

DETERMINING NURSING PROGRAM SUCCESS BETWEEN STUDENTS WHO ENTER
COLLEGE PROGRAM-READY AND THOSE NOT PROGRAM-READY AND SUCCESS ON THE
NCLEX-RN EXAM

by

David Peruski

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David Peruski

Has been approved
July 2016

APPROVED:

Sandra J Balkema, PhD

Committee Chair

Leonard Johnson, PhD

Committee Member

Wanda W. Zenzen, DNP, FNP-C

Committee Member

William Michael Wood, MA, MApSt

Committee Member

Dissertation Committee

ACCEPTED:

Roberta C. Teahen, PhD, Director

Community College Leadership Program

ABSTRACT

College completion and developmental education have been in the national spotlight and efforts to increase the number of graduates remains a priority. Within nursing education, attrition from nursing programs has been problematic, and impacts completion rates, and workforce supply. Program readiness in the area of reading, writing, and Math may impact completion. In this study the researcher used an *ex post facto* design to determine if program readiness had an impact on nursing program completion. The study included 453 nursing students from Fall 2011 through Winter 2014 at a community college in Michigan. The study identified that program readiness did statistically impact program completion and these findings were consistent in reading, writing, and Math. Completion rates among minorities and men showed no difference in completion when compared to Caucasian and female students. Students who completed the nursing program, regardless of program readiness, successfully passed the NCLEX-RN exam equally. Students who were not program-ready did not complete indicating that other factors like intrinsic motivation or “grit” play a part in completion. Efforts to enhance academic preparedness, providing advising and orientation, and increased support for minorities and men in nursing may positively impact completion. Further research that focuses on pre-program GPA, non-academic factors, and enrollment patterns and the impact on program completion will be beneficial.

DEDICATION

This dissertation is dedicated to my family and especially to my wife, Sandy, who has always supported me in all of my endeavors. She has always encouraged me to pursue what I have wanted to do and has been there by my side without fail. I acknowledge her for her unfailing love. My children, Amber, Nicholas, and Emily, have been so inspirational to me. Each of them brings me happiness seeing them grow into talented young adults who have so much to offer. As this period comes to a close I look forward to the future and being able to continue to support my family.

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TABLE OF CONTENTS

	page
Abstract.....	i
Dedication.....	ii
Acknowledgements.....	iii
List of Tables.....	vii
Chapter 1: Introduction	1
Introduction	1
Effect of Developmental Education	2
Completion Rates, Retention, and Attrition	5
Efforts to Improve Retention in Healthcare Programs	6
Healthcare Careers and the Community College.....	8
Understanding the Issue.....	8
The Nursing Program at Delta College.....	10
Delta College’s Retention Efforts	11
Continuing Attrition Problems	13
Efforts to Address Attrition	14
Introduction to this Study	16
Research Questions.....	17
Definitions.....	18
Summary	19
Chapter 2: Review of Literature	21
Introduction	21
Conceptual Frameworks on Retention	22
Completion Considerations: Completion Agenda	25
Completion Considerations: Community College Mission and Open Access.....	28
Completion Considerations: Unprepared Students and Developmental Education	31
Completion Considerations: Improving Retention and Persistence	34
Completion Considerations: Pathways and Academic Performance	35
Completion Considerations: Minorities	36
Completion Considerations: Standardized Testing and Predicting Student Success ...	40
Completion and Occupational Programs	43

Nursing Program Completion Considerations	44
Nursing Program Success Indicators.....	47
Summary	49
Chapter 3: Research Design and Methodology	52
Purpose of the Study.....	52
Research Questions.....	52
Hypotheses.....	53
Assumptions	54
Limitations and Delimitations	54
Research Design.....	57
Threats to Validity and Reliability.....	59
Exclusions.....	61
Sampling.....	62
Data Collection.....	63
Data Analysis.....	64
Discussion and Conclusion.....	65
Chapter 4: Results and Findings.....	68
Introduction	68
Descriptive Statistics Results.....	68
Research Question #1: Findings and Results	80
Research Question #1a: Findings and Results	81
Research Question #1b: Findings and Results	82
Research Question #1c: Findings and Results	83
Research Question #2a: Findings and Results	84
Research Question #2b: Findings and Results	85
Research Question #3: Findings and Results	86
Conclusion / Summary	88
Chapter 5: Analysis of Findings.....	90
Introduction	90
Analysis of Research Question #1.....	91
Analysis of Research Question #1a.....	92
Analysis of Research Question #1b.....	93
Analysis of Research Question #1c.....	94
Analysis of Research Question #2a.....	96
Analysis of Research Question #2b.....	97
Analysis of Research Question #3.....	98

