-campus  
2. On-campus

3. Wherever you worked, how many hours per week did you work this past semester?

1. 1-10 hours  
2. 11-20 hours  
3. 21-30 hours  
4. 31-40 hours  
5. Over 40 hours

4. Why are you working? (Circle ALL that apply).

1. To support myself (rent, food, clothing, etc.).
2. To support my spouse
3. To support my children
4. To support my parents/other relatives
5. For spending money
6. To pay for college tuition
7. Other: ____________________
5. I am ...


6. What kind of family responsibilities do you have on a regular basis during the school year? (Circle ALL that apply).

1. Care of my own children
2. Care of my sisters and brothers
3. Care of my parents
4. Care of my grandparents
5. Care of other relatives
6. Providing meals for others
7. Other household responsibilities
8. No family responsibilities
9. Other _______________________

7. Which of the following are you most likely to do? (Circle only ONE.)

1. Plan classes around my work schedule
2. Plan work around my class schedule
3. Plan classes around my child care or family responsibilities

8. Where do you live when attending school? (Circle only ONE.)

1. Campus/off-campus housing
2. Apartment
3. Home of parents or relative
4. Own home
5. Other _______________________

16. How would you describe your balance of classes, employment, and family responsibilities? (Circle only ONE.)

1. It is easy to balance them all of the time.
2. It is easy to balance them most of the time.
3. It is hard to balance them some of the time.
4. It is always hard to balance them.
II. Social Experiences

1. It has been easy for me to meet and make friends with other students this semester at this campus.

1  2  3  4  5
Strongly Agree Agree Undecided Disagree Strongly Disagree

2. Since coming to college here, I have developed close personal relationships with other students.

1  2  3  4  5
Strongly Agree Agree Undecided Disagree Strongly Disagree

3. I am most comfortable in class when I know the other students.

1  2  3  4  5
Strongly Agree Agree Undecided Disagree Strongly Disagree

4. In this class, I have made good friends who supported each other through the academic challenges.

1  2  3  4  5
Strongly Agree Agree Undecided Disagree Strongly Disagree

5. I like working with others rather than working alone.

1  2  3  4  5
Strongly Agree Agree Undecided Disagree Strongly Disagree

6. With my commitments off-campus, I have difficulty finding time to schedule meetings with a group to complete course assignments.

1  2  3  4  5
Strongly Agree Agree Undecided Disagree Strongly Disagree
7. I want my professor to know my name and who I am.


8. I am satisfied with the opportunity to meet and interact informally with professors.


9. My interaction with professors has had a positive influence on my growth and attitudes.


10. I am more comfortable on campus because of the experiences I had this semester.


11. Because of my experiences this semester, I feel like a part of the campus community.


12. What has helped you the most feeling comfortable and becoming a part of this college?
III. Academic Experiences

1. I have performed academically as well as I anticipated I would.

   1  2  3  4  5
   Strongly Agree  Agree  Undecided  Disagree  Strongly Disagree

2. I am satisfied with my academic experience.

   1  2  3  4  5
   Strongly Agree  Agree  Undecided  Disagree  Strongly Disagree

3. During this past semester I have been involved in my coursework.

   1  2  3  4  5
   Strongly Agree  Agree  Undecided  Disagree  Strongly Disagree

4. I learn the most when I study with a group of students taking the same class.

   1  2  3  4  5
   Strongly Agree  Agree  Undecided  Disagree  Strongly Disagree

5. It is important to me to apply what I am learning in one class to another.

   1  2  3  4  5
   Strongly Agree  Agree  Undecided  Disagree  Strongly Disagree

6. It is important to apply what I’m learning to the real world.

   1  2  3  4  5
   Strongly Agree  Agree  Undecided  Disagree  Strongly Disagree

7. My classes have been involving and stimulating.

   1  2  3  4  5
   Strongly Agree  Agree  Undecided  Disagree  Strongly Disagree
8. It is easy to ask my professors for help when I need it.

