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# An Exploratory Study Of Factors Affecting Retention Rates Of Freshmen In The College Of Technology At Indiana State University

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# AN EXPLORATORY STUDY OF FACTORS AFFECTING RETENTION RATES OF FRESHMEN IN THE COLLEGE OF TECHNOLOGY AT INDIANA STATE UNIVERSITY

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## ABSTRACT

This study explored the factors affecting the retention rates of freshman students in the College of Technology (COT) at Indiana State University. Literature supports that factors such as age, gender, ethnicity, socioeconomic status, and parental education are valid variables affecting the retention rates of freshman student populations across the United States. Also included in the list of valid retention variables are pre-college factors including high school curriculum, SAT/ACT scores, and high school GPA. Environmental factors such as living in dorms or being a commuter student, working on campus or off campus, and number of hours working per week are also considered valid variables affecting retention. Moreover, academic and social experiences are among the valid variables affecting the retention rates of freshman. Characteristics of universities and students vary among the populations. Hence making note that Indiana State University is unique, factors affecting the freshmen retention rate were studied.

This study explored the data recorded by the university for years 2008 through 2013. The impact of factors such as ethnicity, high school GPA, and SAT/ACT scores was studied. The university does not have records of marital status of students and information regarding their employment; hence the impact of being traditional and non-traditional students on retention rates was not studied.

Analysis of data collected through the survey and the Business Intelligence Department at ISU affirms that retention rates did vary over the past five-year period. Ethnicity, SAT/ACT scores, and high school GPA impacted the freshman retention rates in the COT at ISU.

Summarization of the results reveals that both African Americans and a composite group entitled others that was comprised of American Indians, Asian Americans, Hispanics, multiracial, and those who had not reported their ethnicity are at risk of dropping out of school by end of the freshman fall semester. Students who have SAT scores of lower than 899, high school GPA of less than 2.50, and those who have not reported their SAT scores or high school GPA are more prone to drop out of school by the end of the freshman fall semester. The survey questionnaire consisting of 33 questions revealed that the students are highly self-motivated and have a strong desire to achieve a degree. Students also expressed their worries about the debt that might be accumulated in the process of degree completion. Students expressed that they were satisfied with the quality of teaching in the COT; however, they also mentioned that they might consider leaving the COT if the teaching quality depreciates.

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## INTRODUCTION

In the United States, education has historically been viewed as the central venue to control and support the growth of the nation (Kliebard, 2004). Masie (2008) explained learning in his Learning TRENDS newsletter as:

> Learning is a key pillar for freedom and independence. The ability of a society and an economy to make learning a prime and core value-from elementary school through high school, on to college and into our work and vocational lives-is essential. Some would assert that learning is actually a fundamental element of national security. It keeps us wise, vigilant and competitive. As the challenges of the world get more complex, the need for a focus on learning becomes more and more critical. We need the culture, habits and tools that enable constant and life-long learning. Learning is a key to our personal and community freedom and independence. (para. 2)

Every nation in the world tries to offer good education to their citizens. In return they expect the knowledge of their citizens to lead the country in all fields innovatively and hence compete with other nations in the world. Today we live in a globalized world; anyone can travel anywhere and there is knowledge transfer across the nations (Teichler, 2004).

The U.S. stood ahead of all nations during World War II with its advanced technology (Abramovitz, 1986). Bruce E. Bursten, president of the American Chemical society, posited that

"the vast majority of Americans, especially business and scientific leaders, still see the United States as the world's technology leader" (Chikoore, 2008, p. 30). For the past fifty years, most of the U.S. scientific leaders have come from European countries. The case remains that foreign-born scientists and engineers today remain a vital component of the U.S. scientific and technological workforce (Zare, 2009). However, as technology improves, the job market is also increasing. For the United States to maintain its status as the technology leader and to meet the demands of a growing job market, it must take best advantage of its educational pathways to produce citizens with high skills in science and mathematics. The results of the Program of International Student Assessment (PISA) in 2006 revealed that 15-year-old students of the United States stood 21st among 30 developed countries on science literacy and 25th on mathematics literacy (National Center for Education Statistics, 2006). The National Mathematics Advisory Panel established by George W. Bush in 2006 reported that mathematics was *broken* in this country. Representative Vernon J. Elhers stated, "the jobs of the future are going to require the basic understanding of principles of math and science. If we aren't able to educate our children, they won't get decent jobs, and I am not just talking about scientists and engineers" (as cited in Honawar, 2005, p. 1). Moreover, with fast-growing competition from Europe and Asia, the reliance on foreign-born scientists and engineers to be the future workforce of the country is not sustainable (Zare, 2009).

Today a significant portion of U.S. citizens voice frustration as many jobs in the fields of science, mathematics, and technology are offered to foreign nationals (Chikoore, 2008; "Prepare and Inspire," 2010). A company can hire five chemists or 11 engineers in India for the cost of one chemist or one engineer from the United States. Many people assume that jobs were being offered to foreign nationals as they were inexpensive labor (Honawar, 2005), but many U.S.

citizens fail to realize that schools in United States are not able to produce a sufficient number of qualified professionals and also fail to retain most of the freshman students who enter colleges with dreams of careers in the sciences, technology, engineering, and mathematics (STEM) fields (Chikoore, 2008; Honawar, 2005). Bursten noted that fourth graders in the U.S. perform better than their international peers; however, by high school the performance levels decrease and U.S. students tend to lose their interest toward subjects like math or science. A report released by the National Academies (National Academy of Sciences, National Academy of Engineering and Institute of Medicine, collectively known as National Academies) in 2005 stated that only one third of fourth and eighth graders are proficient in mathematics and one third of these students are not able to demonstrate basic mathematical skills (Augustine, 2005). The report also stated that during the year 1991, only 41% of eighth graders received instruction from a teacher who was specialized in mathematics whereas the average for students in international settings was 71%. In the year 2004, there were 500,000 engineers who graduated in China and 200,000 engineers in India, while there were only 70,000 engineers who graduated in United States (Chikoore, 2008). Moreover, of all the students entering any degree program in the U.S., only 56% earn a baccalaureate degree (Bowen, Chingos, & McPherson, 2009).

When one analyzes these reports, one can find that there is a deficiency in terms of preparing sufficient numbers of student for all careers including advanced technological fields. Mathematics teachers, science teachers, engineers, accountants, chemists, physicists, programmers, and even graphics designers and video game designers are related to careers available in technology. All these careers require good academic and social skills (Tinto, 1987). It is not only important that the students enroll in universities to seek a baccalaureate or an associate degree; it is also vital that they graduate. Retention of students through degree program

completion is critical for the educational institutions, so that they are able to fulfill their function in preparing students to enter and remain in these careers. Many students are challenged by the rigor of the academic work in higher education finding they must work hard to understand the discipline concepts to sustain themselves in the program. Furthermore, students' personal circumstances and opinions are framed in students' minds as a result of many variables acting around them in the environment. Among these variables are age (Bowen et al., 2009; Seidman, 2005; Tinto, 1987), gender (Bowen et al., 2009; DeBerard, Spielmans, & Julka, 2004; Seidman, 2005; Tinto, 1987), ethnicity (Bowen et al., 2009; Quarterman, 2008; Seidman, 2005; Tinto, 1987), social economic status (Bowen et al., 2009; Braunstein, Lesser & Pescatrice, et al., 2008; Collier, & Morgan, 2008; Cox, 2009; Riggert, Boyle, Petrosko, Ash, & Rude-Parkins, 2006; Seidman, 2005; Tinto, 1987), SAT/ACT scores (Bowen et al., 2009; Braunstein, et al., 2008; DeBerard et al., 2004; Seidman, 2005; Tinto; 1987), high school GPA ((Bowen et al., 2009; Braunstein, et al., 2008; DeBerard et al., 2004; Owen, 2003; Seidman, 2005; Tinto; 1987), intent to leave (Cox, 2009; Seidman, 2005) and academic preparedness (Coll & Stewart, 2008; Earnest & Dwyer, 2010; Seidman, 2005; Tinto, 1987).

Retention is very important for every educational institution as an institutional performance indicator (Levitz, Neol, & Richter, 1999). Retention was of little importance in bygone days, but in the present day success of an institution is inseparable from the success of its students (Levitz et al., 1999). Continuous student enrollment in the university until program completion is important for the students, the institutions, and the social and economic growth of the nation (Ramirez, Luo, Schofer, & Meyer, 2006).

Governments also show keen interest in retention of students in public universities or community colleges. However, rather than providing supportive legislation toward retention,

legislative bodies typically tie budgetary consequences to institutions not sufficiently retaining students. An increasing number of state legislatures have tied institutional funding to the percentage of students who graduate (Seidman, 2005). This is still a potential blow to those public colleges and universities that enroll large numbers of at-risk students or experience high rates of transfers and dropouts (Barefoot, 2004). Hence, retention turns out to be a very important factor that demands the focus of the institutions. In response, institutions have hired personnel who work particularly on improving the retention numbers within the institution. Even a few universities do offer a course in enrollment management to prepare students to take up jobs in the field of student retention. Student retention personnel are responsible to study and eliminate the factors that are prompting students to drop out of college. These personnel conduct workshops and seminars to motivate students to help them continue and succeed in their degree program.

Student persistence plays a major role in increasing the retention rates of the institution. Student persistence to complete their educational goals would be a key indicator of student's satisfaction and success (Levitz et al., 1999). The academic advisor is responsible to advise appropriate coursework for students based on their educational or career goals. Regular consultations with students would help the advisor to be informed about students' revised goals if they have been changing over time. In this way the students' persistence would be positively influenced by the considerate approach of the advisor, which in turn aids the institution in improving student retention along with paving students' path to success. Retention is not only the primary goal, but it is the best indicator that an institution is meeting its goal of student satisfaction and success (Levitz et al., 1999).

## Statement of the Problem

The United States is facing a challenge of securing its place in the global economy. It needs more students graduating with STEM degrees to help secure its position in the international arena (“Prepare and Inspire,” 2010). There were about 28% of workers between ages 25 to 49 who had postsecondary education during 1973, and by 2007 the percentage raised to 59% (Tyson, Lee, Borman, & Hanson, 2007). Jobs that require an associate degree were expected to grow faster than those jobs that require a baccalaureate degree. As of the year 2009, only 23% of total freshmen declared their major in STEM fields, where they constitute only 15% of the total student body. Of those students who declared their STEM major in the freshmen year, only 40% graduated with a STEM degree within six years (Duncan, 2009). Addressing the issue of low numbers of bachelor degree recipients in STEM fields, President Barack Obama suggested that, "to restore America's competitiveness, we must recruit a new generation of science and technology leaders by investing in diversity" (Duncan, 2009).

The problem identified for research was to recognize the factors that were affecting the retention rates of freshmen in fields of technology that negatively impact the progress of the country. Retaining students in their STEM major until they graduate holds the key for this country’s progress, and for the health of universities and university programs. Moreover, some state legislatures tie funding to retention rates (Layzell, 1999) further influencing the health of the university and university programs. Tuition funds and donor dollars are also sometimes influenced by retention rates. These are the factors that must be addressed to support retention.

Retention is a measure of how student growth and learning take place, how valued and respected students feel on campus, and how effectively the campus delivers what students expect, need, and want (Rhodes & Nevill, 2004). When these conditions are met, students find a

way to stay in school, despite external financial and personal pressures. As every college and campus in the U.S. is unique, the factors influencing student withdrawal would also vary from college to college. Researchers have identified a few factors that significantly impact the retention rates across the United States. However, researchers affirm that the factors affecting retention are not the same for every college in the nation as the characteristics of the colleges vary (Bowen et al., 2009; Seidman, 2005; Tinto, 1987). Strategies for retention in public four-year universities vary from those of private four-year universities. Characteristics of the institution and students depend on the type of institution. Two-year colleges are different from four-year universities; four-year public universities vary from four-year private universities, and single-gender institutions vary from co-educational institutions. Retention strategies can be mirrored to another institution, when their characteristics are closer to an institution where research has been conducted.

Indiana State University (ISU) is a public university established in 1885 as Indiana State Normal School in the United States. ISU is one of 90 institutions awarded the classification of Doctoral/Research University by Carnegie Classification in the United States ("Carnegie Classifications | Institution Profile", n.d.). In the year 2013, ISU had a student body of about 12,000 undergraduate and postgraduate students. ISU's College of Technology (COT) offers twenty-one baccalaureate degree programs, four master degree programs, two certification programs and one doctoral program. The COT had experienced significantly increasing numbers of incoming students for undergraduate degree programs during last two years of this study. It was important for the COT to retain students and have high graduating numbers as its graduates' fuel the nation's economy and retention did impact state funding of the college. Thus, it was vital that the COT study various factors affecting students' retention to degree completion in order to

control those factors to help the COT to retain students. The research results are particular to ISU but could be used to analyze the student departure pattern in other similar universities that are medium sized four-year public universities offering baccalaureate degrees in the field of technology and engineering technology.

## Purpose of the Study

Yorke (1997) identified six factors that caused students to drop out of school: (a) poor quality of the student experience, (b) inability to cope with the demands of higher education, (c) unhappiness with the social environment, (d) wrong choice of program, (e) financial difficulties, and (f) dissatisfaction with what the institution is providing. Several other factors such as parents' education or experience in higher education were thought to help students persist rather than dropping out of the college (Assiter & Gibbs, 2007). Age also affects the retention of students. Studies have revealed that younger students who had withdrawn from classes attributed their early departure to their unpreparedness for study in higher education and a tension between their choices of educational program and their own interests Assiter & Gibbs, 2007). Mature students more often felt forced to leave because of concerns like family worries, job issues, and travel expenses (Assiter & Gibbs, 2007).

The body of literature reviewed has identified some fairly consistent reasons for student withdrawal and some of the ways these reasons vary across different ethnic groups. Data were gathered from students sometime after they left their program of study or from those who intended to leave their program of study. Thomas, Adams, and Birchenough (1996) examined records of a medium-sized higher educational institution with part-time and full-time students of around 7,500 students. Reasons for leaving are categorized as (a) 37% were personal, (b) 30% were unknown, (c) 15% were academic difficulty, (d) 9% were employment related, (e) 6% were

financial difficulty, and (f) 5% were medical reasons. By contrast, the institution's survey of the same cohort found the reasons for leaving as (a) 60% were personal, (b) 52% were course related, and (c) 38% were financial. This difference arose partly because the students could provide multiple reasons in the survey whereas the institutional record often noted only one reason (Assiter & Gibbs, 2007). It was clear that students who leave typically can identify several reasons for leaving the institution. As Thomas et al. (1996) concluded "the causes of student withdrawal are many and varied, and . . . . it is often a combination of factors which lead students to withdraw from an institution" (p. 219). Moreover, it was also not unreasonable to suspect that in reporting to academic staff their reasons for leaving, students would be much less likely to mention course-related issues. Studying the factors affecting the retention numbers is important for every college.

In order to improve the retention numbers in medium sized four-year public universities that offer baccalaureate degrees in the fields of technology and engineering technology or engineering and engineering technology, the factors that are demotivating students from completing the degree requirements have to be identified. Factors that are influencing students' decisions to stay are either internal or external to the institution; internal factors are those that are affecting students' motivation in school while external factors are related to finances, family, or any other factors that are not in control of the institution. With appropriate information, the institution can devise new strategies to control internal factors that make retention of students feasible.

This study was conceived with the notion that the COT at ISU would serve as a model for other universities of similar size with similar demographics. This study gathered basic demographic information of all freshmen in the COT. It also gathered information regarding the

difficulties that the students were facing in pursuing the degree, the help that they received from the institution to solve their academic problems, and the primary reason they intended to leave before degree completion. These factors could help the COT or any institution to analyze the factors that were affecting their attrition numbers.

## Research Questions

1. Did retention rates vary for freshmen in the COT over the past five years?
    a. Do retention rates vary for freshman female students when compared to those of freshman male students in COT over the past five years?
    b. Do retention rates vary for traditional freshman students when compared to those of non-traditional freshman students in COT over the past five years?
    c. Do retention rates vary for traditional freshman female students when compared to those of traditional freshman male students in COT over the past five years?
    d. Do retention rates vary for non-traditional freshman female students when compared to those of non-traditional freshman male students in COT over the past five years?
    e. Do retention rates vary for traditional freshman female students when compared to those of non-traditional freshman female students in COT over the past five years?
    f. Do retention rates vary for traditional freshman male students when compared to those of non-traditional freshman male students in COT over the past five years?
2. What are the factors that are affecting freshmen retention in the COT?
    a. Is there a relationship between ethnicity and retention rate of freshman?

(1) Does the relationship between ethnicity and retention rate of freshmen vary for freshman female students when compared to that of freshman male students in COT over the past five years?

(2) Does the relationship between ethnicity and retention rate of freshmen vary for traditional freshman students when compared to that of non-traditional freshman students in COT over the past five years?

(3) Does the relationship between ethnicity and retention rate of freshmen vary for traditional freshman female students when compared to that of traditional freshman male students in COT over the past five years?

(4) Does the relationship between ethnicity scores and retention rate of freshmen vary for non-traditional freshman female students when compared to that of non-traditional freshman male students in COT over the past five years?

(5) Does the relationship between ethnicity and retention rate of freshmen vary for traditional freshman female students when compared to that of non-traditional freshman female students in COT over the past five years?

(6) Does the relationship between ethnicity and retention rate of freshmen vary for traditional freshman male students when compared to that of non-traditional freshman male students in COT over the past five years?

b. Is there a relationship between SAT/ACT scores and retention rate of freshmen?

(1) Does the relationship between SAT/ACT scores and retention rate of freshmen vary for freshman female students when compared to those of freshman male students in COT over the past five years?

(2) Does the relationship between SAT/ACT scores and retention rate of freshmen vary for traditional freshman students when compared to those of non-traditional freshman students in COT over the past five years?

(3) Does the relationship between SAT/ACT scores and retention rate of freshmen vary for traditional freshman female students when compared to those of traditional freshman male students in COT over the past five years?

(4) Does the relationship between SAT/ACT scores and retention rate of freshmen vary for non-traditional freshman female students when compared to those of non-traditional freshman male students in COT over the past five years?

(5) Does the relationship between SAT/ACT scores and retention rate of freshmen vary for traditional freshman female students when compared to those of non-traditional freshman female students in COT over the past five years?

(6) Does the relationship between SAT/ACT scores and retention rate of freshmen vary for traditional freshman male students when compared to those of non-traditional freshman male students in COT over the past five years?

c. Is there a relationship between high school GPA and retention rate of freshmen?

(1) Does the relationship between high school GPA and retention rate of freshmen vary for freshman female students when compared to that of freshman male students in COT over the past five years?

(2) Does the relationship between high school GPA and retention rate of freshmen vary for traditional freshman students when compared to that of non-traditional freshman students in COT over the past five years?

(3) Does the relationship between high school GPA and retention rate of freshmen vary for traditional freshman female students when compared to that of traditional freshman male students in COT over the past five years?

(4) Does the relationship between high school GPA and retention rate of freshmen vary for non-traditional freshman female students when compared to that of non-traditional freshman male students in COT over the past five years?

(5) Does the relationship between high school GPA and retention rate of freshmen vary for traditional freshman female students when compared to that of non-traditional freshman female students in COT over the past five years?

(6) Does the relationship between high school GPA and retention rate of freshmen vary for traditional freshman male students when compared to that of non-traditional freshman male students in COT over the past five years?

d. Is there a relationship between parent education and retention rate of freshmen?

(1) Does the relationship between parent education and retention rate of freshmen vary for freshman female students when compared to that of freshman male students in COT over the past five years?

(2) Does the relationship between parent education and retention rate of freshmen vary for traditional freshman students when compared to that of non-traditional freshman students in COT over the past five years?

(3) Does the relationship between parent education and retention rate of freshmen vary for traditional freshman female students when compared to that of traditional freshman male students in COT over the past five years?

(4) Does the relationship between parent education and retention rate of freshmen vary for non-traditional freshman female students when compared to that of non-traditional freshman male students in COT over the past five years?