Summary / Conclusion	99
Chapter 6: Conclusions and Implications	101
Introduction	101
Addressing Program Readiness.....	102
Addressing Minorities	106
Addressing Gender.....	107
Addressing NCLEX-RN Examination	109
Recommendations	110
Recommendation #1: Decreasing Attrition	110
Recommendation #2: Decrease Repeating Courses or Increasing Selective Admissions Criteria	111
Recommendation #3: Required Advising and Orientation Sessions	112
Recommendation #4: Reevaluate Part-time Completion Plan.....	113
Recommendation #5: Increase Support for Minority and Male Students	113
Recommendation #6: Evaluate Math Requirement.....	114
Further Research.....	114
Area for Future Research #1.....	115
Area for Future Research #2.....	115
Area for Future Research #3.....	115
Area for Future Research #4.....	116
Conclusions and Implications.....	116
References.....	118
Appendix A: Z test Results for Research questions	128
Appendix B: Research Approvals	137

LIST OF TABLES

	Page
Table 1: <i>Enrollment by Program Track and Semester</i>	69
Table 2: <i>Program Track by Student Count and Percentage of Total Sample Population</i> .	69
Table 3: <i>Sample Population by Gender</i>	69
Table 4: <i>Sample Population as Caucasian or Minority</i>	70
Table 5: <i>Program Completion by Program Track</i>	70
Table 6: <i>Program Readiness by Program Track</i>	71
Table 7: <i>Comparing Program Readiness and Completion</i>	71
Table 8: <i>Comparing Program Readiness and Completion as a Percentage of the Total Sample Population</i>	72
Table 9: <i>Program Completion Compared to Program Readiness by Program Track</i>	72
Table 10: <i>Degree Completion by Gender and Program Readiness</i>	73
Table 11: <i>Program Completion by Caucasian/Minority Identification and Program Readiness</i>	74
Table 12: <i>NCLEX-RN Exam Results by Program Track</i>	75
Table 13: <i>NCLEX-RN Exam Results Based on Program Readiness</i>	75
Table 14: <i>Determination of Degree Completion Based on Math Readiness</i>	76
Table 15: <i>Comparing Math Readiness and Degree Completion as a Percentage of the Total Sample Population by Program Readiness</i>	77
Table 16: <i>Determination of Degree Completion Based on Reading Readiness</i>	78
Table 17: <i>Comparing Reading Readiness and Degree Completion as a Percentage of the Total Sample Population by Program Readiness</i>	78
Table 18: <i>Determination of Degree Completion Based on Writing Readiness</i>	79
Table 19: <i>Comparing Writing Readiness and Degree Completion as a Percentage of the Total Sample Population by Program Readiness</i>	80
Table 20: <i>Comparison of Program Readiness to Program Completion</i>	81
Table 21: <i>Comparison of Reading Readiness to Program Completion</i>	82

Table 22: <i>Comparison of Writing Readiness to Program Completion</i>	83
Table 23: <i>Comparison of Math Readiness to Program Completion</i>	84
Table 24: <i>Comparison of Program Completion by Racial Identification of Caucasian or Minority</i>	85
Table 25: <i>Comparison of Program Completion by Gender Identification</i>	86
Table 26: <i>Comparison of Program Readiness and NCLEX-RN Exam Results</i>	87

CHAPTER 1: INTRODUCTION

INTRODUCTION

The postsecondary educational system has been under scrutiny for increasing costs, less than stellar completion rates, and the inability for graduates to find gainful employment (Schneider & Yin, 2012). Nursing programs at many community colleges and universities across the United States are faced with high rates of attrition, inadequate prerequisite course preparation, poor study behaviors, and perceived changes in rigor within the nursing curriculum (Igbo, Straker, Landson, Symes, Bernard, Hughes, & Carroll, 2011). The retention of nursing students in these programs is critical as the need for registered nurses remains strong and, along with an aging population, the demand for nurses is expected to increase by 19% over the next five years (HRSA, 2013, US Bureau of Labor Statistics, 2013). The majority of nursing students graduate from associate degree programs (HRSA, 2013), and while the community college's approach of open access eliminates barriers to admission it may in turn affect college completion (American Association of Community Colleges, 2012) especially for minorities (Bragg & Durham, 2012). President Obama set a goal to once again have America be the leader in college graduates by 2020. Community colleges will play a significant part in that process. The Bureau of Labor Statistics (2012) indicates that the

areas expected to see the greatest amount of growth through 2020 are in healthcare, retail, and service industries.