1 Strongly Agree  2 Agree  3 Undecided  4 Disagree  5 Strongly Disagree

9. I am the most satisfied at the end of the semester when I truly believe that I learned something important during the semester.

1 Strongly Agree  2 Agree  3 Undecided  4 Disagree  5 Strongly Disagree

10. I am looking forward to taking classes next semester at this campus.

1 Strongly Agree  2 Agree  3 Undecided  4 Disagree  5 Strongly Disagree

11. I feel I will do well here at this college.

1 Strongly Agree  2 Agree  3 Undecided  4 Disagree  5 Strongly Disagree

12. What has helped you the most this past semester in achieving your grades?
IV. **Additional Student Information**

1. About how many times did you meet with your classmates outside of class to work on class projects or assignments?
   - 1. 1 time  
   - 2. 2-3 times  
   - 3. 4-5 times  
   - 4. More than 5 times  
   - 5. Not at all

2. About how many times did you e-mail your classmates to work on class projects or assignments?
   - 1. 1 time  
   - 2. 2-3 times  
   - 3. 4-5 times  
   - 4. More than 5 times  
   - 5. Not at all

3. About how many times did you talk with an instructor about coursework or personal matters?
   - 1. 1 time  
   - 2. 2-3 times  
   - 3. 4-5 times  
   - 4. More than 5 times  
   - 5. Not at all

4. About how many times did you e-mail an instructor about coursework or personal matters?
   - 1. 1 time  
   - 2. 2-3 times  
   - 3. 4-5 times  
   - 4. More than 5 times  
   - 5. Not at all

5. Do you plan to continue next semester here at this campus?
   - 1. Yes  
   - 2. No  
   - 3. Unsure

6. If you could start over again, would you enroll at this campus?
   - 1. Yes  
   - 2. No
Appendix C

FSSBS Experimental Section Additional Three Open-ended Questions
7. Please explain how you feel being with the same students for both your Team and Computer classes affected you academically and socially this semester.

8. How did you like the team-teaching aspect of the course? Explain.

9. Has the team-teaching format affected your ability to understand problem-solving and participate in teamwork? Explain.
Appendix D

Team 112 Experimental Section Syllabus
"The mere formulation of a problem is far more essential than its solution, which may merely be a matter of mathematical or experimental skill. To raise new questions, new possibilities, to regard old problems from a new angle requires creative imagination and marks real advances in science."

-Albert Einstein

"Failure is not failure, but an opportunity to begin again, more intelligently."

-Henry Ford

Course Description:

This course will introduce you to the problem-solving process, focusing on mastery of tools that can be transferred into a variety of contexts. Operating in a collaborative environment, you will practice strategies for identifying and defining problems, generating solutions, making decisions, implementing plans, and evaluating outcomes. You will apply these tools to problems drawn from everyday life, academic contexts, and the workplace. Also you will evaluate your own thinking processes in applying tools critically and creatively.

Course Text:


Course Objectives:

The following is a list of course objectives. During this term, you will be working through exercises and projects that will give you the opportunity to use these skills to solve a variety of problems.

* Problem Definition: Given an ill-defined problem, identify product requirements, resources available, process requirements (checkpoints, due dates, deliverables), and evaluative criteria.

* Information Processing: Collect, process, and evaluate data, facts, and information as they relate to solving a problem.

* Critical Thinking: Evaluate the credibility and applicability of information and ideas.
Team Functioning: Form a team, and delegate roles and tasks in such a way that the team performs efficiently and effectively.

Creative Thinking: Effectively brainstorm in order to generate multiple options, viewpoints, and possibilities for approaching and/or solving a problem.

Evaluative Thinking: Determine and weigh criteria for effectiveness, and evaluate a product or products based on those criteria.

Process Analysis: Create, analyze, or improve a process to enhance productivity, eliminate defects, or standardize a procedure.

Reflective Thinking: Assess and critique performance, identify team or personal strengths and weaknesses, and set goals for improvement.