(5) Does the relationship between parent education and retention rate of freshmen vary for traditional freshman female students when compared to that of non-traditional freshman female students in COT over the past five years?

(6) Does the relationship between parent education and retention rate of freshmen vary for traditional freshman male students when compared to that of non-traditional freshman male students in COT over the past five years?

3. What are the primary reasons that influence students' motivation and lead them to exit ISU COT before degree completion?

## Definition of Terms

*Retention* is defined as the percentage of first-time, full-time freshmen who return to the same institution for the second term or second year of study (Levitz et al., 1999).

*Attrition* is defined as the percentage of students who fail to reenroll to same institution in consecutive semesters (Seidman, 2005).

*Traditional students* refers to those who enrolled full-time in university within a year from their graduation from high school, who do not work full-time and are not single parent (unmarried or divorced) (National Center for Education Statistics, n.d.).

*Non-traditional students* refers to those who are enrolled part-time and work full-time or those who enrolled full-time in the university after more than year from their high school graduation or those who have not completed their high school or those who are single parents (National Center for Education Statistics, n.d.).

*SAT/ACT* refers to assessment test that is used by majority of the universities in United States as a scale to decide the freshmen admissions (Zwick, 2002).

*Grade point average (GPA)* refers to grade point average, a final score for a student's performance in their course of study (National Center for Education Statistics, n.d.).

*Freshmen* refer to first-year students in their first term or second term of their program of study (National Center for Education Statistics, n.d.).

## Assumptions

It was assumed that the participants were honest and thoughtful in their responses. It was also assumed that the results would be an accurate representation for all undergraduate students enrolled in the COT. All freshman students were surveyed irrespective of them starting their program in fall or spring semester. It was assumed that data provided by these students would serve as a valid representation of freshman students of the COT. Finally it was assumed that for this study the students staying on campus and students who commute to campus exhibit the same

characteristics and hence they were considered as a complete sample with no significant difference between them.

## Limitations

This study was limited to freshmen of the COT studying at ISU and cannot be applied to all students in the university. It also cannot be applied to all freshmen students attending other dissimilar universities.

# CHAPTER 2

## LITERATURE REVIEW

The United States is not only addressed as the land of opportunity but also the land of immigrants (Seretan, n.d.). Many people chose the United States as their destination to fulfill their dreams for leading an economically healthier life (Massey, 2008). The United States also hosts the majority of the world's top universities (Sheeny, 2012). In the past, the reputation of the university lay in its programs and students (Tinto, 1993). Students in the past were self-motivated and held high educational goals unlike the present generation (Tinto, 1993). The university is expected to play a major role to motivate the present generation of students. Recruiting and retaining students is important for growth of the student, university, and country as well (Tinto, 1993).

### Retention

Recruitment and retention serve as the most important tools for any successful organization. In the year 2000, the U.S. had fewer students earning degrees in natural sciences and engineering when compared to 16 countries in Eurasia. Many students were enrolled in college to earn a baccalaureate degree, but only few of them met the challenges and attained a degree (Bowen et al., 2009). President Barack Obama once specified that graduating from college is as important as enrolling in a college (Bowen et al., 2009). Education was once a pathway to opportunity, but today it is a prerequisite and a valuable tool with which one can

excel in life (Remarks of President Barack Obama, 2009). Completing a degree in a timely manner is really important. Time from enrollment to graduation was worth not only an individual's time and resources but also the resources of an institution (Bowen et al., 2009). Students risk their careers by taking longer to graduate than usual, as the rapid technological advancement leaves students at jeopardy of their knowledge being outdated by the time they graduate (Fisch, McLeod, & Brenman, n.d.). Retention helps Americans to fulfill their dreams, but only when they complete college in a timely manner (Seidman, 2005).

Research on college student retention has been conducted for over 70 years (Braxton, 2000). However, research regarding retention has been intense only in the last four decades. Tinto (1987, 1993) and Bean (1980, 1983) have contributed significantly to the knowledge base in the area of retention, and laid a well-navigated path for future researchers. Policymakers have wanted institutions to take retention seriously; hence they have tied it to funding (Seidman, 2005). Student retention is beneficial for both students and institutions; it is a win-win situation where the students gain knowledge, earn increased pay, and obtain a higher standard of living, while an institution fulfills its mission to educate a student and receives tuition income (Seidman, 2005). If students take more time to complete their degree, the colleges and universities become overcrowded and underfunded (Seidman, 2005). As public, private, community college, secular, and gender or race specific colleges, all vary in their retention numbers, all these institutions have their own views and strategies for handling the problem of retaining students. Public universities have higher retention numbers when compared to community colleges; similarly private universities have higher retention numbers when compared to public universities (Bowen et al., 2009). Research reveals that private four-year colleges and prestigious Catholic women's colleges tend to have the lowest rates of departure (Tinto, 1987).

Student retention and student persistence are terms that are often used interchangeably. However, to be more specific, the National Center for Education Statistics (n.d.) has defined retention to be an institutional measure and persistence to be a student measure. Retention and drop out are terms that are two faces of the same coin. Retention and drop out have the same meaning, but the terms are used in different contexts. Retention and drop out both refer to the well-being of the student and the institution. However, retention refers to the importance for the institution to retain students, while drop out addresses the students' unwillingness to continue their education. It is difficult to define drop out as some students discontinue their studies and leave an institution, but they may return to the same institution or another to continue their studies after a period of time. Institutional departure and system departure are two different aspects and have to be differentiated to get true retention numbers. Institutional departure is a loss for the institution, but if the students still continued their education they were not considered failures. On the other hand, system departure refers to a situation where a student completely withdraws from an educational institution and exhibited an opinion of not returning back. Only in this case the student can be considered as a failure. Obviously, the interplay of multiple factors increases the level of difficultly in conducting research on the topic of retention unless one predefines the terms and parameters of retention in their study.

The researcher should be aware and should be able to differentiate various types of retention. This study precisely considered the definitions of various terms used to collect and analyze the data. System retention, institutional retention, retention in the major, and retention in particular course are few types of retentions. Hence retention is a broad topic, commonly used as an institutional perspective, while drop out is defined as referring to those students who fail to obtain a degree within a specified period of time (Tinto, 1987), and finally *stop out* is defined as

referring to those students who temporarily depart from the educational institution expressing an intent to return for attaining a degree (Seidman, 2005).

Being humans, everyone is influenced by many factors that are around them all the time. Parents, siblings, neighbors, teachers, strangers, and also prominent personalities influence a student (Dewey, 1990). Students are more likely to be retained when they are filled with self-confidence, self-efficacy, a positive attitude, and a clear career or personal goal (Bower & Hilgard, 1981; Cox, 2009). Students with an internal locus of control are more involved in their college life and tend to complete their baccalaureate degree. Students with an external locus of control are more likely to leave college early without completing their education (Seidman, 2005). Moreover, students have to feel that they belong to the institution; otherwise, feelings such as alienation lead students to leave the institution (Braxton, Hirschy, & McClendon, 2004). Almost all students enter college with high aspirations and dreams of completing their degree; approximately 85% of first-time college students disclose their plans to earn a baccalaureate degree, yet most of them leave college before doing so (Wirt et al., 2002). Research suggested that there was positive correlation between initial academic success and graduation (Seidman, 2005). Student retention would increase only when students feel committed to the institution and have strong commitment toward completing student responsibilities (Seidman, 2005). It is the responsibility of an institution to support students in terms of attitude and other social and personal factors that interfere with degree completion. Educational institutions should work in such a way that the students' locus of control shifts from external to internal, which would make students feel committed to the institution and hence improve the student retention rates.

Student retention would be successful only if the institution and students hold strongly to their intentions and are committed to the degree completion (Tinto, 1987). Students are affected

by factors that are personal such as finances, family issues, and also fear that they might be not ready for college (Braxton, 2000; Collier & Morgan, 2008; DeBerard et al., 2004; Seidman, 2005). The transition for freshman students from high school to college is stressful (Lu, 1994). Student retention is affected by numerous factors that tend to influence students for a long time or short time, directly or indirectly. A growing body of literature suggests various factors that influence student retention. Factors that contribute to early withdrawal of students from higher education include: age (Bowen et al., 2009; Seidman, 2005; Tinto, 1987), gender (Bowen et al., 2009; DeBerard et al., 2004; Seidman, 2005; Tinto, 1987), ethnicity (Bowen et al., 2009; Quarterman, 2008; Seidman, 2005; Tinto, 1987), socioeconomic status (Bowen et al., 2009; Braunstein et al., 2008; Collier & Morgan, 2008; Cox, 2009; Riggert et al., 2006; Seidman, 2005; Tinto, 1987), parental education (Collier & Morgan, 2008;). Pre-college factors such as high school curriculum, SAT/ACT scores (Bowen et al., 2009; Braunstein et al., 2008; DeBerard et al., 2004; Seidman, 2005; Tinto; 1987), high school GPA (Bowen et al., 2009; Braunstein et al., 2008; DeBerard et al., 2004; Owen, 2003; Seidman, 2005; Tinto; 1987), intent to leave (Cox, 2009; Seidman, 2005) and academic preparedness (Coll & Stewart, 2008; Earnest & Dwyer, 2010; Seidman, 2005; Tinto, 1987) also impact retention. Initial courses in college (Seidman, 2005; Tinto, 1987), financial assistance (Riggert et al., 2006; Seidman, 2005; Tinto, 1987), and student commitment (Quarterman, 2008; Seidman, 2005; Tinto, 1987) influence retention. Environmental factors such as living in dorms or being a commuter student, working on campus or off campus, number of hours working per week (Riggert et al., 2006), academic and social experiences (Braxton, 2000; Seidman, 2005; Tinto, 1987) exert influence on retention.

Each student is unique and struggles to fit in with the characteristics of the institution, and institutions try to offer opportunities with a unique set of experiences (Seidman, 2005).

Admission requirements change from institution to institution, private colleges have higher admission requirements when compared to public colleges, and research suggests that private colleges have higher retentions numbers compared to that of the public institutions (Bowen et al., 2009). As decried by Tinto (1987), most of the public institutions in higher education practically admit everyone who applies. After four decades, public institutions still admit virtually everyone who has a GED or have completed high school (Bowen et al, 2009). Low admission requirements require dedicated, high levels of commitment from the institution and students if program completion is to be achieved (Bowen et al., 2009; Hossler & Bean, 1990; Seidman, 2005; Tinto, 1987). Hossler and Bean (1990) also stated "retention rates are related to the interaction between the students attending college and the characteristics of the college" (p. 171). Institutions are under scrutiny by students, parents, legislators and stakeholders; retention numbers of an institution are considered a reliable indicator of its quality and the effectiveness of the instruction (Seidman, 2005). Student retention would be successful within an institution only if its faculty and staff are committed to the social and intellectual development of their students. There isn't any formula or recipe for educational attainment as long as the faculty and staff have strong intentions and are committed to support their students to degree completion (Tinto, 1987).

**Ethnicity and Gender**

Data collected from the Current Population Survey (CPS) conducted by the U.S. Census Bureau and data from National Educational Longitudinal Study suggested that women outperform men in college enrollment and graduation rates (as cited in Bowen et al., 2009). Caucasians and Asians have higher graduation rates compared to those of African Americans and Hispanics (Bowen et al., 2009; Tinto, 1987). Ethnicity and gender are dependent on each other; women as a whole, irrespective of ethnicity, have higher graduation rates than men, but

when ethnicity is considered along with gender, the patterns vary (Bowen et al., 2009; Seidman, 2005). Bowen et al. (2009) created a database of a diverse group of colleges across the United States. The database consisted of data for first-time, full-time freshmen who entered 82 higher education institutions in fall of 1999. Asian men's 6-year graduation rates were higher than those of Hispanic and African American women. African American men had the lowest four-year and six-year graduation rates compared to all other of the seven subgroups of gender and ethnicity. Table 1 provides the detailed hierarchical variation in graduation rates of eight subgroups of gender and ethnicity over four-year and six-year graduation rates.

Table 1

*4 year and 6 year graduation rates of Entering Freshmen Cohort 1999 from selected database of 82 higher education institutions in the U.S.* (Bowen et al., 2009)

| 4 year graduation rate | 6 year graduation rate |
|---|---|
| Asian female (60%) | Asian female (85%) |
| Caucasian female (56%) | Caucasian female (79%) |
| Hispanic female (48%) | Asian male (78%) |
| Asian male (47%) | Hispanic female (76%) |
| African American female (45%) | Caucasian male (75%) |
| Caucasian male (42%) | African American female (72%) |
| Hispanic male (32%) | Hispanic male (66%) |
| African American male (26%) | African American male (59%) |

Data suggested that Hispanic and African American retention numbers were lower but that does not mean all Hispanics and African Americans failed in attaining a degree. Tinto (1987) stated that "sharing a common racial origin (or any other single attribute for that matter) is no guarantee of the sharing of common interests and dispositions" (p. 71). Institutions should consider the pattern in this dataset as an indicator to plan and redesign their retention strategies.

**Socioeconomic Status**

Family income has a significant impact on degree attainment (Bowen et al., 2009). Students from low-income families struggle to complete the degree due to lack of parental support (Chen & Carroll, 2005). They are less likely to join in a college, but once enrolled they are more prone to drop out (Berkner, He, & Cataldi, 2002; Carey, 2004; Cox, 2009). Research

suggests that the parents of low socioeconomic status (SES) students have been less involved in school activities, students themselves are less involved with faculty and peers, do not engage in clubs or organizations on campus, and tend to work more (Seidman, 2005). As a result, these students are less prepared to handle the academic pressure of college and might be more inclined to settle for a career that was not preferred. Research also suggests that there is a strong positive correlation between graduation rates and SES status of students attending public institutions when compared to the students in private institutions (Bowen et al., 2009). Graduation rates are higher for high SES students; they also graduate more quickly when compared to low SES students (Brausnstein et al., 2008; Cabrera, Stampen, & Hanson, 1990; St. John, 1989; St. John 1990; St. John, 1991).

**Parental Education**

Statistically, data suggest that students with both parents educated and having earned a baccalaureate degree tend to graduate on time. The mother's education specifically impacted a student's persistence (Seidman, 2005). Parental education and involvement have been good predictors of student success. The National Center for Education Statistics (2005) revealed that first generation college students are less prone to attain a degree than students who have at least one college-educated parent.

**Pre-college Factors**

Before entering into higher education, students were influenced by their high school environments and neighborhoods. Expectations were usually high for students who performed well in high school. According to McAloon (1994), "GPA is one widely accepted means of determining academic success and the degree to which students have learned what they are expected to learn" (para. 6). The literature also illustrated that students were prone to complete

their degrees on time if they had graduated with an advanced high school curriculum when compared to a core curriculum (Seidman, 2005). Braunstein et al. (2008) explained that high school grades were a significant indicator for freshmen retention, whereas Seidman (2005) agreed low GPA has a negative effect on retention, but then doesn't agree that high GPA assures continued enrollment.

Some universities only admit students with high SAT or ACT scores. These universities have higher retention rates when compared to other universities (Seidman, 2005). Typically students who enter higher education are around 18 years of age; however the freshman cohort also has a few students who are above 25 years of age. A study conducted by Owen (2003) revealed a positive correlation between the age of students and the GPA they attain in higher education. This study suggested that the older the age group of students, the more dedicated they were to complete their degree. Graduation rates of institutions that admitted students with the highest academic achievement such as good high school grades, high SAT/ACT scores, and good academic performance showed an overwhelming positive correlation with student persistence (Braunstein et al., 2008; Seidman, 2005).

Student persistence was also influenced by marital status. Bean (1980, 1983) revealed that marriage increased the likelihood of a student to leave or drop out. Tinto (1987) suggested that married men were likely to complete the college degree, while married women were less likely to attain a degree. Seidman (2005) also suggested that family responsibility such as having children prior to degree completion weakened the students' chance of completing the degree.

**Employment and Financial Assistance**

Everyone expects a benefit that satisfies them from investments made. Students and parents consider higher education to be expensive and only a few students are completely funded

by their parents, while the rest of them must find their own means of funding a degree (Seidman, 2005). Low-income families struggle to continue enrollment in college unless they are at least partially funded by a school or receive scholarships from donors. Hence, students evaluate college expenses and the benefits of investing their time and economic resources on higher education (Braxton, 2003; Tinto, 1986; Seidman, 2005). People understand that enhanced knowledge would be a stepping-stone for a promising future, which is possible only with higher education in some circumstances. The U.S. Census Bureau revealed that household income rises by $37,874 when the householder's education increased from a high school degree to a baccalaureate degree (as cited in Postsecondary Education Opportunity, 2002). Many students have to work hard to earn money to avail themselves of college opportunities. Educational institutions no longer assume that students can dedicate their energies fulltime to academic activities. In 2006 approximately, 80% of undergraduate students were employed to keep up with the costs of school and at least 50% of the students who were under 24 years of age were employed as well (Riggert et al., 2006).

Students often cited that they were leaving school due to financial problems, hiding other reasons of their withdrawal (Tinto, 1987). Students working on-campus are more likely to interact with faculty, staff, and peers to develop interests toward academic activities (Tinto, 1897). Students working off-campus most of the time feel disconnected and isolated when present in the institution, this has a negative impact in terms of attaining a degree (Seidman, 2005). Regardless of the motive behind the student employment, students who work full time experience a negative impact on their academic and social lives (Seidman, 2005). Retention of students working part-time or on-campus was higher when compared to students working full-time or away from campus respectively (Bowen et al., 2009; Seidman, 2005). Financial aid

supports students and has a positive effect on their persistence to graduation; however, Pascarella, Pierson, Wolnaik, and Terenzini (2004) found that financial aid had no impact on retention of first-generation students because it was "insufficient rather than ineffective" (p. 280).

Students realize the importance of education and work hard to complete the degree. In order to support their expenses, some students are left with no choice other than to work. Working time consumes the quality time that the student can spend with faculty, peers, and academic activities on-campus. Working on-campus at least allows students to spend their time on campus enabling them to improve their educational experiences. Tinto (1993) also affirmed that "employment not only limits the time one has for academic studies, it also severely limits one's opportunities for interaction with other students and faculty. As a consequence, one's social integration as well as one's academic performance suffers" (p. 269).

**Student Commitment**

Institutions admit students based on examination of their educational qualifications such as high school grades, high school curriculum, and SAT/ACT scores. Scores do suggest the potential of students but institutions cannot rely on them completely to predict student persistence to baccalaureate degree completion. Self-actualization is the most important quality for every person to accomplish the task that they take up as described by Maslow's Hierarchy of needs (Gawel, 1997). Students must commit themselves to help ensure their progress. Long-term goals such as an educational or career goal could drive them to cross all hurdles that come in their way. Cope and Hannah's (1975) research on personal attitudes of students led them to conclude that, "personal commitment to either an academic or occupational goal is most important determinant of persistence in college" (p. 19). Career counseling and advising in high

school showed a significant impact on students' intention to attain a degree (Chen & Carroll, 2005). Research iterated that students who decided their major of study in the freshman year were self-motivated (Thomas et al., 1996; Tinto, 1993; Seidman, 2005). However the choice of major yielded a mixed and multidimensional result (Hearn, 1987). Students who chose engineering and the hard sciences were less likely to attain a baccalaureate degree within four years, while students in education and social sciences had the highest rates of degree completion (Seidman, 2005). There were instances where lack of student commitment to complete their degree led to a false attribution of cause to the institution and faculty. Students mentioned poor advising as an excuse for leaving the institution, as few students believed that a faculty member did not care about their development; hence, the students' bond with the institution was weakened (Seidman, 2005). Students with higher educational or occupational goals were likely to complete their baccalaureate degrees (Tinto, 1987).

**Academic and Social Experiences**

Retention of students is possible only when students' needs are satisfied and they are positively motivated to complete their degree. As Maslow's theory states, human motivation will be possible only when their needs were satisfied. Maslow places self-actualization on top of the hierarchy of needs pyramid, and physiological needs at bottom of the pyramid. Figure 2 shows Maslow's hierarchy of needs. Students were no exception to this theory; in fact Abraham Maslow reached this conclusion by studying the top 1% of the college student population (Mittleman, 1991).