The completion agenda is a complex issue since many variables are involved. Student motivation and preparation for college are major factors, as is ensuring that the students are selecting careers they are interested in or have the propensity for. Additionally, many students do not have the financial ability or family support to encourage them to stay in college and complete a degree. Community colleges have long been seen as institutions that offer opportunities for students seeking higher education, without creating obstacles often incurred at four-year institutions. Focused on occupational education, workforce training, and transfer preparation, the community college offers opportunities for a wide array of learners. Community colleges tout open access to all with an opportunity to further one's education and improve overall socio-economic status.

This study examined students enrolled in Delta College's nursing program to determine if program readiness impacts program completion and success on the NCLEX-RN exam. The study also sought to determine whether there were differences in completion rates by gender or among minorities.

EFFECT OF DEVELOPMENTAL EDUCATION

The need for nurses will remain strong and community colleges will continue to play a key part in the preparation of registered nurses. Since many students arrive at community colleges underprepared, it is important to ensure that processes are in place

to support their success (Adams, 2010). Bailey, Jaggars, and Jenkins (2015) recommend that students be provided a clear pathway to success that supports a strong advising approach and placement into college-level courses by completing remediation in an accelerated manner.

Students who come to college underprepared are at greater risk of not completing college, especially if they encounter barriers to completing developmental coursework (Feldman & Zimble, 2012). Community colleges may or may not require students to have a high school diploma in order to attend college. In order to establish a certain academic standard, students must take and achieve certain scores on standardized and normed exams, such as the American College Test (ACT) or Computer-Adaptive Placement Assessment and Support System (COMPASS), which provide an assessment of the student's ability in reading, writing, and Math. Historically, community colleges have had to face the fact that up to 60% of the student population do not demonstrate college readiness in at least one of these areas (Bailey, 2009a). Students who present with deficiencies in these areas usually must complete additional course work before being able to take college-level courses. The general term used for foundational education in the areas of reading, writing, and Math when students are not deemed college ready is developmental education.

Developmental education is focused on raising the student's aptitude in the core areas of reading, writing, and Math. Students should have learned this foundational information in high school, and, as a result, developmental education is not considered part of the college curriculum. When students are required to take developmental

education courses to reach college-ready levels, they may be deterred from progressing in college and, thus, may not attain a certificate or degree (Feldman & Zimbler, 2012).

Developmental education has long been discussed and evaluated as to its value in supporting student success. Developmental education provides a foundation in the areas of reading, writing, and Math so that students can advance their level of education. However, when these milestones cannot be reached, then students have additional barriers to overcome. Developmental education can many times add an entire year onto a student's college experience, which can lead to students becoming frustrated and thus not continuing in college (Bailey, 2009a).

In an effort to minimize the time students must invest in developmental education, colleges have examined various approaches to help students reach particular educational outcomes in a shortened period of time. By getting students through the developmental sequence in an orderly and timely fashion, colleges can then have students continue on in their program of study and take courses that result in college credit (Feldman & Zimbler, 2012).

In recent years, the expense associated with developmental education and the low persistence rates seen with these students have called the effectiveness of developmental education into question. Additionally, others feel, since developmental courses are not college-level courses, that funding should be cut or eliminated, and that high schools be held accountable for students to reach particular levels in reading, writing, and Math (Romano, 2011).

COMPLETION RATES, RETENTION, AND ATTRITION

Colleges have long been trying to improve program completion rates and decrease attrition. One method to address this is to have eligible students apply for and then be selected into specific programs. When selecting students based on criteria, colleges are selecting students who are hopefully prepared for the rigors of the program, to see it through to completion, and be successful in completing any type of exit examination that establishes minimum competency. In the past, community colleges shied away from selective admission processes because these policies did not uphold the philosophical value of open access. However, cohort attrition, increasing expenses in providing instructional support, and low rates of completion have resulted in colleges evaluating past beliefs related to open access. Colleges now view completion and reducing attrition as attributes that support the community college mission; thus, requiring changes in the perspective and process by which students may be selected into “limited enrollment” programs (Adams, 2010; American Association of Community Colleges, 2012; Schneider & Yin, 2012).

Some factors that affect retention and completion include minority and socioeconomic status. Students of lower socioeconomic status and minorities are more likely to come to college underprepared than their peers which can negatively impact completion (Fike & Fike, 2008). These findings are important since nursing is seen as a profession that provides an opportunity for stable incomes, and affords individuals an improvement in their socioeconomic status (Belfield & Bailey, 2011). Recent efforts have also been aimed at increasing the number of minorities within the profession

because patients respond more positively when their nurses are representative of themselves (Igbo et al., 2011, Sutherland, Hamilton & Goodman, 2007).