Course Format:

TBAM 112 is a team-based, team-taught course. Early in the semester you will form teams and work with these teams for most of the rest of the semester. A team of two professors will assist and guide you through the problem-solving process. You will be introduced to, discuss, practice, review, and reflect on various problem-solving strategies. This class will allow you to immerse yourself in the problem-solving process and to apply both past experience and knowledge to problems at hand. You will learn that problem-solving is primarily a way of thinking, of analyzing a situation, and of using reasoning skills not learned through the memorization of specific facts.

Guidelines for Success:

Attendance: We learn as much from giving comments as we do from comments given to us. Also as much of the work for class will be done in class, you are required to attend all classes on time. Late attendance will be considered as an absence for one class hour. Absences must be officially cleared, preferably beforehand. If you have to miss a class, contact one of your professors and your teammates to find out what you have missed and what you need to do for the next class.

Class Participation: Some people are better talkers; some people are better listeners. In this class you will be expected to participate in both ways in your teamwork as well as in class discussions.

Completion of all work on time.

DeVry Library Reference Hotline: For reference help, e-mail the library at: ref-help@mfolink.org

Educational Support Center Hotline: e-mail at: help@students.nj.devry.edu
Course Accountabilities and Grading:

* Team & individual problems/projects/homeworks
  - preparation, participation, demonstration
  and reflection
  - some credit maybe be deducted for late work 30%

* Attendance 30%

* Earthquake project 10%

* Capstone (final) project including team evaluation 25%

* Final reflection 5%

* E-mail will be used as a tool for team and class communication.

Grades for the course are as follows:

A = 100-90: evidence of strength in all of the skill areas in the course objective list.
B = 89-80: evidence of strength in most of the skill areas.
C = 79-70: evidence of improvement in all of the skill areas.
D = 69-60: little evidence of skills in these areas.
F = 59 and below: no evidence of skills in these areas.

If you are absent, you will not be able to receive any credit for work done in class that day. When submitting work, remember: no name, no section, no date, no team number = no credit.

"Whether you think you can, or whether you think you can't—either way—you're right."
-Henry Ford

See page 4 for TEAM instructors, policies, telephone numbers, e-mail addresses, and office hours and page 5 for attendance addendum.

Syllabus subject to change.
Instructor's Policies:

We are always willing to assist you, and if you encounter any problems with this course or your adjustment to DeVry, we hope you'll plan to meet with one of us during our scheduled office hours. These hours are set aside just for you, so please see us when the need arises. If the times are inconvenient for you, we can make special arrangements for a mutually convenient appointment. You can leave messages at (732) 435-4862 at each of our extensions and/or e-mail us.

Barbara Goldberg:  Ext. 3936  
E-mail: bgoldber@admin.nj.devry.edu  
Office #936  
    Monday:  1:00 - 1:30;  3:45-4:35  
    Wednesday:  6:00 - 6:25  
    Friday:  1:00-1:30;  4:10-4:35  
    By appointment.

Tom Kist:  
Ext. 3953  
E-mail: tkist@ieee.org  
Office #952  
    Tuesday:  1:55 -2:45  
    Wednesday:  2:50 - 3:40  
    Thursday:  2:50-3:40
Appendix E

Team 112 Control Section Syllabus
"The mere formulation of a problem is far more essential than its solution, which may merely be a matter of mathematical or experimental skill. To raise new questions, new possibilities, to regard old problems from a new angle requires creative imagination and marks real advances in science."
   - Albert Einstein

"Failure is not failure, but an opportunity to begin again, more intelligently."
   - Henry Ford

Course Description:

This course will introduce you to the problem-solving process, focusing on mastery of tools that can be transferred into a variety of contexts. Operating in a collaborative environment, you will practice strategies for identifying and defining problems, generating solutions, making decisions, implementing plans, and evaluating outcomes. You will apply these tools to problems drawn from everyday life, academic contexts, and the workplace. Also you will evaluate your own thinking processes in applying tools critically and creatively.