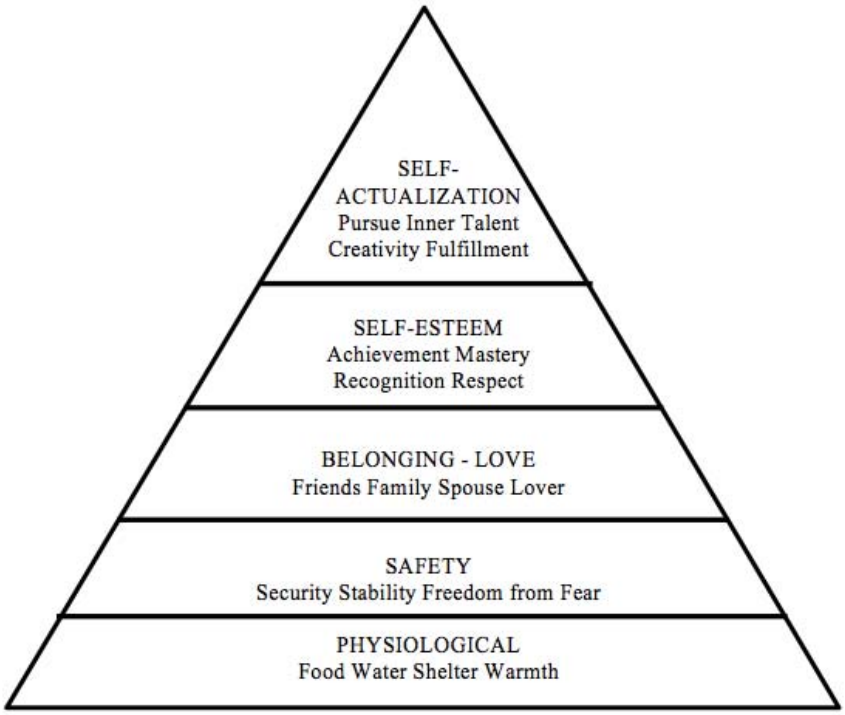


*Figure 1*. Maslow's Hierarchy of Needs (Maslow, 1943).

Social support before and during college is important for the student to feel connected with the institution. The match between the student and the institution shows significant impact on retention rates (Tinto, 1993; Seidman, 2005). Institutions should make sure that the students mingle socially on campus with faculty and students. Student organizations, orientations, classroom discussions, and collaborative learning experiences enhance the students' academic and social experiences (Seidman, 2005). Researchers had varied opinions on the effect of academic and social integration on retention rates. Tinto's work on retention suggested that academic and social integration played the key role in retaining students and was termed as Tinto's model of retention (Braxton, 2000; Coll & Stewart, 2008; Collier & Morgan, 2008; DeBerard et al., 2004; Earnest & Dwyer, 2010; Owen, 2003; Riggert et al., 2006; Seidman,

2005), however, Braxton (2000) suggested that social integration was key in the process of understanding student withdrawal from college, not academic integration.

## Importance of Freshmen Retention

Students enter higher education with aspirations to achieve their career or educational goal. Transitioning from being a high school student to a college student is stressful; one might feel neglected and homesick as one enters the arena of higher education. Research indicated that three-fourths of students left within the first two years of their college experience, the greatest proportion left within the first year of college (Tinto, 1987). The end of the freshman year and beginning of the sophomore year was the most critical phase where students chose not to return (Bowen et al., 2009). With larger freshman classes and lower academic qualifications, institutions face a considerable challenge to enhance their retention rates. Students are vulnerable at this phase of their college life; they are in need of self-assurance that they can handle the course load, find friendly faculty from whom to seek advice, and more importantly, they need to feel that the institution would support them in attaining their degrees. First year grades have a very powerful independent effect on graduation rates (Bowen et al., 1999). Institutions need to incorporate support programs that enhance students' basic skills and motivate them. Student retention is vital for every institution; each student drop out costs the college thousands of dollars in tuition, fees, and funding (DeBerard et al., 2004). Hence, improving first-year experiences of students and retaining them should be a priority for the institution. A formula of retention suggested by Seidman (2005) also emphasizes the importance of retention of freshman students.

## Seidman's Retention Formula

Based on Seidman's (2005) research and a foundation set by Tinto (1987, 1993), Seidman (2005) suggested the following formula for effective retention:

"Retention = Early $_{\text{Identification}}$ + (Early + Intensive + Continuous) $_{\text{Intervention}}$" (p. 296). Seidman (2005) defined retention as "student attainment of academic and/or personal goal(s)" (p. 296). He clearly stated that student retention was seen differently in students' perceptions as opposed to the institution's perception. Students considered themselves to be successful even before graduation if they had achieved their goals, which might not involve degree completion. However, the institution measured retention as degree completion for every student. Identifying students who were prone to leave college prior to degree completion would help institutions design and implement strategies to lessen the factors that prompt them to exit college. Students leave college for a wide range of reasons, and if institutions can uncover those, they could help students choose to stay. Students showing similar characteristics might be grouped so that institutions could efficiently implement strategies to improve retention of those students.

Early identification of intent to leave serves as a predictor to improve the retention rates. Pre-college factors help colleges to implement retention strategies right from the first day of the freshman year. Most students drop out at the end of first year and do not choose to return in their sophomore year. Seidman (2005) suggested that gathering information from students during their freshman year helps college plan retention strategies and helps students to decide to continue their program of study. Early and intensive interventions help students decide to build a strong academic foundation and complete the degree.

**Retention in College of Technology, Indiana State University**

Enrollment in the College of Technology at Indiana State University had been rising gradually over the past few years. However, a report produced by the Office of Student Success (Indiana State University, n.d.) revealed a precipitous drop in retention numbers. Table 2 shows fall-to-fall freshman retention numbers in the COT over the past five years.

Table 2

*Fall to Fall Freshmen Retention in the College of Technology at ISU by Most Recent College from 2008 to 2012*

| Year | Fall to Fall Freshmen Retention |
|---|---|
| 2008 | 90.14% |
| 2009 | 77.16% |
| 2010 | 80.30% |
| 2011 | 71.43% |
| 2012 | 66.05% |

It was crucial that the COT identified the factors that were compelling students to leave the major or school. With valid information, the faculty of the COT could work together to design strategies to retain students.

## Conclusion

The literature revealed that students exit college due to a variety of reasons. It was important to identify these factors early in order to intervene and help students decide to stay and complete their degrees. These factors included studying students' entry characteristics, their attachment to an institution of higher learning, and their knowledge of the value of education for obtaining a position in their career of choice. Identifying the primary trends and reasons for students' intent to depart from a program would help faculty and the institutions across a broad horizon devise new plans to help them stay. Institutions of similar league share comparable factors and hence the results could be implied to all institutions in the same category.

# CHAPTER 3

## RESEARCH METHODOLOGY

A survey research design was implemented for this study. The survey participant group was composed of freshmen in the class of 2013/14 in the COT. Faculty of the COT were approached for permission to conduct the survey in their classes. All students were invited to participate irrespective of them being a traditional or non-traditional student. The survey was absolutely voluntary.

### Research Questions

1. Did retention rates vary for freshmen in the COT over the past five years?
    a. Do retention rates vary for freshman female students when compared to those of freshman male students in COT over the past five years?
    b. Do retention rates vary for traditional freshman students when compared to those of non-traditional freshman students in COT over the past five years?
    c. Do retention rates vary for traditional freshman female students when compared to those of traditional freshman male students in COT over the past five years?
    d. Do retention rates vary for non-traditional freshman female students when compared to those of non-traditional freshman male students in COT over the past five years?

e. Do retention rates vary for traditional freshman female students when compared to those of non-traditional freshman female students in COT over the past five years?

f. Do retention rates vary for traditional freshman male students when compared to those of non-traditional freshman male students in COT over the past five years?

2. What are the factors that are affecting freshmen retention in the COT?

   a. Is there a relationship between ethnicity and retention rate of freshman?

      (1) Does the relationship between ethnicity and retention rate of freshmen vary for freshman female students when compared to that of freshman male students in COT over the past five years?

      (2) Does the relationship between ethnicity and retention rate of freshmen vary for traditional freshman students when compared to that of non-traditional freshman students in COT over the past five years?

      (3) Does the relationship between ethnicity and retention rate of freshmen vary for traditional freshman female students when compared to that of traditional freshman male students in COT over the past five years?

      (4) Does the relationship between ethnicity scores and retention rate of freshmen vary for non-traditional freshman female students when compared to that of non-traditional freshman male students in COT over the past five years?

      (5) Does the relationship between ethnicity and retention rate of freshmen vary for traditional freshman female students when compared to that of non-traditional freshman female students in COT over the past five years?

(6) Does the relationship between ethnicity and retention rate of freshmen vary for traditional freshman male students when compared to that of non-traditional freshman male students in COT over the past five years?

b. Is there a relationship between SAT/ACT scores and retention rate of freshmen?

(1) Does the relationship between SAT/ACT scores and retention rate of freshmen vary for freshman female students when compared to those of freshman male students in COT over the past five years?

(2) Does the relationship between SAT/ACT scores and retention rate of freshmen vary for traditional freshman students when compared to those of non-traditional freshman students in COT over the past five years?

(3) Does the relationship between SAT/ACT scores and retention rate of freshmen vary for traditional freshman female students when compared to those of traditional freshman male students in COT over the past five years?

(4) Does the relationship between SAT/ACT scores and retention rate of freshmen vary for non-traditional freshman female students when compared to those of non-traditional freshman male students in COT over the past five years?

(5) Does the relationship between SAT/ACT scores and retention rate of freshmen vary for traditional freshman female students when compared to those of non-traditional freshman female students in COT over the past five years?

(6) Does the relationship between SAT/ACT scores and retention rate of freshmen vary for traditional freshman male students when compared to those of non-traditional freshman male students in COT over the past five years?

c. Is there a relationship between high school GPA and retention rate of freshmen?

(1) Does the relationship between high school GPA and retention rate of freshmen vary for freshman female students when compared to that of freshman male students in COT over the past five years?

(2) Does the relationship between high school GPA and retention rate of freshmen vary for traditional freshman students when compared to that of non-traditional freshman students in COT over the past five years?

(3) Does the relationship between high school GPA and retention rate of freshmen vary for traditional freshman female students when compared to that of traditional freshman male students in COT over the past five years?

(4) Does the relationship between high school GPA and retention rate of freshmen vary for non-traditional freshman female students when compared to that of non-traditional freshman male students in COT over the past five years?

(5) Does the relationship between high school GPA and retention rate of freshmen vary for traditional freshman female students when compared to that of non-traditional freshman female students in COT over the past five years?

(6) Does the relationship between high school GPA and retention rate of freshmen vary for traditional freshman male students when compared to that of non-traditional freshman male students in COT over the past five years?

d. Is there a relationship between parent education and retention rate of freshmen?

(1) Does the relationship between parent education and retention rate of freshmen vary for freshman female students when compared to that of freshman male students in COT over the past five years?

(2) Does the relationship between parent education and retention rate of freshmen vary for traditional freshman students when compared to that of non-traditional freshman students in COT over the past five years?

(3) Does the relationship between parent education and retention rate of freshmen vary for traditional freshman female students when compared to that of traditional freshman male students in COT over the past five years?

(4) Does the relationship between parent education and retention rate of freshmen vary for non-traditional freshman female students when compared to that of non-traditional freshman male students in COT over the past five years?

(5) Does the relationship between parent education and retention rate of freshmen vary for traditional freshman female students when compared to that of non-traditional freshman female students in COT over the past five years?

(6) Does the relationship between parent education and retention rate of freshmen vary for traditional freshman male students when compared to that of non-traditional freshman male students in COT over the past five years?

3. What are the primary reasons that influence students' motivation and lead them to exit ISU COT before degree completion?

**Hypotheses**

**$H_0$1**. There is no difference between retention rates for freshmen in the COT over the past five years.

a. There is no difference between retention rates of freshman female students when compared to that of freshman male students in the COT over the past five years.
b. There is no difference between retention rates of traditional freshman students when compared to that of non-traditional freshman students in the COT over the past five years.
c. There is no difference between retention rates of traditional freshman female students when compared to that of traditional freshman male students in the COT over the past five years.
d. There is no difference between retention rates of non-traditional freshman female students when compared to that of non-traditional freshman male students in the COT over the past five years.
e. There is no difference between retention rates of traditional freshman female students when compared to that of non-traditional freshman female students in the COT over the past five years.

f. There is no difference between retention rates of traditional freshman male students when compared to that of non-traditional freshman male students in the COT over the past five years.

**$H_0$2.** There are no particular factors that were affecting freshmen retention in the COT.

a. There is no relationship between ethnicity and retention rate of freshman.

(1) The relationship between ethnicity and retention rate of freshmen did not vary for freshman female students when compared to that of freshman male students in COT over the past five years.

(2) The relationship between ethnicity and retention rate of freshmen did not vary for traditional freshman students when compared to that of non-traditional freshman students in COT over the past five years.

(3) The relationship between ethnicity and retention rate of freshmen did not vary for traditional freshman female students when compared to that of traditional freshman male students in COT over the past five years.

(4) The relationship between ethnicity and retention rate of freshmen did not vary for non-traditional freshman female students when compared to that of non-traditional freshman male students in COT over the past five years.

(5) The relationship between ethnicity and retention rate of freshmen did not vary for traditional freshman female students when compared to that of non-traditional freshman female students in COT over the past five years.

(6) The relationship between ethnicity and retention rate of freshmen did not vary for traditional freshman male students when compared to that of non-traditional freshman male students in COT over the past five years.

b. There is no relationship between SAT/ACT scores and retention rate of freshmen.

(1) The relationship between SAT/ACT scores and retention rate of freshmen did not vary for freshman female students when compared to that of freshman male students in COT over the past five years.

(2) The relationship between SAT/ACT scores and retention rate of freshmen did not vary for traditional freshman students when compared to that of non-traditional freshman students in COT over the past five years.

(3) The relationship between SAT/ACT scores and retention rate of freshmen did not vary for traditional freshman female students when compared to that of traditional freshman male students in COT over the past five years.

(4) The relationship between SAT/ACT scores and retention rate of freshmen did not vary for non-traditional freshman female students when compared to that of non-traditional freshman male students in COT over the past five years.

(5) The relationship between SAT/ACT scores and retention rate of freshmen did not vary for traditional freshman female students when

compared to that of non-traditional freshman female students in COT over the past five years.

(6) The relationship between SAT/ACT scores and retention rate of freshmen did not vary for traditional freshman male students when compared to that of non-traditional freshman male students in COT over the past five years.

c. There is no relationship between high school GPA and retention rate of freshmen.

(1) The relationship between high school GPA and retention rate of freshmen did not vary for freshman female students when compared to that of freshman male students in COT over the past five years.

(2) The relationship between high school GPA and retention rate of freshmen did not vary for traditional freshman students when compared to that of non-traditional freshman students in COT over the past five years.

(3) The relationship between high school GPA and retention rate of freshmen did not vary for traditional freshman female students when compared to that of traditional freshman male students in COT over the past five years.

(4) The relationship between high school GPA and retention rate of freshmen did not vary for non-traditional freshman female students when compared to that of non-traditional freshman male students in COT over the past five years.

(5) The relationship between high school GPA and retention rate of freshmen did not vary for traditional freshman female students when compared to that of non-traditional freshman female students in COT over the past five years.

(6) The relationship between high school GPA and retention rate of freshmen did not vary for traditional freshman male students when compared to that of non-traditional freshman male students in COT over the past five years.

d. There is no relationship between parent education and retention rate of freshmen.

(1) The relationship between parent education and retention rate of freshmen did not vary for freshman female students when compared to that of freshman male students in COT over the past five years.

(2) The relationship between parent education and retention rate of freshmen did not vary for traditional freshman students when compared to that of non-traditional freshmen students in COT over the past five years.

(3) The relationship between parent education and retention rate of freshmen did not vary for traditional freshman female students when compared to that of traditional freshman male students in COT over the past five years.

(4) The relationship between parent education and retention rate of freshmen did not vary for non-traditional freshman female students

when compared to that of non-traditional freshman male students in COT over the past five years.

(5) The relationship between parent education and retention rate of freshmen did not vary for traditional freshman female students when compared to that of non-traditional freshman female students in COT over the past five years.

(6) The relationship between parent education and retention rate of freshmen did not vary for traditional freshman male students when compared to that of non-traditional freshman male students in COT over the past five years.

**$H_0$3.** There are no primary reasons that influenced students' motivation that led them to exit ISU COT before degree completion.

## Sampling Procedure

The participants of this study were the entire freshman class of 2013 in the COT. Permission from the Institutional Review Board was acquired before approaching the COT faculty for conducting the survey. Students were asked to voluntarily participate in the survey. Informed consent forms were distributed to those who were willing to complete the survey. Participants of the survey were allowed to leave without completing the survey upon their preference.

## Research Instrument

Rhodes and Nevill (2004) developed a survey of 31 questions that revealed the level of student experience and its effect on academic and social integration. The survey questionnaire was pre-piloted with representatives drawn by stratified sampling. Rhodes and Nevill chose 10

students who represented different gender, ethnicity, age, and entry qualifications. The results from the focus group yielded assurance of the generalizability to all freshman students. A few modifications were implemented based on the results from the focus group study. The content validity of the survey was assured by evidence throughout the literature reviewed (Braunstein et al., 2008; Coll & Stewart, 2008; Collier & Morgan, 2008; Cox, 2009; DeBerard et al., 2004; Earnest & Dwyer, 2010; Quarterman, 2008; Owen, 2003; Rhodes & Nevill, 2004; Riggert et al., 2006; Seidman, 2005; Tinto, 1987). The literature review studied in this document validated the effect of freshmen being grouped by gender, ethnicity, age, traditional student and non-traditional student as variables as these had been demonstrated to show a significant impact on academic and social integration of a student.

This study used the survey developed and published by Rhodes & Nevill (2004) in the *Journal of Further and Higher Education*. The survey questionnaire collected data from the freshman cohort in the COT. This survey consisted of 33 questions of which 25 used a Likert scale with 5 choices; 1 being strongly disagree and 5 being strongly agree (See Appendix A for the survey and Appendix B for permission to use the survey). Demographic data were collected from Office of Student Success at ISU. The reliability of the survey questionnaire was tested using Cronbach's alpha test.

**Materials and Equipment**

The students participating in the survey used pencil and paper. All the materials required to complete the survey were supplied to the participants.

### Survey Procedure

Upon receiving approval from the Institutional Review Board, data were collected in fall of 2013. Faculty were approached to permit their class time for survey completion. Participants were given an overview of research and were assured that the data collected were safely secured.

### Demographic Data

Once the survey responses were collected they were sent to the Office of Student Success, where the survey responses were linked to student's demographic data. The linked data were then sent to me sans personal identifiers so that the data for analysis were completely free of information that could be linked to any individual student. Additionally, five-year student retention data were gathered from the Business Intelligence webpage supported by ISU.

## Risks and Benefits

This research involved minimal risk to the participants. Personal data that could be identified and related to a participant were not collected. The results of the research revealed the pattern of student departure, factors affecting the retention of students, and primary reason for their departure, if they choose to leave in future. This would help the COT to increase their retention rates by redesigning their strategies.

## Analysis of Data

Survey data collected from participants was analyzed along with their demographic data gathered from Office of Student Success. Data gathered from survey and demographic data were matched using an identifier. A chi-square ($\chi^2$) test of independence was measured to explore the dependency of gender, age, ethnicity, SAT/ACT scores, students' attendance to the university, impact on student motivation and morale, factors that were most likely lead students to retention or exit prior to degree completion.