While persistence and retention are important topics within higher education and have been studied repeatedly yielding interventions to positively impact college completion, no one approach has made significant gains in this area. Researchers, including Tinto (1975), argue that retention has both a social and academic component that needs to be integrated. Moss and Young (1995) reported that the student's level of integration and faculty interaction impacted persistence. While Karp and Bork (2012) found that specific academic habits, cultural know-how, managing multiple roles, and help-seeking behaviors made a positive impact. Significant challenges remain for low income, part-time, commuter students, and men who are at greater risk for not completing college (Tinto, 2012; Perrakis, 2008). Thus nursing students who move through the program together may have a greater sense of belonging but may still have academic challenges that threaten their completion goal as well as situational factors which impact their integration and completion at college.

EFFORTS TO IMPROVE RETENTION IN HEALTHCARE PROGRAMS

In order to decrease attrition, especially with low income and minority students, specific criteria that have been demonstrated to have an impact must be identified. These criteria will help to prepare students to meet certain standards so they are program-ready. Standardized exams and grade point averages have been helpful in determining a certain level of program readiness. Nursing programs have also

established requirements that are meant to support student success, but it is not clear if they have an impact on attrition. To become program-ready, students may have to take developmental coursework. Peters (2010) found that students who took developmental courses did complete the nursing program and passed the NCLEX-RN, and Pritchard (2010) found that COMPASS reading scores correlated with program completion.

In healthcare programs, the students typically complete prerequisite coursework before entering the clinical portion of the program or participate in a competitive process for selection into the program. In many cases, if students fail more than one course within the program, they can no longer continue within that program. Since health curricula have very specific programs of study, generally a student cannot attain a degree in another area easily without investing considerable time and effort in additional coursework. This can lead to feelings of failure and defeat and the student may never complete a degree if they fail their program of study.

Students make a significant commitment financially to obtain their degree. The inability to complete that degree and then not be gainfully employed leaves the student financially burdened and may result in default of their student financial aid. Colleges understand that, since many factors influence why students may fail a course, efforts to support students through their educational attainment should be in place. Many community colleges have early identification programs in place that allow faculty to report students who miss class to see if there is something that can be done to help them so they complete the course.

HEALTHCARE CAREERS AND THE COMMUNITY COLLEGE

Healthcare offers many job opportunities, from entry-level positions that require little or no education, to positions that are focused on research and go beyond post-doctorate level preparation. Healthcare has also been viewed as a “recession-proof” industry, meaning that jobs remain plentiful even in tough economic times (Stepchew, 2013). Because of the multiple entry points into healthcare and to its resilience during prolonged recessions, many individuals consider healthcare a viable option for employment.

Students making career choices may not always be making fully informed decisions when open access and multiple employment opportunities present themselves related to healthcare. Some people may be choosing a career option so they can get a job but do not fully understand the demands of the profession. Students choosing a career in healthcare do not always seek out career advising and counseling to see if they are properly suited for the profession. All of these factors can affect the student’s success.

UNDERSTANDING THE ISSUE

At the present time, while there is not an immediate critical shortage of nurses, the demand for nurses remains strong especially in light of the fact that retirements and an aging population will create additional positions. The last nursing shortage between 2005 and 2009 left employers, colleges, and universities scrambling to educate enough nurses for the demand in the workforce (American Association of Colleges of Nursing,

2014). This resulted in colleges and universities increasing their capacities in a reactive versus a proactive mode.

Colleges also anticipate that there will be a shortage of nursing faculty in the next several years, since the current average age of a faculty member is 55 years old (American Association of Colleges on Nursing, 2014). Because a critical need for nurses will once again return in a few years, it would be prudent to look at factors that will help retention of nursing students so that the upcoming need can be met and students entering a program of study will be more likely to complete.

Regardless of the process used for admission into the nursing program, open enrollment or a selective process, nursing programs are monitored for standards compliance through their respective State Board of Nursing (SBON). If a nursing program does not meet the appropriate standards defined by the State Board of Nursing, the college is reviewed and a plan of action must be initiated. If the program cannot meet the expected outcomes, the program is closed. Most nursing programs also seek national accreditation through the Accreditation Commission for Education in Nursing (ACEN) or the Commission on College Nursing Education (CCNE). A college not in compliance with established standards cannot receive accreditation. All nursing programs are considered “limited enrollment” because the State Board of Nursing regulates the number of students who can be admitted into the program. Since admission to nursing programs is regulated and compliance to standards is critical, attrition within nursing programs is a concern, as many times those seats cannot be

filled with other nursing students. The inability to replace a vacated seat decreases the number of graduates.