Course Text:


Course Objectives:

The following is a list of course objectives. During this term, you will be working through exercises and projects that will give you the opportunity to use these skills to solve a variety of problems.

* Problem Definition: Given an ill-defined problem, identify product requirements, resources available, process requirements (checkpoints, due dates, deliverables), and evaluative criteria.
* Information Processing: Collect, process, and evaluate data, facts, and information as they relate to solving a problem.
* Critical Thinking: Evaluate the credibility and applicability of information and ideas.
* Team Functioning: Form a team, and delegate roles and tasks in such a way that the team performs efficiently and effectively.
* Creative Thinking: Effectively brainstorm in order to generate multiple options, viewpoints, and possibilities for approaching and/or solving a problem.
* Evaluative Thinking: Determine and weigh criteria for effectiveness, and evaluate a product or projects based on those criteria.
* Process Analysis: Create, analyze, or improve a process to enhance productivity, eliminate defects, or standardize a procedure.
* Reflective Thinking: Assess and critique performance, identify team or personal strengths and weaknesses, and set goals for improvement.

Course Format:

TEAM 112 is a team-based, team-taught course. Early in the semester, you will form teams and work with these teams for most of the semester. This class will allow you to immerse yourself in the problem-solving process and to apply both past experience and knowledge to problems at hand. You will learn that problem-solving is primarily a way of thinking, of analyzing a situation, and of using reasoning skills not learned through the memorization of specific facts.

Guidelines for Success:

Attendance: We learn as much from giving comments as we do from comments given to us. Also as much of the work for class will be done in class, you are required to attend all classes on time. Late attendance will be considered as an absence for one class hour. Absences must be officially cleared, preferably beforehand. If you have to miss a class, contact me and your teammates to find out what you have missed and what you need to do for the next class.

Class Participation: Some people are better talkers; some people are better listeners. In this class you will be expected to participate in both ways in your teamwork as well as in class discussions.

Completion of all work on time.

DeVry Library Reference Hotline: For reference help, e-mail the library at ref-help@infolink.org.

Educational Support Center Hotline: e-mail at: help@students.nj.devry.edu
Course Accountabilities and Grading:

* Team & individual problems/projects
  (preparation, participation, demonstration
  and reflection) 30%

* Attendance 30%

* Earthquake project 10%

* Capstone (final) project including final self-evaluation 25%

* Final reflection 5%

* E-mail will be used as a tool for team and class communication.

Grades for the course are as follows:

A = 100-90: evidence of strength in all of the skill areas in the course objective list.
B = 89-80: evidence of strength in most of the skill areas.
C = 79-70: evidence of improvement in all of the skill areas.
D = 69-60: little evidence of skills in these areas.
F = 59 and below: no evidence of skills in these areas.

If you are absent, you will not be able to receive any credit for work done in class that day. When submitting work, remember: no name, no section, no date, no team number = no credit.

"Whether you think you can, or whether you think you can't—either way—you're right."
-Henry Ford

See page 4 for instructor's policies, telephone number, e-mail address, and office hours and page 5 for attendance addendum.

Syllabus subject to change.
Instructor's Policies:

I am always willing to assist you, and if you encounter any problems with this course or your adjustment to DeVry, I hope you'll plan to meet with me during my scheduled office hours. These hours are set aside just for you, so please see me if the need arises. If the times are inconvenient for you, we can make special arrangements for a mutually convenient appointment. You can leave messages for me at (732) 435-4862, Ext.3936 or e-mail me at bgoldber@admin.nj.devry.edu.

Office Hours:

<table>
<thead>
<tr>
<th>Office #936</th>
<th>Monday: 1:00 - 1:30; 3:45-4:35</th>
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<tbody>
<tr>
<td></td>
<td>Wednesday: 6:05-6:25</td>
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<td>Friday: 1:00-1:30; 4:10-4:35</td>
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