# CHAPTER 4

## RESULTS

This chapter describes the results of quantitative research undertaken to determine the factors affecting retention of freshmen in the College of Technology at Indiana State University. The current literature provides substantial evidence that various factors such as age (Bowen et al., 2009; Seidman, 2005; Tinto, 1987), gender (Bowen et al., 2009; DeBerard et al., 2004; Seidman, 2005; Tinto, 1987), ethnicity (Bowen et al., 2009; Quarterman, 2008; Seidman, 2005; Tinto, 1987), socioeconomic status (Bowen et al., 2009; Braunstein et al., 2008; Collier & Morgan, 2008; Cox, 2009; Riggert et al., 2006; Seidman, 2005; Tinto, 1987), parental education (Collier & Morgan, 2008); pre-college factors such as high school curriculum, SAT/ACT scores (Bowen et al., 2009; Braunstein et al., 2008; DeBerard et al., 2004; Seidman, 2005; Tinto, 1987), high school GPA (Bowen et al., 2009; Braunstein et al., 2008; DeBerard et al., 2004; Owen, 2003; Seidman, 2005; Tinto; 1987), intent to leave (Cox, 2009; Seidman, 2005) and academic preparedness (Coll & Stewart, 2008; Earnest & Dwyer, 2010; Seidman, 2005; Tinto, 1987) affect the freshman retention rate in higher education. Initial course in college (Seidman, 2005; Tinto, 1987), financial assistance (Riggert et al., 2006; Seidman, 2005; Tinto, 1987), student commitment (Quarterman, 2008; Seidman, 2005; Tinto, 1987), and environmental factors such as living in dorms or being a commuter student, working on campus or off campus, number of hours working per week (Riggert et al., 2006), academic and social experiences (Braxton, 2000;

Seidman, 2005; Tinto, 1987) also affect the freshman retention rate in higher education. This research was designed to study those factors that are impacting the retention rate in the COT at ISU. Freshmen retention data for the past five years were gathered from the Business Intelligence Department of ISU. Survey data were gathered from freshman students enrolled in the COT for fall 2013.

## Instrument

The survey instrument was devised by Dr. Christopher Rhodes and Professor Alan Nevill (2004). These researchers studied various facets that are internal and external to the university that lead to student satisfaction. They developed a survey of 31 questions that reveal the level of the student experience and its effect on academic and social integration (Rhodes & Nevill, 2004). The content validity of the survey was supported through numerous other studies identified in the literature (Braunstein et al., 2008; Coll & Stewart, 2008; Collier & Morgan, 2008; Cox, 2009; DeBerard et al., 2004; Earnest & Dwyer, 2010; Quarterman, 2008; Owen, 2003; Rhodes & Nevill, 2004; Riggert et al., 2006; Seidman, 2005; Tinto, 1987). The literature review studied in this document validated freshmen being grouped by gender, ethnicity, age, and traditional student and non-traditional student as variables, as these had been demonstrated to show a statistically significant impact on academic and social integration of the student.

This study used the survey developed and published by Rhodes and Nevill (2004) in the *Journal of Further and Higher Education*. The survey collected data from the freshman cohort in the COT and consisted of four sections. The first section consisted of four questions that gathered information from the students regarding the reasons that made them inclined to attend a university. This section gathers the factors that made students either feel naturally good or bad about themselves as a consequence of their university attendance. The second section consisted

of 25 questions that revealed the impact of the university environment on students' personal motivation and morale. This section collected student responses on a Likert scale with 5 choices; 1 being very satisfied and 5 being very dissatisfied. The third section consisted of two questions that sought factors chosen by students that lead to retention or their departure from the university, and the final section consisted of two open-ended questions where students shared the difficulties that they had encountered during the semester and a possible solution for their problem, if they had found one. Demographic data were collected from the Office of Student Success at ISU and the Business Intelligence webpage supported by ISU (Indiana State University, n.d.).

A random sample of fifteen responses was selected from the data that was gathered in fall 2013 to run Cronbach's alpha test. The test revealed that the survey questionnaire provided excellent internal consistency and high reliability with Cronbach's $\alpha = .92$.

## Procedure

The first phase of data was collected from the survey questionnaire. Faculty of the COT were approached to permit a time slot to administer the survey in one of their freshman class sessions. As a result, 201 freshman students' responses were recorded out of a total sample size of 310 freshman students. The survey was administered after midterm grades were reported. At the time the survey responses were recorded, students had completed at least one-third of the semester, which allowed freshman students ample time to experience university life, understand the course work expectations, and have had opportunities for social and academic interaction.

During the second phase of data collection, the survey responses were sent to the Office of Student Success, where the survey responses were linked to students' demographic data.

Additionally, five-year student retention data were gathered from the business intelligence webpage supported by ISU.

## Findings

In analyzing descriptive data retrieved in April of 2014from the Office of Student Success supported by ISU (Indiana State University, n.d.), I found that the College of Technology at Indiana State University offers 20 different major options for a bachelor's degree program. There are 310 students in the freshman cohort class of fall 2013: 0% in Adult and Career Education, 0.29% in Advanced Manufacturing Management, 1.77% in Automation and Control Engineering Technology, 2.95% in Automotive Engineering Technology, 7.96% in Aviation Management, 6.19% in Civil Engineering Technology, 4.42% in Computer Engineering Technology, 6.49% in Construction Management, 7.67% in Electronics Engineering Technology, 2.65% in Engineering Technology, 4.13% in Human Resource Development, 7.37% in Information Technology, 5.01% in Interior Design, 16.22% in Mechanical Engineering Technology, 1.18% in Packaging Engineering Technology, 13.86% in Professional Aviation Flight Technology, 5.01% in Safety Management, 1.47% in Technology Management, 0.59% in Technology and Engineering Education, 4.13% in Textiles Apparel and Merchandising, and 0.59% have not declared their major, but would like to choose a major offered in the COT. Only 87.10% of freshman cohort fall class of 2013 had enrolled in spring 2014.

### Hypotheses

**$H_0$1**. There is no significant difference between retention rates for freshmen in the COT over the past five years.

Fall to spring retention rates declined following years 2008 to 2010; however, it increased during 2011 and had stabilized around 87% for the remainder of the documented period.

Enrollment had also risen; there were only 130 students who declared their major in the COT and enrolled full time during fall 2008, while there were 310 students in fall 2013. Though the enrollment was on the rise, fall to spring retention rates had been approximately the same over the past three years. Hence the hypothesis has been violated; there is a difference between retention rates for freshman in the COT over the past five years.

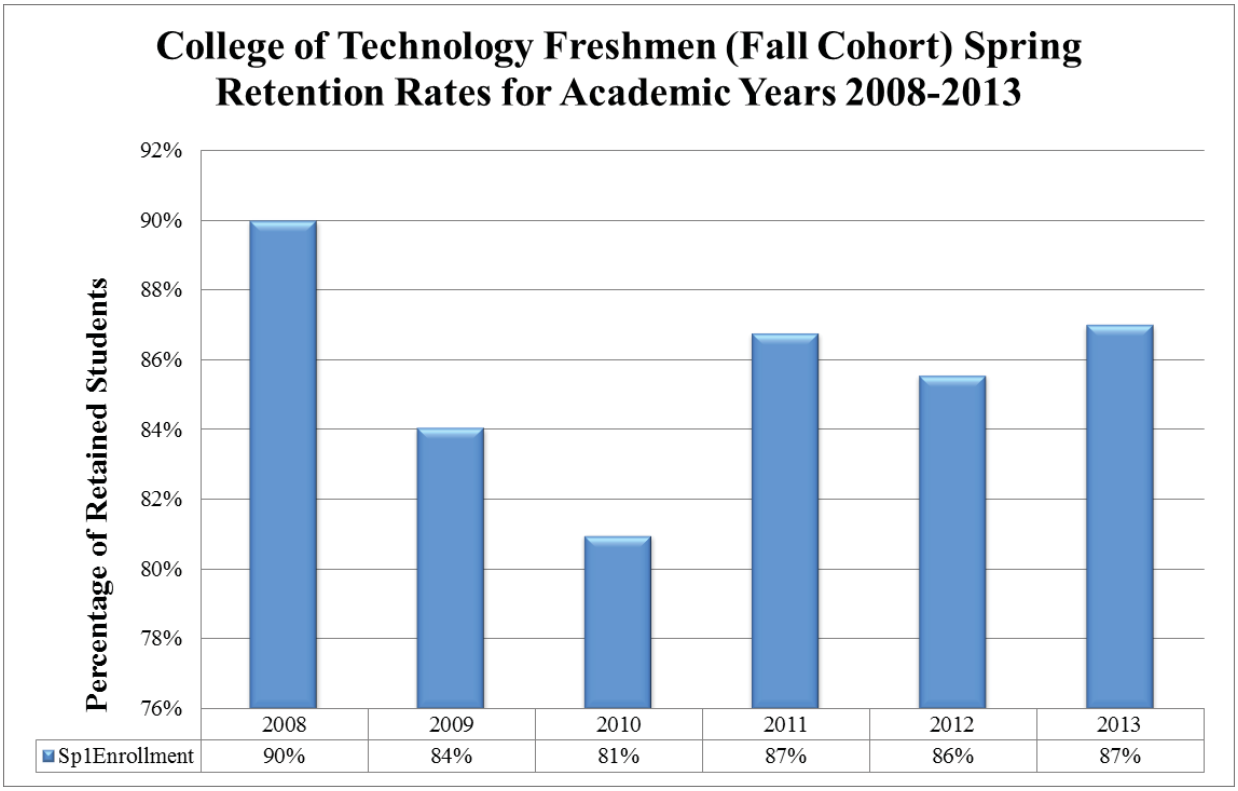


*Figure 2*. Freshmen fall to spring retention rates for years academic years 2008-2013 in the College of Technology.

a. There is no difference between retention rates of freshman female students when compared to that of freshman male students in the COT over the past five years.

The freshman female student retention rates were always higher than freshman male retention rates except for years 2010 and 2013 as demonstrated in Figure 3. During 2008, there was not much difference in retention rates of freshman female students and

freshman male students; however, by 2009, all freshman female students had enrolled for the spring semester while only 83% of male students enrolled in the spring semester. During 2010, the freshman male student retention rate was much higher than that of the freshman female retention rate. There was only about a 3% to 5% difference between male and female student retention rates during years 2011 through 2013. The enrollment number of freshman female students was never above 100, while freshman male students' enrollment numbers were never below 100. Therefore, it can be determined that the hypothesis was violated.

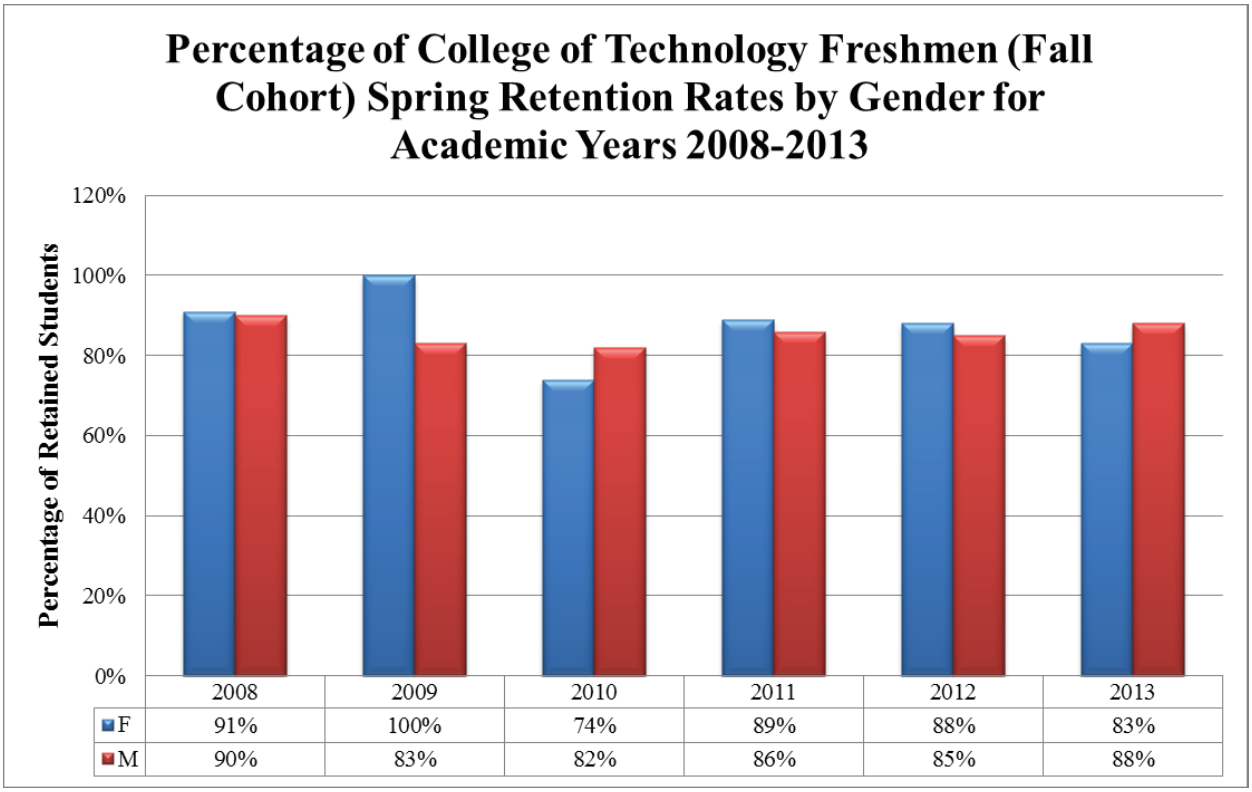


*Figure 3*. Freshmen fall to spring retention rates for academic years 2008-2013 by gender in the College of Technology.

Figure 4 illustrates the enrollment numbers for both female and male students from 2008 to 2013, and Figure 5 illustrates the retention numbers by gender from 2008 to 2013. Table 3 shows the number of students who had dropped out by end of fall semester.

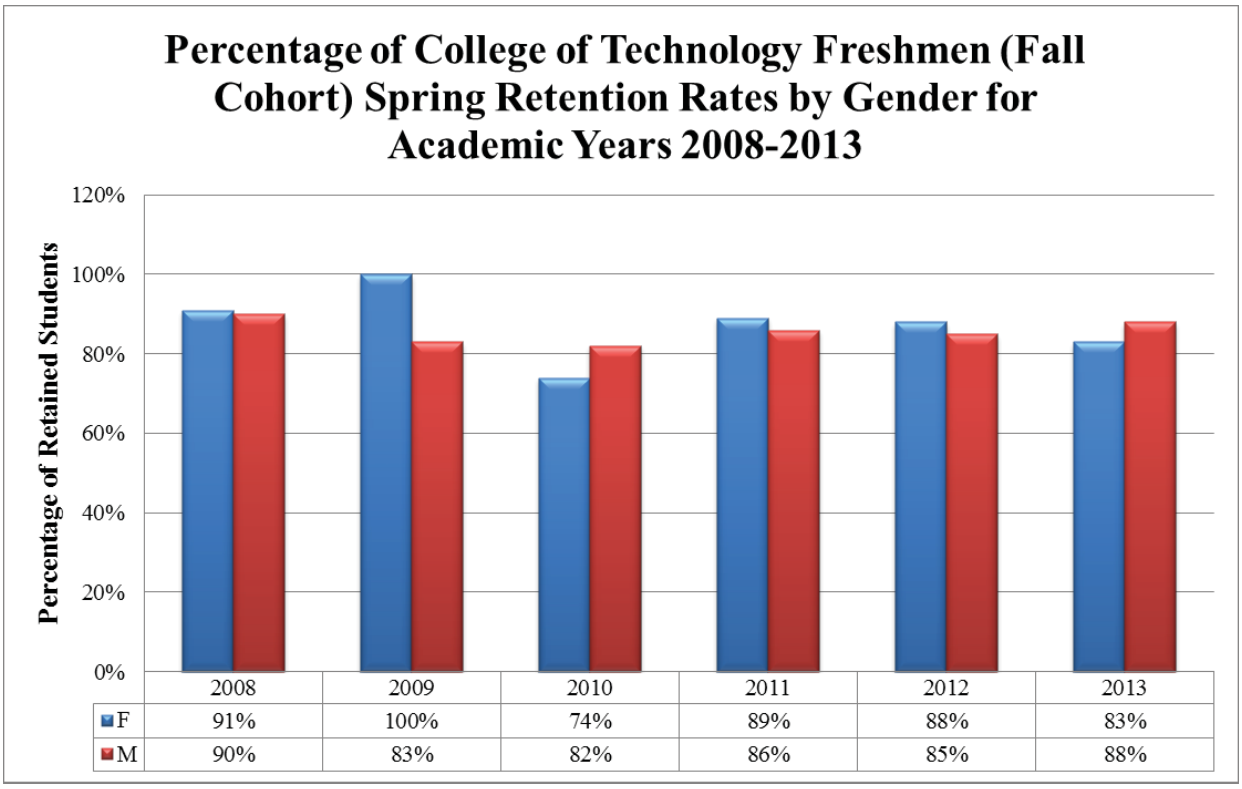


*Figure 4*. Number of enrolled freshman students in College of Technology by gender for academic years 2008-2013.

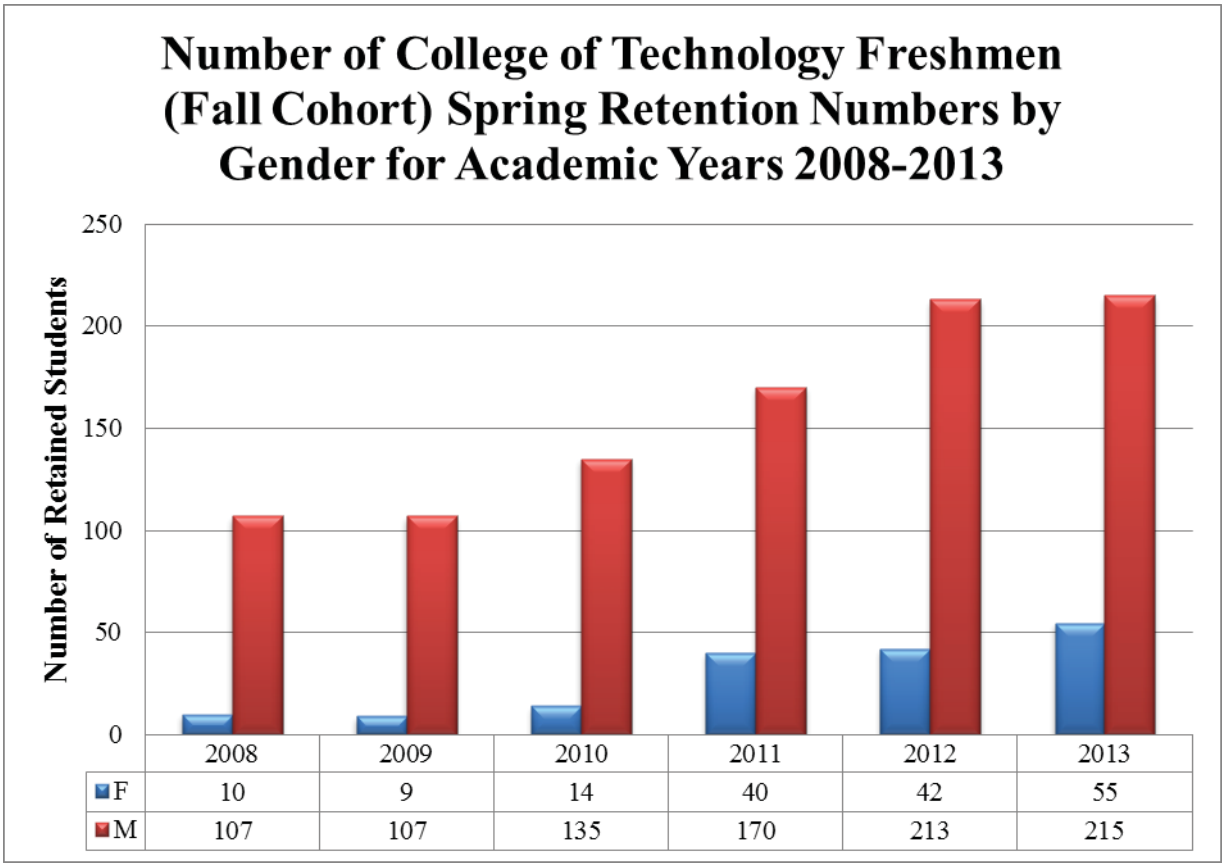


*Figure 5*. Number of retained freshman students in the College of Technology (fall to spring) by gender for academic years 2008-2013.