THE NURSING PROGRAM AT DELTA COLLEGE

Delta College began offering a degree track that led to becoming a registered nurse in 1964. The registered nurse program became nationally accredited in 1968 through the National League for Nursing Accreditation Commission now called the Accreditation Commission for Education in Nursing (ACEN). In addition to the registered nurse program, students may also complete coursework to become either a practical nurse or a nursing assistant. The registered nurse program has three tracks. Students are able to become registered nurses by completing the Full-time, Part-time, or Transition track. When students enter the clinical component of the registered nurse program, they complete the remainder of the program in the Full-time track over four semesters, with students attending in Fall and Winter semesters. They can complete in the Part-time track over seven semesters attending year around, or if they are a licensed practical nurse or paramedic, they can complete the Transition track and finish in four semesters, attending year around. The Full-time track admits 60 students into the program each Fall and Winter semester. The Part-time track admits 30 students into the program each Fall semester, and the Transition track admits 30 students each Winter semester.

DELTA COLLEGE'S RETENTION EFFORTS

In an effort to minimize attrition and thus improve graduation rates, Delta College has established several criteria that students must meet before entering the clinical portion of the nursing program. At the present time, the students who are admitted into the nursing program must successfully complete core prerequisite coursework that consists of several subjects. They must successfully complete the following core prerequisite courses with a "B" or better:

- English Composition I
- Anatomy & Physiology I
- Anatomy & Physiology II
- Pharmacology

The following core prerequisite courses must be completed with a "C" or better:

- Microbiology
- English Composition II
- Math for Allied Health
- Healthcare Ethics
- Nutrition

Once these core prerequisite courses are completed and an overall grade point average (GPA) of 2.5 or higher is attained in these core courses, the student can request entry into the nursing program.

The following general education courses must be completed with a "C" or better and can be completed any time before graduating from the college:

- Psychology
- Sociology
- Political Science

A student obtains entry into the nursing program once the core prerequisite courses are completed. Generally there is a wait time to enter the program, since more students are eligible to enter the program than the available openings. Students are maintained on a “validation list” that notes what semester they completed their core prerequisite coursework, and students enter the program based on that semester of validation. This validation list allows students to be admitted in an orderly sequential fashion.

During an evaluation process completed in 2010 as part of a program review, several curricular changes were made adding minimum grades to key courses. First, it was found that the student’s grade in Anatomy and Physiology was an indicator of success within the nursing program. Based on this finding, the program now requires students to obtain a “B” or better in that course in order to enter in the program. Second, it was also determined that students must have the ability to read and write well as practicing nurses, and thus the program now requires a “B” in Composition I. In addition, because much a nurse’s position is related to the administration of medications, a student must also earn a “B” or better in Pharmacology.

CONTINUING ATTRITION PROBLEMS

The nursing program continues to have attrition. This attrition is multi-factorial. Some of the attrition is related to personal situations that develop during the course of the program. However, much of the attrition is due to poor academic performance in the didactic or clinical setting. In the didactic portion of the course, the student must achieve an overall score of 76.5% on examinations in order to pass the course. Failure in the clinical setting is generally due to performance concerns but is often directly related to the student's inability to think critically through a problem situation. If these standards are not met, then the student fails the course. Students have one chance to repeat a course within the program. A second failure at any point in the program prevents the student from completing the nursing program.

Student success is important in any program, but when the number of attempts within a program is limited, this can have a negative impact on program completion. Attrition in nursing programs has been evaluated for decades in an effort to increase the number of graduates, especially in times of nursing shortages. Determining student success models that impact attrition are very complicated.

Any time there is attrition within the nursing program, particular issues for students, the program, and the college arise. For students, attrition is problematic since they have invested in a number of courses that are most likely specific to the nursing program. When students must stop out of the nursing program because of a course failure, they may elect to drop out of college, or students may be unable to continue if they have already had a prior failure within the program. These situations leave

students unable to complete a degree, and they may have limited transfer options to other colleges. The students have incurred a financial impact as well, and they are not able to complete the degree that they initially had hoped would lead to employment. The inability to demonstrate any degree completion becomes especially frustrating as they do not have an employable skill and have incurred debt.