Table 3

*Fall to Spring Enrollment and Drop out Numbers in the College of Technology at ISU from 2008 to 2013*

| Year | Female | | Male | |
|---|---|---|---|---|
| | Enrolled | Dropped | Enrolled | Dropped |
| Fall 2008 | 11 | 1 | 119 | 12 |
| Fall 2009 | 9 | 0 | 129 | 22 |
| Fall 2010 | 19 | 5 | 165 | 30 |
| Fall 2011 | 45 | 5 | 197 | 27 |
| Fall 2012 | 48 | 6 | 250 | 37 |
| Fall 2013 | 66 | 11 | 244 | 29 |

b. There is no difference between retention rates of traditional freshman students when compared to that of non-traditional freshman students in the COT over the past five years.

There were not enough data to differentiate traditional students from non-traditional students. University records did not have data regarding the marital status of students and their employment status. Hence, it was not possible to study the difference in retention rates between traditional and non-traditional students for the past six years.

c. There is no difference between retention rates of traditional freshman female students when compared to that of traditional freshman male students in the COT over the past five years.

There were not enough data to categorize traditional students. Hence, it was not possible to study the difference in retention rates between traditional female students and traditional male students for the past six years.

d. There is no difference between retention rates of non-traditional freshman female students when compared to that of non-traditional freshman male students in the COT over the past five years.

There were not enough data to categorize non-traditional students. Hence, it was not possible to study the difference in retention rates between non-traditional female students and non-traditional male students for the past six years.

e. There is no difference between retention rates of traditional freshman female students when compared to that of non-traditional freshman female students in the COT over the past five years.

There were not enough data to differentiate traditional students from non-traditional students. Hence, it was not possible to study the difference in retention rates between traditional female and non-traditional female students for the past six years.

f. There is no difference between retention rates of traditional freshman male students when compared to that of non-traditional freshman male students in the COT over the past five years.

There were not enough data to differentiate traditional students from non-traditional students. Hence, it was not possible to study the difference in retention rates between traditional male and non-traditional male students for the past six years.

**$H_0$2.** There are no particular factors that were affecting freshman retention in the COT.

a. There is no relationship between ethnicity and retention rate of freshmen.

The hypothesis was violated as there was a statistically significant relationship between ethnicity and the retention rate of freshmen as demonstrated in Table 4. Ethnicity was categorized as African American, White, foreign, and others. The others group was comprised of American Indians, Asian Americans, Hispanics, multiracial and those who had not reported their ethnicity. A total of 1302 freshman students enrolled during fall 2008 through fall 2013.

Table 4

*Chi-square Results for Association of Ethnicity and Retention for Academic Years 2008-2013*

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 28.767[a] | 3 | .000 |
| Likelihood Ratio | 29.178 | 3 | .000 |
| Linear-by-Linear Association | .206 | 1 | .650 |
| N of Valid Cases | 1302 | | |

[a] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 13.86.

Table 4 demonstrates a significant association between ethnicity and retention of freshman students in the COT at ISU for years 2008 to 2013, $\chi^2$ (3) = 28.77, $p < .001$. The foreign and others ethnic groups had a high impact on the chi-square values. A standard residual of -3.0 for the foreign group implies that fewer students had dropped than the expected number of students. The standard residual suggests that being a foreign student increases the chance of that student enrolling in the spring semester. A standard residual of 3.5 for the others group implies that more students had dropped after the freshman fall semester. The standard residual suggests that a student categorized in the others group has a higher chance of dropping out of school by the end of the freshman fall semester.

Table 5

*Chi-square Results for Association of Ethnicity and Retention for Academic Years 2008-2010*

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 12.260[a] | 3 | .007 |
| Likelihood Ratio | 11.306 | 3 | .010 |
| Linear-by-Linear Association | .018 | 1 | .893 |
| N of Valid Cases | 452 | | |

[a] 2 cells (25.0%) have expected count less than 5. The minimum expected count is 3.10.

As demonstrated in Table 5, there were a total of 452 freshman students enrolled during fall 2008 through fall 2010. There is a significant association between ethnicity and retention of freshman students in the COT at ISU for academic years 2008 to 2010, $\chi^2$ (3) = 12.26, $p < .05$. The ethnic group of African Americans had a high impact on the chi-square values. A standard residual of 2.2 for the African American group implies more students had dropped out after the freshman fall semester. The standard residual suggests that a student from the African American group had a higher chance of dropping out of school by the end of the freshman fall semester during the academic years 2008 through 2010. A low chi-square value might have been the result of the violation of the basic assumption. In order to analyze data using the chi-square test, it is assumed that no more than 20% of the expected cell counts should be less than 5 in the contingency table (Field, 2013).

Table 6

*Chi-square Results for Association of Ethnicity and Retention for Academic Years 2011-2013*

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 20.253[a] | 3 | .000 |
| Likelihood Ratio | 20.571 | 3 | .000 |
| Linear-by-Linear Association | .396 | 1 | .529 |
| N of Valid Cases | 850 | | |

[a] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.42.

As demonstrated in Table 6, there were a total of 850 freshman students enrolled during fall 2011 through fall 2013. There was a significant association between ethnicity and retention of freshman students in the COT at ISU for years 2011 to 2013, $\chi^2$ (3) = 20.25, $p < .001$. The foreign and others group of ethnicity had a high impact on the chi-square values. A standard residual of -2.7 for the foreign group implies that fewer students dropped out than the expected number of students. The standard residual suggests that being a foreign student increases the chance of a student enrolling in the spring semester. A standard residual of 3.1 for the others group implies that more students in this group had dropped out after the freshman fall semester. The standard residual suggests that a student categorized in the others group had a higher chance of dropping out of school by end of the freshman fall semester.

A three-year analysis of years 2011 through 2013 revealed an overwhelming impact of ethnicity on freshman retention rates. The sample size of 850 students impacted the overall chi-square values for the six-year analysis when compared to the 452 students for years 2008 through 2010. The African American ethnic group impacted the chi-square values for years 2008 through 2010; African American students had a higher chance of dropping out of school by the end of the freshman fall semester. For years 2011 through 2013, foreign and others ethnic

groups impacted chi-square values; for example, a student identified as foreign had a higher chance of enrolling in the spring semester and continuing his or her education while a student identified as being from the others ethnic group had a higher chance of dropping out of school by the end of the freshman fall semester. The sample size for years 2011 through 2013 was twice the sample size for years 2008 through 2010. Hence, a six-year analysis reveals only the impact of foreign and others ethnic groups while the impact of the African American group on retention rates was undetectable.

(1) The relationship between ethnicity and retention rate of freshman did not vary for freshman female students when compared to that of freshman male students in COT over the past five years.

There were no relationship between ethnicity and the retention rate of freshman female students. The sample size of female students over six years was 198, and there were at least three cells in the contingency table where the expected cell count was less than 5. As a result, there was no relationship between the ethnic groups and freshman female retention rates. The sample size of the male population was larger when compared to that of the female population. A total of 1104 freshman male students enrolled during fall 2008 through fall 2013. As demonstrated in Table 7, there was a significant association between ethnicity and retention of freshman male students in the COT at ISU for years 2008 to 2013, $\chi^2$ (3) = 25.32, $p < .001$.

Table 7

*Chi-square Results for Association of Male, Ethnicity and Retention for Academic Years 2008-2013*

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 25.320[a] | 3 | .000 |
| Likelihood Ratio | 27.032 | 3 | .000 |
| Linear-by-Linear Association | .009 | 1 | .926 |
| N of Valid Cases | 1104 | | |

[a] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.73.

The foreign and others ethnicity groups had a high impact on the chi-square values. A standard residual of -3.1 for the male foreign group implies that fewer students dropped out than the expected number of students. The standard residual suggests that being a male foreign student increases the chance of enrolling in the spring semester. A standard residual of 3.0 for the others group implies that more male students have dropped out after the freshman fall semester. The standard residual suggests that a male student from the others group had a higher chance of dropping out of school by end of the freshman fall semester.

(2) The relationship between ethnicity and retention rate of freshmen did not vary for traditional freshman students when compared to that of non-traditional freshman students in COT over the past five years.

There were not enough data to differentiate traditional students from non-traditional students. University records do not provide data regarding the marital status of students and their employment status. Hence, it was not possible to study the difference in retention rates between traditional and non-traditional students for the past six years.

(3) The relationship between ethnicity and retention rate of freshmen did not vary for traditional freshman female students when compared to that of traditional freshman male students in COT over the past five years.

There were not enough data to categorize traditional students. Hence, it was not possible to study the difference in retention rates between traditional female students and traditional male students for the past six years.

(4) The relationship between ethnicity and retention rate of freshmen did not vary for non-traditional freshman female students when compared to that of non-traditional freshman male students in COT over the past five years.

There were not enough data to categorize non-traditional students. Hence, it was not possible to study the difference in retention rates between non-traditional female students and non-traditional male students for the past six years.

(5) The relationship between ethnicity and retention rate of freshmen did not vary for traditional freshman female students when compared to that of non-traditional freshman female students in COT over the past five years.

There were not enough data to differentiate traditional students from non-traditional students. Hence, it was not possible to study the difference in retention rates between traditional female and non-traditional female students for the past six years.

(6) The relationship between ethnicity and retention rate of freshmen did not vary for traditional freshman male students when compared to that

of non-traditional freshman male students in COT over the past five years.

There were not enough data to differentiate traditional students from non-traditional students. Hence, it was not possible to study the difference in retention rates between traditional male and non-traditional male students for the past six years.

b. There is no relationship between SAT/ACT scores and retention rate of freshmen.

As demonstrated in Table 8, there was a significant association between SAT/ACT scores and retention of freshman students in the COT at ISU for years 2008 to 2013, $\chi^2$ (4) = 9.64, $p < .05$. Students who scored 899 and below in their SATs impacted the chi-square values. A standard residual of 2.1 for students who scored 899 and below implies that more students dropped out after the freshman fall semester. The standard residual suggests that a student who has a SAT score lower than 899 has a higher chance of dropping out of school by end of the freshman fall semester. As a result of the statistical outcomes, the hypothesis was violated.

Table 8

*Chi-square Results for Association of SAT/ACT Scores and Retention for Academic Years 2008-2013*

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 9.644[a] | 4 | .047 |
| Likelihood Ratio | 9.870 | 4 | .043 |
| Linear-by-Linear Association | .096 | 1 | .757 |
| N of Valid Cases | 1302 | | |

[a] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 21.62.

(1) The relationship between SAT/ACT scores and retention rate of freshmen did not vary for freshman female students when compared to that of freshman male students in COT over the past five years.

There was no relationship between SAT/ACT scores and the retention rate of freshman female students. The sample size of female students over six years is 198, and there were at least two cells in the contingency table where the expected cell count was less than 5, which constitutes 20% of the total cells in the contingency table. Chi-square test results were not significant. As a result, no relationship was exhibited between SAT/ACT scores and female freshman retention rates. The sample size of the male population was larger when compared to that of the female population. A total of 1104 freshman male students enrolled during fall 2008 through fall 2013. As demonstrated in Table 9, there was a significant association between ethnicity and the retention of freshman male students in the COT at ISU for years 2008 to 2013, $\chi^2$ (4) = 15.30, p < .05.

Table 9

*Chi-square Results for Association of Male, SAT/ACT Scores and Retention for Academic Years 2008-2013*

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 15.304[a] | 4 | .004 |
| Likelihood Ratio | 15.529 | 4 | .004 |
| Linear-by-Linear Association | .000 | 1 | .997 |
| N of Valid Cases | 1104 | | |

[a] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 20.89.

Chi-square values were impacted by those students who scored 899 and below and those who had not reported their SAT/ACT scores. A standard residual of 2.7 for male students who

scored 899 and below in the SAT/ACT implies that more male students in this category had dropped out after their freshman fall semester. The standard residual suggests that being a male student scoring below 899 on the SAT increases the chance of that student not continuing his enrollment in the COT. A standard residual of -2.2 for those who had not reported their SAT/ACT scores suggests that more male students in this group had been retained.

(2) The relationship between SAT/ACT scores and retention rate of freshmen did not vary for traditional freshman students when compared to that of non-traditional freshman students in COT over the past five years.

There were not enough data to differentiate traditional students from non-traditional students. University records do not have data regarding the marital status of students and their employment status. Hence, it was not possible to study the impact of SAT/ACT scores on retention rates between traditional and non-traditional students for the past six years.

(3) The relationship between SAT/ACT scores and retention rate of freshmen did not vary for traditional freshman female students when compared to that of traditional freshman male students in COT over the past five years.

There were not enough data to categorize traditional students. Hence, it was not possible to study the impact of SAT/ACT scores on retention rates between traditional female students and traditional male students for the past six years.

(4) The relationship between SAT/ACT scores and retention rate of freshmen did not vary for non-traditional freshman female students

when compared to that of non-traditional freshman male students in COT over the past five years.

There were not enough data to categorize non-traditional students. Hence, it was not possible to study the impact of SAT/ACT scores on retention rates between non-traditional female students and non-traditional male students for the past six years.

(5) The relationship between SAT/ACT scores and retention rate of freshmen did not vary for traditional freshman female students when compared to that of non-traditional freshman female students in COT over the past five years.

There were not enough data to differentiate traditional students from non-traditional students. Hence, it was not possible to study the impact of SAT/ACT scores on retention rates between traditional female and non-traditional female students for the past six years.

(6) The relationship between SAT/ACT scores and retention rate of freshmen did not vary for traditional freshman male students when compared to that of non-traditional freshman male students in COT over the past five years.

There were not enough data to differentiate traditional students from non-traditional students. Hence, it was not possible to study the impact of SAT/ACT scores on retention rates between traditional male and non-traditional male students for the past six years

c. There is no relationship between high school GPA and retention rate of freshmen.

As demonstrated in Table 10, there was a significant relationship between high school GPA and retention of freshman students in the COT at ISU for years 2008 to 2013, $\chi^2$ (4) =

41.55, $p < .001$. Chi-square values were impacted by students who had a high school GPA of 2.99 or less and those who had not reported their high school GPA. A standard residual of -3.0 for students who scored a high school GPA of 3.5 or higher implies that students are likely to continue their enrollment in the COT for the spring semester of their freshman year. A standard residual of 2.7, 2.0, and 3.5 for students who scored a high school GPA between 2.50-2.99, 2.00-2.49, and 2.00 or less and those who have not reported respectively implies that students leave the COT after their freshman fall semester. The standard residuals suggest that unless a student has a high school GPA of 2.50 or higher, there is a greater chance of dropping out of school by end of the freshman fall semester. Hence, the hypothesis was rejected.

Table 10

*Chi-square Results for Association of High School GPA and Retention for Academic Years 2008-2013*

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 41.547[a] | 4 | .000 |
| Likelihood Ratio | 37.406 | 4 | .000 |
| Linear-by-Linear Association | 35.875 | 1 | .000 |
| N of Valid Cases | 1305 | | |

[a] 1 cells (10.0%) have expected count less than 5. The minimum expected count is 1.57.

A total of 452 freshman students enrolled during fall 2008 through fall 2010. There was no significant relationship between high school GPA and retention of freshman students in the COT at ISU for years 2008 to 2010. However, for years 2011 to 2013 there were a total of 850 freshman students enrolled and as demonstrated in Table 11, there was a very strong significant relationship between high school GPA and retention of freshman students in the COT at ISU, $\chi^2 (4) = 44.88$, $p < .001$.

Table 11

*Chi-square Results for Association of High School GPA and Retention for Academic Years 2011-2013*

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 44.877[a] | 4 | .000 |
| Likelihood Ratio | 38.168 | 4 | .000 |
| Linear-by-Linear Association | 33.657 | 1 | .000 |
| N of Valid Cases | 850 | | |

[a] 3 cells (30.0%) have expected count less than 5. The minimum expected count is .68.

A three-year analysis for years 2011 through 2013 revealed an overwhelming impact of high school GPA on freshman retention rates. A standard residual of 1.9, 2.8, and 4.0 for students who scored a high school GPA between 2.50-2.99, 2.00-2.49, and less than 2.00 or those who had not reported respectively suggests that those particular students leave the COT after their freshman fall semester. The student group with a high school GPA less than 2.00 or those who have not reported had a standard residual of 4.0 that shows a very strong and significant relationship revealing that this set of students was more prone to drop out of school by the end of freshman fall semester. A sample size of 850 students impacted the overall chi-square values for the six-year analysis. Though the three-year analysis of years 2008 to 2010 does not show any relationship between high school GPA and retention of freshman students, a strong relationship between these variables for years 2011 through 2013 impacted the six-year analysis.

(1) The relationship between high school GPA and retention rate of freshmen did not vary for freshman female students when compared to that of freshman male students in COT over the past five years.

There was no relationship between high school GPA and retention rate of freshman female students. The sample size of female students over six years was 198, and there were at least four cells in the contingency table where the expected cell count was less than 5, which constituted 40% of the total cells in the contingency table. This violated the basic assumption for analyzing the data using a chi-square test. Additionally chi-square results were not significant; hence, no relationship exists between high school GPA and female freshman retention rates. The sample size of the male population was larger when compared to that of the female population. A total of 1105 freshman male students enrolled during fall 2008 through fall 2013. As demonstrated in Table 12, there was a significant relationship between high school GPA and retention of freshman male students in the COT at ISU for years 2008 to 2013, $\chi^2$ (4) = 41.95, p < .001.

Table 12

*Chi-square Results for Association of Male, High School GPA and Retention for Academic Years 2008-2013*

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 41.954[a] | 4 | .000 |
| Likelihood Ratio | 36.200 | 4 | .000 |
| Linear-by-Linear Association | 32.919 | 1 | .000 |
| N of Valid Cases | 1105 | | |

[a] 1 cells (10.0%) have expected count less than 5. The minimum expected count is 1.42.

Chi-square values were impacted by students who had a high school GPA of 2.99 or lower and those who had not reported their high school GPA. A standard residual of -2.4 and -2.3 for students who scored a high school GPA of 3.5 and higher, and 3.00-3.50 respectively implies that students continue their enrollment in the COT for the spring semester of their

freshman year. A standard residual of 2.6, 2.0, and 3.8 for students who scored a high school GPA between 2.50-2.99, 2.00-2.49, and lower than 2.00 or those who have not reported respectively suggests that these students leave the COT after their freshman fall semester. The standard residuals suggests that unless a male student has a high school GPA of 2.50 or higher, there is a greater chance of dropping out of school by end of the freshman fall semester.

(2) The relationship between high school GPA and retention rate of freshmen did not vary for traditional freshman students when compared to that of non-traditional freshman students in COT over the past five years.

There were not enough data to differentiate traditional students from non-traditional students. University records do not have data regarding the marital status of students and their employment status. Hence, it was not possible to study the impact of high school GPA on retention rates between traditional and non-traditional students for the past six years.

(3) The relationship between high school GPA and retention rate of freshmen did not vary for traditional freshman female students when compared to that of traditional freshman male students in COT over the past five years.

There were not enough data to categorize traditional students. Hence, it was not possible to study the impact of high school GPA on retention rates between traditional female students and traditional male students for the past six years.

(4) The relationship between high school GPA and retention rate of freshmen did not vary for non-traditional freshman female students

when compared to that of non-traditional freshman male students in COT over the past five years.

There were not enough data to categorize non-traditional students. Hence, it was not possible to study the impact of high school GPA on retention rates between non-traditional female students and non-traditional male students for the past six years.

(5) The relationship between high school GPA and retention rate of freshmen did not vary for traditional freshman female students when compared to that of non-traditional freshman female students in COT over the past five years.

There were not enough data to differentiate traditional students from non-traditional students. Hence, it was not possible to study the impact of high school GPA on retention rates between traditional female and non-traditional female students for the past six years.

(6) The relationship between high school GPA and retention rate of freshmen did not vary for traditional freshman male students when compared to that of non-traditional freshman male students in COT over the past five years.

There were not enough data to differentiate traditional students from non-traditional students. Hence, it was not possible to study the impact of high school GPA on retention rates between traditional male and non-traditional male students for the past six years.

d. There is no relationship between parent education and retention rate of freshmen.