From a program perspective, attrition can be an indicator of overall program quality. Attrition is reported to both state and national agencies. Programs with low attrition and high completion rates potentially can serve as models, so their efforts in improving completion can be replicated in other programs. However, while attrition is important to control, it is also important to ensure that students who complete the program pass the NCLEX-RN exam successfully, as it is not possible to practice as a registered nurse until the exam has been passed.

From a college perspective, when there is attrition from a limited enrollment program, this results in cohorts moving forward that have open capacity and seats that cannot be filled. In addition to impacting completion, these open seats also result in a loss of revenue and generated credit hours. Attrition has a significant impact for multiple reasons; thus, addressing the issue of attrition is important from a student success and completion agenda, as well as from an economic perspective.

EFFORTS TO ADDRESS ATTRITION

Since attrition is multi-factorial, colleges will most likely never eliminate it completely; however, by identifying and evaluating those aspects that have the most

significant impact, colleges can significantly reduce attrition. The concept of program readiness, as determined by the completion of prerequisite courses and the attainment of specific ACT or COMPASS scores, must also be evaluated. All of the courses required for the nursing program now have required reading, writing, and Math levels. These reading, writing, and Math levels must be obtained through standardized tests such as the ACT or COMPASS, or by the students taking developmental coursework that eventually places them at the appropriate required program levels. Students who take a standardized placement exam, such as the ACT, and achieve appropriate college readiness scores are considered program-ready because they meet the minimum reading, writing, and Math scores needed to take all of the college-level courses required for the nursing program.

Delta College has established that the college-level readiness score for English is an ACT of 20 or greater and a Math ACT score of 19 or greater. If students do not achieve the appropriate college readiness scores through the ACT, then they must take the COMPASS exam and achieve the appropriate scores required by a specific program.

Delta's Nursing Program has established that a student must have the following

COMPASS scores to be considered program-ready:

- Reading score of 81 or greater
- Writing score of 70 or greater and
- Elementary Algebra Math score of 13 or greater

Students are allowed to retest to obtain a higher score in any specific area should they not achieve the minimum score needed; however, they cannot retest more

than three times in one year. If students cannot achieve a COMPASS score required by their program, then they are not considered program-ready, and they must complete some level of developmental education. Adding to the complicating factors, students can be underprepared in one or more areas. Depending on their areas of underpreparedness, students may have one or multiple semesters of required developmental education that they must complete before taking college-level coursework that will apply to the nursing program.

INTRODUCTION TO THIS STUDY

Since developmental education programming is controversial in relation to its impact on college completion, these courses may also have an impact on nursing program completion. For this reason, this study evaluated students who entered the nursing program and came to college program-ready, without any need to take developmental education courses in reading, writing, or Math. This study also evaluated students who entered the nursing program but were not program-ready and needed to take developmental education courses. Students, regardless of their program readiness status, must complete prerequisite courses required for the program to attain a certain level of entry level competency to enable them to complete the program successfully. Because a registered nurse must have a license to practice nursing and must pass the NCLEX-RN exam, it is important to see if there are any differences between students who come to the college program-ready versus those who must take developmental coursework to become program-ready.

To address attrition in a more proactive manner and to maintain an open enrollment process, COMPASS scores in reading, writing, and Math may also give an indication of program readiness. Determining if a student who comes to college program-ready has greater success within the nursing program can provide valuable data in addressing attrition and program completion.

RESEARCH QUESTIONS

In an effort to examine the above criteria and their relationship to student success in the Delta College nursing program, the following research questions were developed.

1. Do nursing students who enter college program-ready in reading, writing, and Math complete the nursing program at a significantly greater rate than students who are not program-ready in any area of reading, writing, or Math at the time they enter college?
 - a. Do students who enter college program-ready in reading complete the nursing program at a significantly greater rate than students who are not program-ready in reading?
 - b. Do students who enter college program-ready in writing complete the nursing program at a significantly greater rate than students who are not program-ready in writing?
 - c. Do students who enter college program-ready in Math complete the nursing program at a significantly greater rate than students who are not program-ready in reading?
2. Do statistical differences in program completion exist among racial groups or by gender?
 - a. Is there a difference in program completion between Caucasians and minorities?
 - b. Is there a difference in program completion between males and females?

3. Do nursing students who enter college program-ready in reading, writing, and Math pass the NCLEX-RN exam at a significantly greater rate than students who are not program-ready in any area of reading, writing, or Math at the time they enter college?

DEFINITIONS

To ensure understanding of this research and its results, the following abbreviations and terms have been defined.

Associate Degree in Nursing (ADN): The degree earned upon completion of the nursing program at a community college.

Attrition: “A decrease in student enrollment at the individual, institution, or system level” (Hirschy, Bremer, & Castellano, 2011).