The university does not have any data regarding the student's parental education and it was not possible to study the relationship between parent education and retention rate of freshmen.

(1) The relationship between parent education and retention rate of freshmen did not vary for freshman female students when compared to that of freshman male students in COT over the past five years.

There were not enough data to study the impact of parent education on retention rate of freshmen. Therefore, it was not possible to compare impact of parent education on freshman female retention with freshman male retention.

(2) The relationship between parent education and retention rate of freshmen did not vary for traditional freshman students when compared to that of non-traditional freshman students in COT over the past five years.

There were not enough data to study the impact of parent education on retention rate of freshmen. Hence, it was not possible to compare impact of parent education on traditional freshman retention with non-traditional freshman retention.

(3) The relationship between parent education and retention rate of freshmen did not vary for traditional freshman female students when compared to that of traditional freshman male students in COT over the past five years.

There were not enough data to study the impact of parent education on retention rate of freshmen. Hence, it was not possible to compare impact of parent education on traditional freshman female retention with traditional freshman male retention.

(4) The relationship between parent education and retention rate of freshmen did not vary for non-traditional freshman female students when compared to that of non-traditional freshman male students in COT over the past five years.

There were not enough data to study the impact of parent education on retention rate of freshmen. Hence, it was not possible to compare impact of parent education on non-traditional freshman female retention with non-traditional freshman male retention.

(5) The relationship between parent education and retention rate of freshmen did not vary for traditional freshman female students when compared to that of non-traditional freshman female students in COT over the past five years.

There were not enough data to study the impact of parent education on retention rate of freshmen. Therefore, it was not possible to compare impact of parent education on traditional freshman female retention with non-traditional freshman female retention.

(6) The relationship between parent education and retention rate of freshmen did not vary for traditional freshman male students when compared to that of non-traditional freshman male students in COT over the past five years.

There were not enough data to study the impact of parent education on retention rate of freshmen. Hence, it was not possible to compare impact of parent education on traditional freshman male retention with non-traditional freshman male retention.

**$H_0$3.** There are no primary reasons that influenced students' motivation that led them to exit ISU COT before degree completion.

**Sample**

The sample was comprised of freshman in the fall cohort in the COT. There were a total of 310 students enrolled in the COT, having declared their major in COT; however, the survey collected only 201 students' responses. Demographics of one student who responded to the survey were not available in university records. University records revealed that the individual was not enrolled as a student for fall 2013, but had been attending classes; the data set had only 200 valid responses from the fall 2013 COT cohort. All students present in the sample were full-time students; 22 were female students, and 178 were male students. Of the 200 students in the sample, 101 were Caucasians, 35 were African Americans, 50 were non-resident aliens (foreign), eight were Hispanic and six were multiracial. The majority of the fall cohort of the student population was younger than 20 years of age, there were 128 students who were younger than 20 years of age, 58 in the group were 20-24 years of age, 10 in the group were 25-29 years of age, and there were only 5 students who were older than 30 years of age.

Table 13 shows a primarily self-motivated sample strongly influenced to achieve a degree from a well-reputed program at a convenient location. The sample responses emphasized knowledge acquisition, empowerment in the job market, and making new friends as major factors that make students naturally feel good about attending the university. On the other hand, the majority of the students in the sample were worried about debt, had negative feelings about not yet gaining a desired job/role in the society, had concerns related to poor public image of students, had self-doubt about their success given their university investment, and revealed negative feelings about the demands expected by family and work. A chi-square test of independence showed no significant impact of gender, ethnicity, or age on motivation or demotivation factors impacting the freshman fall cohort of students.

Table 13

*Student Generated Responses Explaining Their Reason for Accepting ISU, Influences to Attend, and Factors Which Make Them Feel Good and Bad About Attending ISU*

| Total no. of respondents | Responses | Percentage of total |
|---|---|---|
| | Main reason for accepting a place at the university | |
| 197 | Convenient location | 15.2 |
| | Suitable location | 8.5 |
| | Secure a career | 16.7 |
| | Achieve a degree | 36.4 |
| | Good course reputation | 12.9 |
| | Entry via clearing ?? | 3.5 |
| | Desire to leave home | 6.7 |
| | Who or what influenced you to attend university? | |
| 199 | Self-motivation | 63.4 |
| | Family/peer group | 28.9 |
| | Lack of other options | 7.8 |
| | What makes you feel good about attending university? | |
| 200 | Knowledge acquisition | 36.9 |
| | Empowerment in the job market | 24.3 |
| | The congratulations of my family/peer group | 15.3 |
| | Doing something for myself | 1.3 |
| | Meeting new friends | 22.3 |
| | What makes you feel bad about attending university? | |
| 188 | I have not yet got a job/role in society | 17.4 |
| | I have self-doubt about the likelihood of success | 13.9 |
| | The poor public perception of students | 15.2 |
| | Debt/money worries | 40.9 |
| | Family/work demands | 12.6 |

Table 14

*Survey Responses to Student Satisfaction Facets*

| Facets | No. of responses | Very Satisfied (%) | Satisfied (%) | Neither Satisfied not dissatisfied (%) | Dissatisfied (%) | Very Dissatisfied (%) |
|---|---|---|---|---|---|---|
| Balance between study and personal life | 198 | 21.2 | 54.5 | 19.2 | 5.1 | 0.0 |
| Desire to achieve academic success | 199 | 44.7 | 44.7 | 8.5 | 2.0 | 0.0 |
| Desire to secure good career prospects | 197 | 37.1 | 44.7 | 13.7 | 4.6 | 0.0 |
| Availability of learning resources | 197 | 31.0 | 52.8 | 13.7 | 2.5 | 0.0 |
| Society's views of students | 198 | 15.7 | 42.4 | 33.3 | 7.1 | 1.5 |
| Feeling stimulated to learn | 199 | 19.6 | 61.3 | 16.1 | 2.5 | 0.5 |
| Friendliness of teaching staff | 199 | 36.2 | 46.7 | 12.1 | 4.0 | 1.0 |
| Quality of feedback on my work | 197 | 23.4 | 44.7 | 24.9 | 6.1 | 1.0 |
| Intellectual challenge | 199 | 24.1 | 49.7 | 21.6 | 4.0 | 0.5 |
| Level of support provided by family/partner | 199 | 47.2 | 35.7 | 12.1 | 4.0 | 1.0 |
| Feeling able to cope with the workload | 200 | 19.0 | 59.0 | 18.0 | 3.5 | 0.5 |
| Friendliness of other students | 200 | 26.0 | 49.0 | 18.0 | 5.5 | 1.5 |
| High level of control over my own work | 200 | 28.0 | 55.5 | 12.5 | 3.0 | 1.0 |
| Physical conditions/learning environment | 199 | 26.6 | 57.3 | 12.6 | 3.0 | 0.5 |
| Feeling able to cope with degree level work | 200 | 28.5 | 55.5 | 11.5 | 4.0 | 0.5 |
| Feeling able to get financial advice | 197 | 20.3 | 39.1 | 27.9 | 7.6 | 5.1 |
| Level of support/university staff | 197 | 22.8 | 53.8 | 16.8 | 5.6 | 1.0 |
| Variety of assessment techniques | 197 | 17.3 | 51.3 | 22.8 | 8.1 | 0.5 |
| Feeling able to show initiative | 198 | 24.7 | 51.0 | 20.2 | 3.5 | 0.5 |
| Access to university social life | 199 | 34.2 | 41.7 | 15.6 | 6.5 | 2.0 |
| Variety of teaching techniques | 198 | 18.2 | 55.1 | 21.2 | 4.5 | 1.0 |
| Tutorials to discuss work | 200 | 20.5 | 44.0 | 25.5 | 9.0 | 1.0 |
| Feeling valued by teaching staff | 199 | 16.6 | 47.2 | 30.7 | 4.5 | 1.0 |
| Other students views of university life | 200 | 14.0 | 41.0 | 34.0 | 9.5 | 1.5 |
| Friendliness of non-teaching staff | 198 | 25.3 | 48.0 | 22.7 | 4.0 | 0.0 |

$p < .001$

Table 14 summarizes the responses of questions 5 to 29. A Likert scale was used for students to respond to these questions. Analysis of these responses by variables such as gender, age, and ethnicity using a chi-square test of independence revealed no significant relationship with the freshman retention rates. A *t* test for these 25 questions revealed that all questions ratings were significant. At least 80% of the students were satisfied with the following ten facets. These ten facets have a very high potential to positively impact the motivation and morale of students. These facets, given below, are ranked in order of highest percentage rate to lowest:

1. Desire to achieve academic success
2. Feeling able to cope with degree level work
3. Physical condition/learning environment
4. Availability of learning resources
5. High level of control over my own work
6. Friendliness of teaching staff
7. Level of support provided by family/partner
8. Desire to secure good career prospects
9. Feeling stimulated to learn

The following three facets, ranked in order from highest percentage to lowest, reveal facets with which at least 10% of students were dissatisfied. Therefore, these facets have a very high potential to negatively impact the motivation and morale of students:

1. Feeling able to get financial advice
2. Other students views of university life
3. Tutorials to discuss work

Table 15 summarizes the survey response of students' opinions on factors leading them to stay and attain a degree from ISU.

Table 15

*Rank Order of Student Chosen Factors Most Likely to Lead to Retention to Degree Completion*

| Order | Percent of responses | Factor |
|---|---|---|
| 1 | 33.2 | Chance to attain desired career/life progress |
| 2 | 15.5 | Good self-confidence resulting from success |
| 3 | 11.7 | Stimulating/interesting course |
| 3 | 11.7 | Good teaching |
| 5 | 10.7 | Support from family/peer group |
| 6 | 10.0 | Quality of the learning environment |
| 7 | 7.2 | Desire to act as a role model for others |

A comparison of factors that make students in the sample feel essentially good about attending university, as shown in Table 13, with facets identified as deeply satisfying, as shown in Table 14, revealed similarities within the factors identified as most likely to lead to retention towards degree completion, as shown in Table 15. For instance, "chance to achieve desired career/life progress" in Table 15 links well with "knowledge acquisition" and "empowerment in the job market" in Table 13 and also with "desire to achieve academic success" shown in Table 14. Table 16 summarizes the survey response of students' opinions on factors that may lead students to leave ISU prior to degree completion.

Table 16

*Rank Order of Student Chosen Factors Most Likely to Lead to Exit Prior to Degree Completion*

| Order | Percent of responses | Factor |
|---|---|---|
| 1 | 29.0 | Debt / Money worries |
| 2 | 14.3 | Poor teaching |
| 3 | 13.4 | Alternative route to desired job / career |
| 4 | 8.5 | Lack of self-confidence resulting from failure |
| 4 | 8.5 | Travel difficulties |
| 6 | 6.8 | Family / work commitments |
| 7 | 6.5 | Not coping with the workload |
| 7 | 6.5 | Poor stimulation / interest in course |
| 7 | 6.5 | Unfriendliness of other students |

A comparison of factors that make students in the sample feel potentially bad about attending university, as shown in Table 13, with facets identified as deeply dissatisfying as shown in Table 14, exhibit similarities within the factors identified as most likely to lead students to leave ISU, prior to degree completion, as shown in Table 16. For example, “Debt / money worries” in Table 16 links well with “Debt / money worries” in Table 13 and also with “Feeling able to get financial advice” in Table 14. Quality of teaching also impacts students’ decision to stay and complete their degree. Currently, most of the students were satisfied with the quality of teaching and friendliness of the faculty; however, they did specify that if there is depreciation in quality of teaching, they are prone to leave ISU prior to their degree completion.

Questions 32 and 33 provide a chance for students to evince their difficulties and remedies that they have taken to overcome them. Qualitative responses to these questions suggest that many students have faced trouble with their time management, and faced difficulties in balancing their academic and social lives. Most of the international students responded that language was a major barrier. Few students felt that large classes were an obstruction for one on one interaction with the faculty and finally, few aviation students felt that there was a miscommunication regarding the ISU flight academy program being an approved Federal Aviation Administration Part 141 certified. The majority of students felt that they received very little help and guidance with their funding, and most of them were worried about their financial status. The sample of responses below asserts the above stated inferences:

RESPONDENT #15: "Adjusting to the work load/style, and lifestyle of living on the college campus."

RESPONDENT #21: "The big things is the language, speak slowly and understand that international people are speak other language."

RESPONDENT #24: "I have to learn in class because the language because can second language, that hand for student who not perfect at second language. Also, some teacher didn't care about who hand working but didn't understand. I will find solution for that problem for the international students. I hope you understand what I would to say it."

RESPONDENT #30: "Time management making sure to get everything done and turned in on time."

RESPONDENT #31: "I have face the stress of staying focus. School life can sometimes be overshadowed by my social life."

RESPONDENT #37: “The main difficulty I have had has been trying to get all my homework done for all my classes through the week while working a full time overnight job. There is no way I could take less hours at work due to all the bills I have. I find it hard to get enough sleep through the week without doing much homework. In today’s world, a young person can’t afford to go to college full time and work part time unless they are being supported in some way. I, personally, am already in debt excluding my student loans. I can’t make enough money as it is, so I can’t risk any time I have to do anything else. The only help I've received on the previous issue has been simple advisement. I was failing a class and my professor suggested I drop his class. We discussed the pros and cons and I decided to drop the class. Dropping his class has saved me a poor grade or failed class my first semester, as well as free up time for me twice a week. Now I can get home early on Tuesdays and Thursdays to do any homework I have due before I have to go to sleep for work.”

RESPONDENT #49: “There one too many nonsense general education classes I thought college would be me focusing on what I want to do for a career.”

RESPONDENT #51: “Time management is a problem for me because I commute an hour, have classes and homework, work a part time job, and am in ROTC.”

RESPONDENT #52: “The flight academy I have been lied to about whether or not the flight academy is in fact part 141. Plus they are price gouging students & didn’t buy planes able to accommodate incoming instrument students.”

RESPONDENT #56: “Financial aid, they screw up all my loans, then eventually I got my loans weeks after I need them.”

RESPONDENT #58: “Finding time to get homework done between school and work.”

RESPONDENT #62: “That as of flight now the flight school is very unorganized. And I am not getting all my hours in at the pace I would like.”

RESPONDENT #67: “The Indiana state flight academy is not a 141 school. This is one of the main reasons I come here. The dept chair told my parents and I face to face we would be a 141 school by time I started course not the case. Also the aircraft have been unfairly priced as compared to other flight academics. This has already forced me change major and leave the academy. If these problems continue in the aviation dept I may have to leave all together. I received no help from the institution. I sought out the help of sky king airport and have moved my flight training to their facility.”

RESPONDENT #70: “Lecture classes, with more than 40 students, just hard to get one-on-one with the professor for help.”

RESPONDENT #72: “Paying for college is a major difficulty in pursuing my degree. I have received no guidance from the university.”

RESPONDENT #80: “Social difficulties, keeping up with fast pace, having to do everything myself.”

RESPONDENT #81: “Lack of money, problems with financial aid, both times I have talked to financial aid I have received little to no help.”

RESPONDENT #86: “Paying for room, board and flight time, I have received help from the staff on how to pay for room and board and other expenses.”

RESPONDENT #105: “The biggest difficult is balancing work and time management. I have the self-motivation but time management is difficult a planner doesn’t work for everyone.”

## Conclusion

Analysis of data collected through the survey and the Business Intelligence department at ISU affirms that retention rates did vary over the past five-year period. Ethnicity, SAT/ACT scores, and high school GPA impacted the freshman retention rates in the COT at ISU. African Americans were at risk during academic years 2008 to 2010 and members of the others group were at risk for academic years 2011 to 2013. Over the period of the study there had been a rise in enrollment and the dynamics of ethnicity were changed. Due to high enrollment of the foreign students, the impact of the African Americans at risk on the chi-square test results were minimized, as foreign students positively impacted the chi-square test results. The positive impact of the foreign students made the negative impact of the African Americans almost invisible. Summarization of the results reveals that both African Americans and others are at risk of dropping out of school by the end of freshman fall semester. Students who have SAT scores of lower than 899, high school GPA of lower than 2.50 and those who have not reported their SAT scores or high school GPA are more prone to drop out of school by end of freshman fall semester. Students expressed their worries about the debt that might be accumulated in the process of degree completion. They also expressed that they were satisfied with the quality of teaching in the COT; however, they also mentioned that they might consider leaving the COT if the teaching quality depreciates.

# CHAPTER 5

## DISCUSSION OF FINDINGS AND IMPLICATIONS FOR FUTURE RESEARCH

This study investigated the factors that impacted the retention of freshman students in the College of Technology at Indiana State University. Valuable information gained through the survey and demographic records stored by the business intelligence department in ISU were utilized to study the retention rates in the COT at ISU. Analyzing the gathered data revealed the factors affecting retention of freshman students in the COT at ISU although there were limitations in the sample size that impact the generalizability of the study to all female students.

### Discussion of Findings

This section recapitulates the instrument, data collection procedures, research questions and findings. It describes how the findings relate to the previous research and discusses their interpretations for retention of undergraduate freshman students in the COT at ISU.

### Summary of the Study

Recruitment and retention are important for an organization to be successful and for that organization to be a desirable destination for students. Devising strategies for successful student retention would help students to attain a degree that lays a pathway for a successful career and prosperity in life. As suggested by Siedman (2005), early identification and intervention would help improve the retention rates for the university. The effort to identify the factors affecting freshman retention rates in the COT at ISU were pursued based on Seidman's research. Literature

suggests that the factors affecting the retention rates vary for every institution based on the characteristics of the educational institution (Bowen et al., 2009; Seidman, 2005; Tinto, 1987). ISU is a four-year public institution; hence, factors suggested globally as affecting retention rates might not be valid for ISU.

Data for the study were obtained from two sources; one from the past six years records stored in the university database while the second one was through the survey conducted with freshman students in the COT in fall 2013. University data records were downloaded for the academic years 2008 through 2013. Retention data were downloaded from the business intelligence webpage supported by Indiana State University. Demographic information for survey respondents was matched by the Office of Student Success and then provided to me sans individuals' identifiers. The survey questionnaire used in this study was developed and published by Rhodes and Nevill (2004) in the *Journal of Further and Higher Education*. This survey consisted of four sections. The first section consisted of four questions that gathered information from the students regarding the reasons that made them inclined to attend a university. This section gathered the factors that made students either feel naturally good or bad about themselves as a consequence of their university attendance. The second section consisted of 25 questions that studied the impact of the university environment on students' personal motivations and morale. This section collected student responses on a Likert-scale with 5 choices; 1 being very satisfied and 5 being very dissatisfied. The third section consisted of two questions that sought factors chosen by students that led to retention or their departure from the university. The final section consisted of two open-ended questions where students had reported the difficulties they had encountered during the semester and a possible solution for their problem if they had found one. Again, demographic data for survey respondents were collected from the Office of Student

Success at ISU. Retention rates and demographic data for the years 2008 to 2013 were downloaded from the business intelligence webpage supported by ISU. Using SPSS, I studied the following research questions:

1. Did retention rates vary for freshmen in the COT over the past five years?
    a. Do retention rates vary for freshman female students when compared to those of freshman male students in COT over the past five years?
    b. Do retention rates vary for traditional freshman students when compared to those of non-traditional freshman students in COT over the past five years?
    c. Do retention rates vary for traditional freshman female students when compared to those of traditional freshman male students in COT over the past five years?
    d. Do retention rates vary for non-traditional freshman female students when compared to those of non-traditional freshman male students in COT over the past five years?
    e. Do retention rates vary for traditional freshman female students when compared to those of non-traditional freshman female students in COT over the past five years?
    f. Do retention rates vary for traditional freshman male students when compared to those of non-traditional freshman male students in COT over the past five years?
2. What are the factors that are affecting freshmen retention in the COT?
    a. Is there a relationship between ethnicity and retention rate of freshman?
        (1) Does the relationship between ethnicity and retention rate of freshmen vary for freshman female students when compared to that of freshman male students in COT over the past five years?

(2) Does the relationship between ethnicity and retention rate of freshmen vary for traditional freshman students when compared to that of non-traditional freshman students in COT over the past five years?