Completion: “Focuses on students’ attainment of a degree or other credential” (Hirschy, Bremer, & Castellano, 2011).

Computer Adaptive Placement Assessment and Support System (COMPASS): “A comprehensive assessment...for course placement and diagnostic testing...providing a high level of assessment accuracy...in reading, writing, and Mathematics” (ACT, 2012).

Dropout: “Formal or informal withdrawal and reflects a situation when a student perceives their leaving the institution as a failure” (Hirschy, Bremer, & Castellano, 2011).

National Council Licensure Examination for Registered Nursing (NCLEX-RN): “Designed to test knowledge, skills, and abilities essential to the safe and effective practice of nursing at the entry level” (NCSBN Examinations, 2016).

Nontraditional Student: A student over the age of 24 (Attewell, Heil & Reisel, 2011).

Persistence: “Students maintaining or completing their enrollment at any postsecondary institution” (Hirschy, Bremer, & Castellano, 2011).

Program-ready: Establishes that the student has met the developmental skills in reading, writing, and Mathematics to progress on to take college-level courses for the nursing program.

Retention: “Institution’s intent to keep students enrolled from one term of study to the next” (Hirschy, Bremer, & Castellano, 2011).

Stop out: “Formal or informal withdrawal, withdrawal with the intent of reenrolling at a later time, or decision not to reenroll” (Hirschy, Bremer, & Castellano, 2011).

Success: “The achievement of an educational goal” (Hirschy, Bremer, & Castellano, 2011).

Underprepared: Students who do not meet college-level readiness standards based on a standardized exam like ACT or COMPASS.

SUMMARY

Nursing is a profession that has seen significant workforce shortages and continues to have a demand for new nurses. Nursing programs, because of the extensive required clinical and laboratory time, are high cost programs for a college. Nursing programs have struggled with issues of high attrition that negatively impact student completion and revenue for the college if a student cannot continue. By evaluating if program readiness has any impact on program completion, program administrators can suggest interventions and then evaluate them to see if they have any impact on student success. The ability to garner new information and see if it makes a

significant impact on student learning has the potential to result in positive change which can impact student retention and completion rates.

This research study looked at program readiness and compared program-ready students with not program-ready students to see if their preparation impacted program completion or their ability to pass the NCLEX-RN exam. Additionally, race and gender differences within the study population were evaluated to determine if program completion rates were significant within any of these groups. Finally, this study examined whether reading, writing, and/or Math readiness had any impact on program completion.

In the following chapters, the review of literature examines previous studies of the nursing profession and nursing programs, including the importance of racial and gender diversity in nursing and their effect on program completion or attrition. Also discussed are research studies related to student retention, the impact that program readiness and developmental education may have on student persistence, and the effect of standardized exams on academic placement. In Chapter 3, the research design and methodology for this study are discussed. Chapter 4 presents the findings of the data gathered, and Chapter 5 presents the data analysis and findings. In Chapter 6, the conclusions and implications are discussed, and recommendations are presented.

CHAPTER 2: REVIEW OF LITERATURE

INTRODUCTION

Community colleges offer students the opportunity to attend college who may otherwise not be able to. The community college's approach to open access eliminates barriers to admission but may make it more difficult to complete college (American Association of Community Colleges, 2012). Community colleges provide a variety of services to their region including occupational education, workforce training, and coursework that allow for transfer to four-year colleges. Though community colleges offer valuable opportunities, the postsecondary educational system has been under scrutiny for increasing costs, less than stellar completion rates and the inability to find gainful employment (Schneider & Yin, 2012).

Nursing programs at many community colleges and universities across the United States are faced with high rates of attrition, inadequate prerequisite course preparation, poor study behaviors, and underestimates of the rigor of the nursing curriculum (Igbo et al., 2011). The retention of nursing students is critical as the need for registered nurses remains strong and along with an aging population the demand for nurses is expected to increase by 19% (HRSA, 2013, US Bureau of Labor Statistics, 2013). Community colleges play a large part in preparing registered nurses since the majority still graduate from associate degree programs (HRSA, 2013). Many students arrive at

community colleges underprepared; thus, it is important to ensure that processes are in place to support their success (Adams, 2010). Bailey, Jaggars, and Jenkins (2015) recommend a strong advising approach, providing a clear pathway to success and placement into college-level courses through completion of remediation in an accelerated manner.