(3) Does the relationship between ethnicity and retention rate of freshmen vary for traditional freshman female students when compared to that of traditional freshman male students in COT over the past five years?

(4) Does the relationship between ethnicity scores and retention rate of freshmen vary for non-traditional freshman female students when compared to that of non-traditional freshman male students in COT over the past five years?

(5) Does the relationship between ethnicity and retention rate of freshmen vary for traditional freshman female students when compared to that of non-traditional freshman female students in COT over the past five years?

(6) Does the relationship between ethnicity and retention rate of freshmen vary for traditional freshman male students when compared to that of non-traditional freshman male students in COT over the past five years?

b. Is there a relationship between SAT/ACT scores and retention rate of freshmen?

(1) Does the relationship between SAT/ACT scores and retention rate of freshmen vary for freshman female students when compared to those of freshman male students in COT over the past five years?

(2) Does the relationship between SAT/ACT scores and retention rate of freshmen vary for traditional freshman students when compared to those of non-traditional freshman students in COT over the past five years?

(3) Does the relationship between SAT/ACT scores and retention rate of freshmen vary for traditional freshman female students when compared to those of traditional freshman male students in COT over the past five years?

(4) Does the relationship between SAT/ACT scores and retention rate of freshmen vary for non-traditional freshman female students when compared to those of non-traditional freshman male students in COT over the past five years?

(5) Does the relationship between SAT/ACT scores and retention rate of freshmen vary for traditional freshman female students when compared to those of non-traditional freshman female students in COT over the past five years?

(6) Does the relationship between SAT/ACT scores and retention rate of freshmen vary for traditional freshman male students when compared to those of non-traditional freshman male students in COT over the past five years?

c. Is there a relationship between high school GPA and retention rate of freshmen?

(1) Does the relationship between high school GPA and retention rate of freshmen vary for freshman female students when compared to that of freshman male students in COT over the past five years?

(2) Does the relationship between high school GPA and retention rate of freshmen vary for traditional freshman students when compared to that of non-traditional freshman students in COT over the past five years?

(3) Does the relationship between high school GPA and retention rate of freshmen vary for traditional freshman female students when compared to that of traditional freshman male students in COT over the past five years?

(4) Does the relationship between high school GPA and retention rate of freshmen vary for non-traditional freshman female students when compared to that of non-traditional freshman male students in COT over the past five years?

(5) Does the relationship between high school GPA and retention rate of freshmen vary for traditional freshman female students when compared to that of non-traditional freshman female students in COT over the past five years?

(6) Does the relationship between high school GPA and retention rate of freshmen vary for traditional freshman male students when compared to that of non-traditional freshman male students in COT over the past five years?

d. Is there a relationship between parent education and retention rate of freshmen?

(1) Does the relationship between parent education and retention rate of freshmen vary for freshman female students when compared to that of freshman male students in COT over the past five years?

(2) Does the relationship between parent education and retention rate of freshmen vary for traditional freshman students when compared to that of non-traditional freshman students in COT over the past five years?

(3) Does the relationship between parent education and retention rate of freshmen vary for traditional freshman female students when compared to that of traditional freshman male students in COT over the past five years?

(4) Does the relationship between parent education and retention rate of freshmen vary for non-traditional freshman female students when compared to that of non-traditional freshman male students in COT over the past five years?

(5) Does the relationship between parent education and retention rate of freshmen vary for traditional freshman female students when compared to that of non-traditional freshman female students in COT over the past five years?

(6) Does the relationship between parent education and retention rate of freshmen vary for traditional freshman male students when compared to that of non-traditional freshman male students in COT over the past five years?

3. What are the primary reasons that influence students' motivation and lead them to exit ISU COT before degree completion?

**Discussion of Findings for Question 1**

The retention rate of freshmen fall to spring semester for the past six years had been following a similar trend. As demonstrated in Figure 6, for years 2008 through 2010 the retention rate had been varying between 81% through 90%; however for years 2011 through 2013, retention rates were practically stabilized at 87%. Hence, the hypothesis was rejected based on

the results of descriptive statistics; there was a difference between the retention rates for freshman in the COT for years 2008 through 2013.

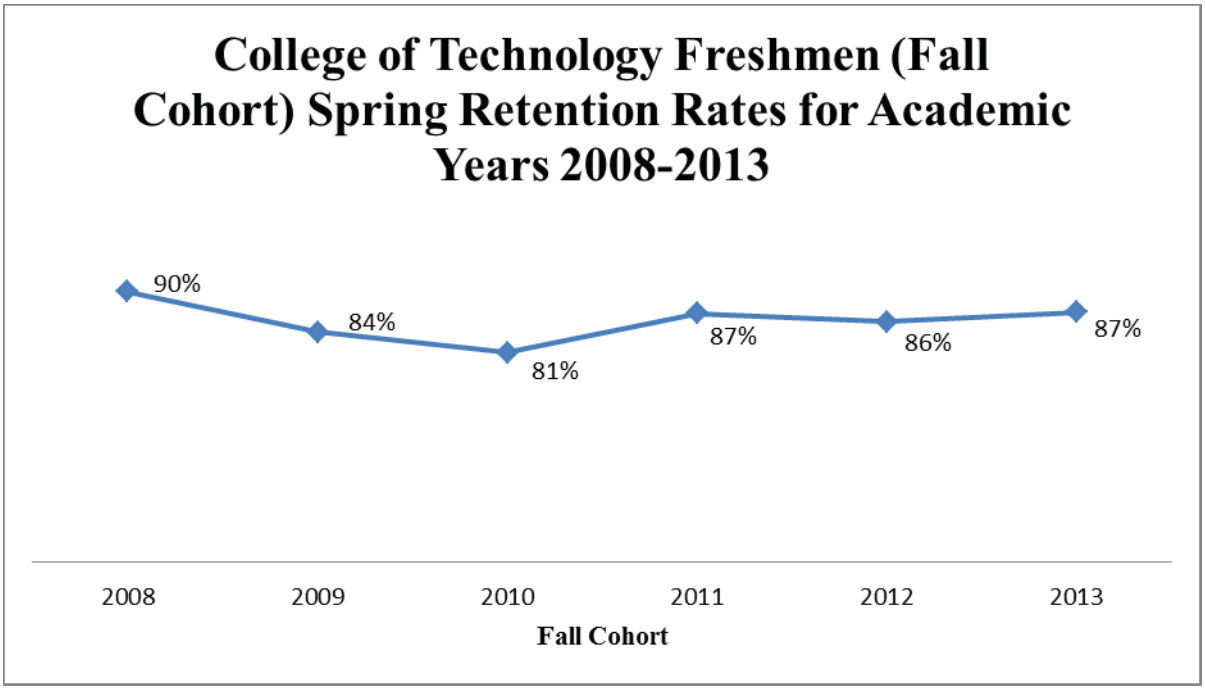


*Figure 6*. Percent of freshman retention rates in the College of Technology for academic years 2008-2013.

Bowen et al. (2009) suggested female students have higher retention rates when compared to that of the male students. The student body in the COT at ISU was constituted of 15.21% female students and 84.79% of male students over a span of the past six years. As demonstrated in Figure 7, the female student population was always below 20% except for the year 2013, in which the percentage was 21.29%. Statistically, female students were retained at higher levels when compared to those of male students, which fell in line with the global trends (Bowen et al., 2009). The retention rate of female students in the COT at ISU was 88% while that of the male students was 86% for academic years 2008 to 2013.

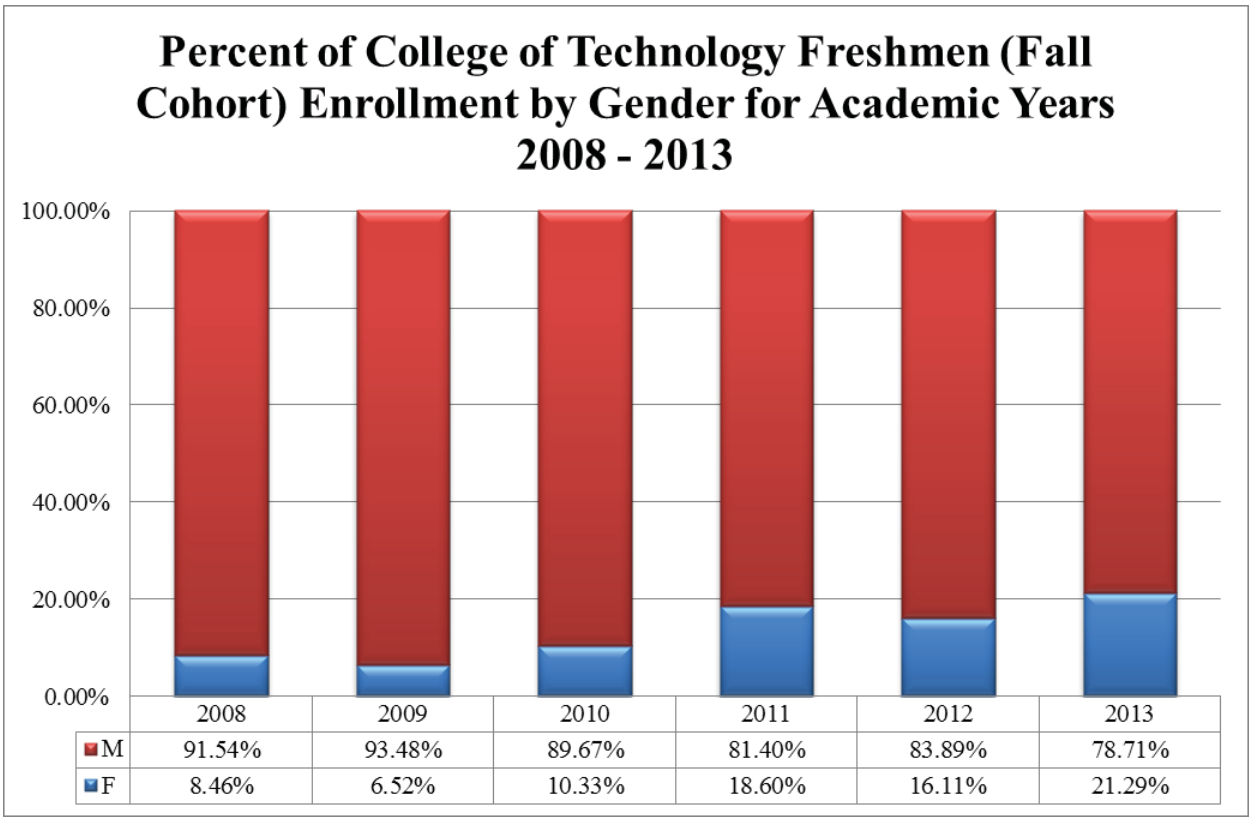


*Figure 7*. Percent of enrolled freshman students in the College of Technology by gender for academic years 2008-2013.

Traditional students were categorized as those who enrolled full time in the university within a year from their graduation from high school, who do not work full time, and are not single parents (unmarried or divorced). Non-traditional students are those who are enrolled part time and work full-time or those who enrolled full time in the university after more than one year from their high school graduation, or those who have not completed their high school, or those who are single parents. The university had records of students' high school graduation years; however, they did not record the employment data or the marital status of the student. Hence it was not possible to categorize the students as traditional and non-traditional students. As a result comparison of retention rates for traditional and non-traditional students was not feasible.

**Discussion of Findings for Question 2**

The College of Technology had a small population among the Asian American, Native American, Hispanic, and multiracial groups, hence all these ethnic groups were categorized as part of the others group for the purposes of the statistical tests. Caucasians (White) and the Foreign group students exhibited higher retention rates when compared to those of African American or the Others groups. The sample size was very small to study the impact of subcategories defined by gender and ethnicity on freshman retention rates. Retention rates of Caucasians in the COT at ISU were similar to those of the national trends (Bowen et al., 2009). The research of Bowen et al. (2009) did not provide any retention rate information for foreign students; however, foreign students had a high retention rate in the COT at ISU. With higher enrollment of international students for the last two years of study data, retention rates were increasing while Asian American, Hispanic, Native American, and multiracial students were more prone to drop out. The others group pulled retention rates down; as a result, retention rates were stabilized at 87%. As demonstrated in Figure 8, foreign students had a retention rate of 95.49%, which was higher than the average retention rate of 87%. Students in the African American and others group had significantly lower retention rates of 81.57% and 72.16%respectively. Caucasian retention rates followed the same as for the COT as a whole at 86.78%.

Results of the study suggested that international students were more likely to complete a degree. The sample size was not sufficient to study the effects of Hispanics, Native Americans, Asian Americans, multiracial and those not reporting an ethnicity on retention rates; hence, all these students were grouped as members of the others group. As a group, the others are more prone to drop out prior to their degree completion. The female student sample size was not

sufficient to study the effect of gender on retention rates. Variables such as socioeconomic status and parental education were not recorded by the university; hence, the study of their effect on retention rates was not possible. Overall, the hypothesis was rejected based on the results of chi-square test analysis: there was a relationship between ethnicity and the retention rates for freshman in the COT for years 2008 through 2013.

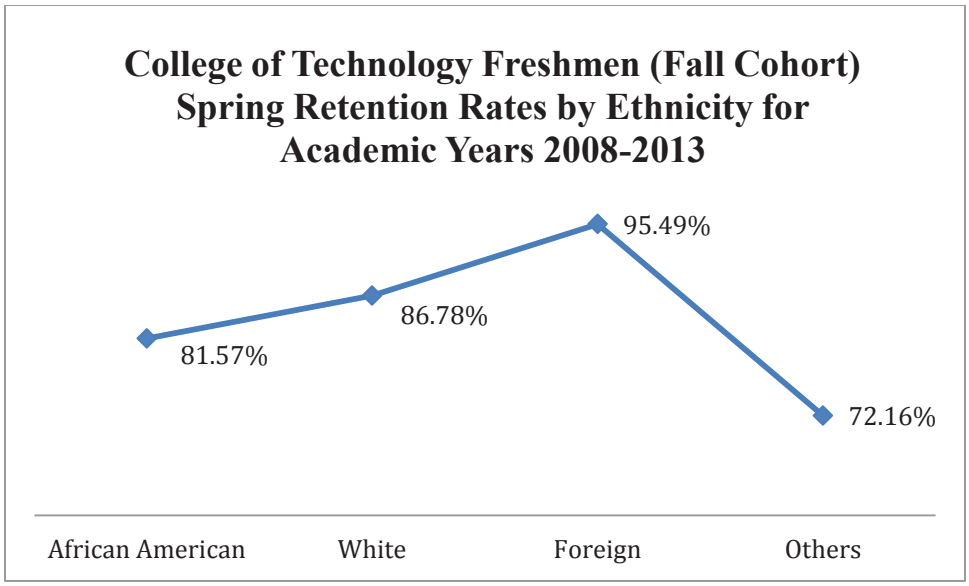


*Figure 8*. Percent of freshman retention rates by Ethnicity in the College of Technology for academic years 2008-2013.

High SAT/ACT scores were a significant indicator for higher retention rates; this finding was valid for students in the COT at ISU during the period under study. Students who had SAT scores of 899 and lower were more prone to drop out of school when compared to those who scored SAT scores of 899 and higher, and compared to those who had not reported. The majority of the students who had not reported SAT/ACT scores were foreign students. As demonstrated in Figure 9, the retention rate of students who held SAT scores of 899 and lower was 81.87%, which was lower than the COT average retention rate of 87%, while the retention rate of students who held SAT scores of 1100 and higher, 1000-1099, 900-999 and those who had not reported

were 87.18%, 86.52%, 86.69%, and 91.50% respectively. This finding confirmed what was found by Seidmen (2005) who noted that the retention rates for those universities which had admitted students with high SAT/ACT scores were higher than those universities that technically admitted everyone who had applied for admission. Therefore, the hypothesis was rejected based on the results of chi-square test analysis; there was a relationship between SAT/ACT scores and the retention rates for freshman in the COT for years 2008 through 2013.

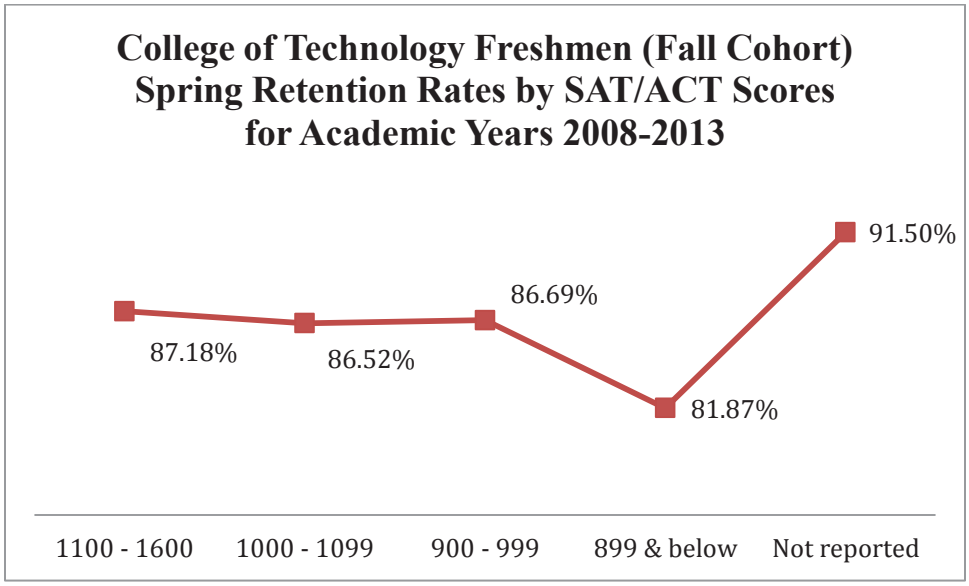


*Figure 9*. Percent of freshman retention rates by SAT/ACT scores in the College of Technology for academic years 2008-2013.

Researchers shared mixed opinions regarding curriculum and the impact of high school GPAs on the retention rates of undergraduate students. They believed that students graduating with an advanced high school curriculum tended to graduate with a baccalaureate degree when compared to those who graduate with high school core curriculum only. Essentially, they believed that the high school grades were a significant indicator for freshmen retention (Braustein et al., 2008); however, Seidman (2005) agreed that low GPA had a negative impact on student retention, but didn't agree that high GPA promised a continued enrollment. Retention

trends in the COT at ISU were similar to those of the national trends. As demonstrated in Figure 10, retention rates of students who earned a high school GPA of 3.50 or higher and 3.00-3.49 were 92.57% and 88.82% respectively, which were higher than the COT average retention rate of 87. Retention rate of students who scored a high school GPA of 2.50-2.99 and 2.49 and lower, or those who had not reported were 81.24% and 68.52% respectively, which were lower than the COT average retention rate of 87%. Data suggested that students who had a GPA of lower than 3.0 or those who had not reported their GPA were more prone to drop out of school by the end of their freshman fall semester. Hence the hypothesis was rejected based on the results of chi-square test analysis; there was a relationship between high school GPA and the retention rates for freshman in the COT for years 2008 through 2013.

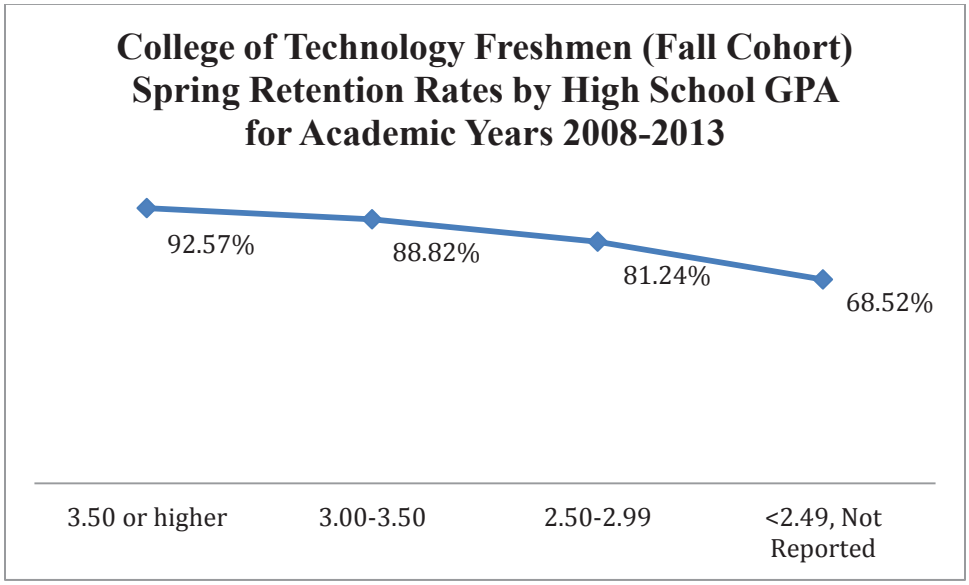


*Figure 10*. Percent of freshman retention rates by high school GPA in the College of Technology for academic years 2008-2013.

**Discussion of Findings for Question 3**

Research suggested that the retention rates were higher for high socioeconomic status students when compared to that of low socioeconomic status students (Brausnstein et al., 2008;

Cabrera et al, 1990; St John, 1989; St. John, 1990; St. John, 1991). ISU did not have records of students' socioeconomic status. As a result, it was not possible to study the impact of socioeconomic status on freshman retention rates in the COT at ISU. Research conducted by Riggert et al., (2006) suggested that in year 2006 approximately 80% of undergraduate students were employed to keep up with the costs of the school. Many students often cited financial problems as the primary reason for their departure from higher education (Riggert et al., 2006). Students in the COT at ISU also responded that they were worried about their finances and revealed that they might not continue their enrollment in the COT at ISU if they face financial problems. They also indicated their dissatisfaction regarding the help they had been receiving from the financial aid office of the university.

Parental education had been a good predictor for student success; a mother's education especially had a positive impact on student persistence (Seidman, 2005). The National Center for Education Statistics (2005) suggested that first generation students were at risk of dropping out of school before attaining a baccalaureate degree. However, studying the impact of parental education was not feasible at ISU as ISU had no records of parental education information.

A study conducted by Owen (2003) suggested that a positive correlation exists between the age of the student and the retention rate of students. The Owen study suggested the older group of students were more dedicated to attain a baccalaureate degree. However, age did not show any impact on freshman retention rates in the COT at ISU.

Marital status of students also impacted retention rates. Research suggested that married men were likely to graduate while married women were less likely to continue their enrollment in college (Bean, 1980; Tinto, 1987). ISU did not save the marital records of the students; hence

it was not possible to study the impact of marital status on freshman retention rates in the COT at ISU.

Survey results in this study revealed that students were highly self-motivated and committed to achieving their bachelor's degree; however, they also revealed intense dissatisfaction regarding the help and guidance being received from the student financial aid department. Many students were struggling to balance their academic workload along with their full time/part time workloads; the survey results also revealed that they were expecting help to understand and complete their homework. Most of the students were worried about their student debts being accumulated while they try to graduate as they receive minimal guidance and financial help from the university. A few students expressed dissatisfaction regarding the help received from the tutors. Students were intensely satisfied with the quality of teaching and were on the other hand dissatisfied with large class sizes. They also indicated that if quality of teaching depreciates, they will be greatly encouraged to consider the option of leaving the university.

Student commitment was a very strong significant indicator for high retention rates (Quarterman, 2008; Seidman, 2005; Tinto, 1987). Students also indicated poor advising as a reason for leaving the university (Siedman, 2005). Fortunately, students in the COT at ISU were highly satisfied with their advisors and the quality of teaching. The hypothesis was rejected based on the analysis of survey responses; there were few reasons that influenced students' motivation that may lead them to exit ISU before degree completion.

## Recommendations

In order to improve the retention rates for freshman students in the COT, the study suggested that students need guidance in completing homework, informational sessions

regarding funding, and the provision of English as second language classes (ESL) during the first semester for international students. In reviewing the retention rates by category, it would seem that setting minimum criteria in terms of SAT/ACT scores and high school GPAs for admission in the COT would contribute to higher retention rates. Pre-college factors do show a significant impact on retention rates. High school GPA and SAT/ACT scores have a significant impact on the retention rates of freshman students. Students with high school GPA of lower than 3.00 or SAT/ACT scores of lower than 899 were more prone to drop out by end of freshman fall semester. Admission guidelines for international students did not require them to attempt SAT/ACT tests. The impact of SAT/ACT scores may have been more significant if international students were also required to submit their SAT/ACT scores.

Improving retention rates for freshman students is very important as they reflect the four-year and six-year graduation rates, which in turn are tied with state funding of the university. Enrollment was on the rise for past three years in the study period. My data indicated that freshman student enrollments in the COT at ISU rose 188.05% as for years 2011 through 2013 when compared to that of 2008 through 2010. Enrollments based on ethnic groups of caucasians, African Americans, foreign, and others rose by 371.74%, 138.83%, 565.00% and 246.43% respectively, for years 2011 through 2013 when compared to that of 2008 through 2010. Enrollments based on gender rose by 407.69% and 167.31% for female students and male students, respectively. However, there was no sign of improvement in the retention rates as the average freshman retention rates for years 2008 through 2010 was 85% and for years 2011 through 2013 was 86%. Setting up minimum criteria for admission such as a minimum SAT/ACT scores, high school GPA, or a combination of both would help the COT to raise their standard of student acceptance and in turn it should help in raising the retention rates. This was

supported by significant chi-square test results. SAT/ACT scores were required for resident students, whereas non-resident aliens were not required to take SAT/ACT tests. International students were only required to take either the Test of English as Foreign Language (TOEFL) or the International English Language Testing System (IELTS) to be admitted at ISU. TOEFL or IELTS scores may not have been sufficient as many students had expressed in the survey that language was a barrier to understanding the classes, and they were lacking mathematical abilities. Mandating SAT/ACT scores would at least minimize the problem if not completely eliminating the language constraint for them to understand the class lectures as students with only the prerequisite knowledge and skills would be admitted. In the survey, a few students expressed that they were not aware of the tutoring until they approached their advisors for help. Sharing the information regarding tutoring assistance help in class with the students would help them manage time and coursework for out of class sessions. Help received from tutors will make students' academic lives manageable and will instigate interest towards the coursework.

## Implications for Future Research

This study exhibited constraints such as a very small female sample size, insufficient information regarding traditional and non-traditional students, and lack of parental educational details. There had been a rise of female student enrollment in the COT at ISU; however, the number of enrolled female students constitutes only about one-fourth of the total enrolled male student body. As a result, ferreting out a statistical significance was not feasible. While studying the impact of gender on retention rates, male student retention rates influenced the overall freshman student retention rates in the COT at ISU. Future studies may be conducted using a mixed-methods approach to study the impact of various factors such as ethnicity, SAT/ACT

scores, high school GPA, SES, and age on female student retention rates. The qualitative and quantitative analyses would provide more insights on the freshman female retention rates.

The university does not track students' employment status, marital status, and their parental education details. Future research can be continued by gathering these details as a part of demographic data. These details will provide more insight on the retention rates of freshman students in the COT at ISU. This would enable one to study the retention rates for traditional and non-traditional students. Future studies could revise and replicate this study using a different sample, in a different campus setting to study the hypotheses guiding the current research. The sample for this study was the freshman fall cohort and the retention rates were studied for freshmen for the fall to spring semesters. This study could be replicated to investigate the freshmen fall to sophomore fall retention rates as the study conducted by Bowen et al. (2009) suggested that more students drop out of school by the end of their freshman year. Seidman (2005) also suggested that gathering information from students during their freshman year helps colleges plan retention strategies and helps students to decide to continue their program of study. As demonstrated in Table 17, fall to fall retention rates in the COT at ISU also support findings from the research conducted by Bowen et al. (2009) and Seidmen (2005).

Table 17

*Freshmen Fall1 to Fall2 retention in the College of Technology at ISU by Original College from 2008 to 2012*

| Freshmen Fall Cohort Year | Freshmen Fall 2 Retention |
|---|---|
| 2008 | 66% |
| 2009 | 69% |
| 2010 | 65% |
| 2011 | 63% |
| 2012 | 70% |

## Summary

Seidman (2005) had come up with the formula for retention which was "Retention = Early $_{\text{Identification}}$ + (Early + Intensive + Continuous) $_{\text{Intervention}}$" (p. 296). This formula had a foundation laid by Tinto (1987, 1993). Identifying students who were prone to leave college prior to degree completion would help institutions design and implement strategies to minimize the factors that prompt them to exit college. Students leave college for a wide range of reasons; uncovering those reasons would help students choose to stay. Early identification of intent to leave would serve as an avenue for interventions to improve the retention rates. Pre-college factors help colleges to implement retention strategies right from the first day of the freshman year. Most students who drop out do so at the end of their first year and do not choose to return in their sophomore year. Early and intensive interventions help students decide to build a strong academic foundation and complete the degree. Students showing similar characteristics might be

grouped so that institutions could efficiently implement strategies to improve retention of those students.

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## APPENDIX A: SURVEY QUESTIONNAIRE

Choose one answer for the each of the following questions

1) Which of the following is the main reason for accepting a place at the university?
   a) Convenient location
   b) Suitable location
   c) Secure a career
   d) Achieve a degree
   e) Good course reputation
   f) Entry via clearing
   g) Desire to leave home

2) Who or what influenced you to attend the university?
   a) Self – motivation
   b) Family/peer group
   c) Lack of other options

3) What makes you feel good about attending the university?
   a) Knowledge acquisition
   b) Empowerment in the job market
   c) The congratulations of my family/peer group
   d) Doing something for my friends
   e) Meeting new friends

4) What makes you feel bad about attending the university?
   a) I have not yet got a job/role in society
   b) I have self-doubt about the likelihood of success
   c) The poor public perception of students
   d) Debt/Money worries
   e) Family/work demands

For the following questions, please indicate how satisfied or dissatisfied are you with your activities and life at the university?

5) Balance between your study and personal life
   a) Very Satisfied
   b) Satisfied
   c) Neither Satisfied or Dissatisfied
   d) Dissatisfied
   e) Very Dissatisfied

6) Desire to achieve academic success
   a) Very Satisfied
   b) Satisfied
   c) Neither Satisfied or Dissatisfied
   d) Dissatisfied
   e) Very Dissatisfied

7) Desire to secure good career prospects
   a) Very Satisfied
   b) Satisfied
   c) Neither Satisfied or Dissatisfied
   d) Dissatisfied
   e) Very Dissatisfied

8) Availability of learning resources
   a) Very Satisfied
   b) Satisfied
   c) Neither Satisfied or Dissatisfied
   d) Dissatisfied
   e) Very Dissatisfied

9) Society's views of students
   a) Very Satisfied
   b) Satisfied
   c) Neither Satisfied or Dissatisfied
   d) Dissatisfied
   e) Very Dissatisfied

10) Feeling stimulated to learn
    a) Very Satisfied
    b) Satisfied
    c) Neither Satisfied or Dissatisfied
    d) Dissatisfied
    e) Very Dissatisfied

11) Friendliness of teaching staff
    a) Very Satisfied
    b) Satisfied
    c) Neither Satisfied or Dissatisfied
    d) Dissatisfied
    e) Very Dissatisfied

12) Quality of feedback from my work
    a) Very Satisfied
    b) Satisfied
    c) Neither Satisfied or Dissatisfied
    d) Dissatisfied
    e) Very Dissatisfied

13) Intellectual challenge
    a) Very Satisfied
    b) Satisfied
    c) Neither Satisfied or Dissatisfied
    d) Dissatisfied
    e) Very Dissatisfied

14) Level of support provided by family/partner
    a) Very Satisfied
    b) Satisfied
    c) Neither Satisfied or Dissatisfied
    d) Dissatisfied
    e) Very Dissatisfied

15) Feeling able to cope with the workload
    a) Very Satisfied
    b) Satisfied
    c) Neither Satisfied or Dissatisfied
    d) Dissatisfied
    e) Very Dissatisfied

16) Friendliness of other students
    a) Very Satisfied
    b) Satisfied
    c) Neither Satisfied or Dissatisfied
    d) Dissatisfied
    e) Very Dissatisfied

17) High level of control over my own work
    a) Very Satisfied
    b) Satisfied
    c) Neither Satisfied or Dissatisfied
    d) Dissatisfied
    e) Very Dissatisfied

18) Physical conditions/learning environment
    a) Very Satisfied
    b) Satisfied
    c) Neither Satisfied or Dissatisfied
    d) Dissatisfied
    e) Very Dissatisfied

19) Feeling able to cope with College Baccalaureate degree level work
    a) Very Satisfied
    b) Satisfied
    c) Neither Satisfied or Dissatisfied
    d) Dissatisfied
    e) Very Dissatisfied

20) Feeling able to get financial advice
    a) Very Satisfied
    b) Satisfied
    c) Neither Satisfied or Dissatisfied
    d) Dissatisfied
    e) Very Dissatisfied

21) Level of support/university staff
    a) Very Satisfied
    b) Satisfied
    c) Neither Satisfied or Dissatisfied
    d) Dissatisfied
    e) Very Dissatisfied

22) Variety of assessment techniques
    a) Very Satisfied
    b) Satisfied
    c) Neither Satisfied or Dissatisfied
    d) Dissatisfied
    e) Very Dissatisfied

23) Feeling able to show initiative
    a) Very Satisfied
    b) Satisfied
    c) Neither Satisfied or Dissatisfied
    d) Dissatisfied
    e) Very Dissatisfied

24) Access to university social life
    a) Very Satisfied
    b) Satisfied
    c) Neither Satisfied or Dissatisfied
    d) Dissatisfied
    e) Very Dissatisfied

25) Variety of teaching techniques
    a) Very Satisfied
    b) Satisfied
    c) Neither Satisfied or Dissatisfied
    d) Dissatisfied
    e) Very Dissatisfied

26) Tutorials to discuss work
    a) Very Satisfied
    b) Satisfied
    c) Neither Satisfied or Dissatisfied
    d) Dissatisfied
    e) Very Dissatisfied

27) Feeling valued by teaching staff
    a) Very Satisfied
    b) Satisfied
    c) Neither Satisfied or Dissatisfied
    d) Dissatisfied
    e) Very Dissatisfied

28) Other students views of university life
    a) Very Satisfied
    b) Satisfied
    c) Neither Satisfied or Dissatisfied
    d) Dissatisfied
    e) Very Dissatisfied

29) Friendliness of non-teaching staff
    a) Very Satisfied
    b) Satisfied
    c) Neither Satisfied or Dissatisfied
    d) Dissatisfied
    e) Very Dissatisfied

30) Of the following factors which is the most likely one that would lead you to stay and attain a degree from this university.
   a) Chance to attain desired career/life progress
   b) Good self-confidence resulting from success
   c) Stimulating/interesting course
   d) Support from family/peer group
   e) Good teaching
   f) Quality of the learning environment
   g) Desire to act as a role model for others

31) Of the following factors which is the most likely one that would lead you to leave the university before attaining a degree.
   a) Debt/Money worries
   b) Poor teaching
   c) Not coping with the workload
   d) Family/work commitments
   e) Lack of self-confidence resulting from failure
   f) Poor stimulation/interest in course
   g) Travel Difficulties
   h) Alternative route to desired job/career
   i) Unfriendliness of other students

# APPENDIX B: LETTER OF REQUEST

**Susan Kiger**

**To:** Bhargavi Vemulapalli
**Subject:** RE: Request for Permission from Dr Rhodes

**From:** Christopher Rhodes [c.p.rhodes@bham.ac.uk]
**Sent:** Wednesday, September 26, 2012 8:59 AM
**To:** Bhargavi Vemulapalli
**Subject:** RE: Request for Permission from Dr Rhodes

Dear Bhargavi,

Thank you for your e-mail. I don't think you need my permission to create your own questionnaire based on my original paper – but if you want it – you have it. I hope this helps.

With all best wishes,

Chris

Dr. Christopher Rhodes
School of Education
University of Birmingham

Email: c.p.rhodes@bham.ac.uk

**From:** Bhargavi Vemulapalli [mailto:bvemulapall@sycamores.indstate.edu]
**Sent:** 26 September 2012 13:33
**To:** Christopher Rhodes
**Cc:** Thomas Bisschoff
**Subject:** Re: Request for Permission from Dr Rhodes

Dr Rhodes,

Appreciate your response. I do understand that you do not have any information about the questionnaire. Your published paper has tables which discuss the results of your survey conducted 10 years ago. I would like to use the contents of your survey result tables and adapt it to my questionnaire that I would like to create. I would like to use those contents as it has been a verified tool and your paper is been referred at least 37 times by various other authors. Our assessment advisor suggested me to have permission from author of the paper, so I can adapt few questions from your survey results table.

As the author of that published paper, all I need is your permission to use contents of your published paper. I did try to contact Professor Alan Nevill as well, but did not hear back from him.

I do apologize for the inconvenience I am causing you. I promise not to disturb you again. Please let me know if you can permit me to use your work in my thesis.

Once again I do apologize for the inconvenience and sincerely appreciate your time for writing me back. This means a lot to me.

Thanks
Bhargavi.

On Sep 26, 2012, at 6:05 AM, Christopher Rhodes wrote:

Dear Bhargavi,

You have previously contacted me. I could not provide a questionnaire for you – the work was done over 10 years ago at another university. What use of my questionnaire do you refer to? and what is it you want from me? I have copied in my current colleague Dr Bisschoff as he is unlikely to have much idea about work I did over 10 years ago.

With all best wishes,

Chris.

Dr. Christopher Rhodes
School of Education
University of Birmingham

Email: c.p.rhodes@bham.ac.uk

**From:** Thomas Bisschoff [mailto:t.c.bisschoff@bham.ac.uk]
**Sent:** 26 September 2012 10:11
**To:** Christopher Rhodes
**Subject:** FW: Request for Permission from Dr Rhodes

**From:** Bhargavi Vemulapalli [mailto:bvemulapall@sycamores.indstate.edu]
**Sent:** 24 September 2012 17:14
**To:** t.c.bisschoff@bham.ac.uk
**Subject:** Re: Request for Permission from Dr Rhodes

Dear Tom,

I apologize for contacting you frequently. I emailed Dr Rhodes regarding the permission for my thesis, as I would like to use few of his research components. I received an automated message from the Dr Rhodes that he will be out of country from Sep 28th to Oct 2nd.

I am also forwarding you the email that I sent to Dr Rhodes. It would be great if you can convey the message to Dr Rhodes. I need his approval to adapt his questionnaire components in my research work.

I do really appreciate your time and help.

Thanks
Bhargavi.

**From:** Bhargavi Vemulapalli
**Sent:** Thursday, September 20, 2012 9:15 PM
**To:** Christopher Rhodes
**Subject:** Re: Request for Permission

Dr Rhodes,

Based on your research work published in the journal paper, I would like to adapt the questionnaire for my thesis work, that you have used to collect the data. I am writing this to request for your approval to use your questionnaire.

It will be of a great help. I do appreciate it.

Thanks,
Bhargavi.

On Sep 12, 2012, at 6:10 AM, Christopher Rhodes wrote:

Dear Bhargavi,

Thank you for e-mail. I see you have also contacted my colleague Dr Tom Bisschoff and my former colleague Professor Alan Nevill. Unfortunately this work was done around 10 years ago at another University. I no longer have this information. If I had, you would be welcome to it. Sorry.

With all best wishes,

Chris.

Dr. Christopher Rhodes
School of Education
University of Birmingham

Email: c.p.rhodes@bham.ac.uk

**From:** Bhargavi Vemulapalli [mailto:bvemulapall@sycamores.indstate.edu]
**Sent:** 12 September 2012 04:17
**To:** c.p.rhodes@bham.ac.uk
**Subject:** HELP!! - Questionnaire

Dr Rhodes,

I am Bhargavi Vemulapalli. I am a doctoral student, working on my dissertation in Indiana State University, Terre Haute, IN, USA.

Retention of Students in College of technology is my dissertation topic. I read your paper "Academic and Social integration in Higher Education". The survey questionnaire that you have used would be really helpful for me.