Students who come to college underprepared are at greater risk of not completing college, especially if they encounter barriers to completing developmental coursework (Feldman & Zimble, 2012). Students of lower socioeconomic status and minorities are more likely to come to college underprepared than their peers (Fike & Fike, 2008). These findings are important since nursing is seen as a profession that provides an opportunity for stable income that affords individuals an improvement in their socioeconomic status (Belfield & Bailey, 2011). Efforts to increase the number of minorities within the nursing profession are also important, since patient care can be impacted positively and significantly when the nurses are representative of the patients themselves (Igbo et al., 2011; Sutherland, Hamilton, & Goodman, 2007).

CONCEPTUAL FRAMEWORKS ON RETENTION

Multiple theoretical frameworks of persistence and retention exist. Tinto (1975) focused on dropouts from higher education from the viewpoint of being voluntary or because of academic failure. Students who successfully connect with both the social and academic environment of the institution are more likely to be retained. Factors impacting retention are complex, integrating individual attributes, precollege

experiences, and socioeconomic backgrounds. Factors from both an external and internal locus of control determine if a student persists. Students' level of commitment to complete a college education will determine in large part if they will persist. Intellectual development and recognizing the value of knowledge promotes persistence. Behaviors within the social realm, however, can either help or deter continuation and in a large part are dependent on the student's commitment with the institution (Tinto, 1975).

The ability of the college student to integrate into college is based on the process of socialization that occurs both formally and informally, and is based on socially understood behaviors. Karp and Bork (2012) identified four behaviors of successful community college students.

1. Academic Habits
 - a. Manage workflow
 - b. Organize time
 - c. Note-taking
 - d. Use resources or "tools of the trade"
2. Cultural Know-how
 - a. Understand and adhere to institutional norms
 - b. Engage in collegiate discourse
 - c. Demonstrate respect and commitment
 - d. Less forgiving — adhere to rules and deadlines
3. Balance Multiple Roles
 - a. Competition for time and energy
 - b. Make college a priority
 - c. Communicate with instructors early and often
 - d. Remain flexible and fluid
4. Help-Seeking
 - a. Aware of need
 - b. Gain knowledge of available resources
 - c. Take action for themselves

Tinto (2012) describes a framework for institutional action that is focused on improving retention and graduation and consists of four constructs:

1. **Expectations:** Self-determined by the student and established by the college it requires expectations to be of a high standard. A clear pathway to completion, providing mandatory advising, an academically challenging experience and having students spend time on task help to establish and reinforce high expectations.
2. **Support:** Systems must be in place to provide academic, social, and financial support so students who are in need of these services have access. Academic success is dependent upon the students having not only the skills, but also the belief that they can succeed. Mentoring is one approach that provides an environment for students to interact on a personal and professional level and develop these abilities. Learning communities have also demonstrated that social and academic development is facilitated if properly conducted.
3. **Assessment and feedback:** Enabling students by providing classroom experiences that allow them to demonstrate understanding (assessment) and affording appropriate and frequent feedback is critical in keeping the student interested. Retention is impacted based on the student's perception of their experience and self-assessment of their learning. Adequate college resources for faculty development in the area of assessment and feedback are important since faculty lack adequate preparation in this area.
4. **Involvement:** Students who have a sense of being part of something larger are engaged both socially and academically, which results in higher satisfaction and retention. Collaborative learning experiences, such as civic engagement or service learning, promote self-efficacy and impact success.

Jensen (2011) provided an overview that retention is dependent on cultural and social integration and can be viewed at three levels:

1. **Individual Level**
 - Academic Performance: Personal academic discipline and GPA
 - Attitudes & Satisfaction: Positive outlook and self-efficacy
2. **Institutional Level**
 - Academic Engagement: Engage in effective academic scholarship
3. **Social & External Level**

- Social & Family Support: Friendships and importance of family acceptance of going to college

Demetriou and Schmitz-Sciborski (2011) examined strength-based approaches to student retention. They identified the following factors that have had an impact on student retention:

1. Academic Preparation: Completion of a strong high school curriculum, GPA and class standing
2. Academic Engagement: Faculty-student interaction, tutoring centers, office hours
3. Social Engagement: Friendships, college activities
4. Financing College
5. Demographic Characteristics: Parents' level of education, gender, ethnicity

Demetriou and Schmitz-Sciborski (2011) noted that motivational theories impact student retention. How students view their ability to impact an outcome is dependent on their actions and the actions of others (attribution theory) and is also dependent on the students' perception of optimism, academic self-concept, goal setting, and self-efficacy beliefs.

COMPLETION CONSIDERATIONS: COMPLETION AGENDA

The importance of higher education is well documented. Higher education provides an opportunity for greater earning potential and improved socioeconomic status. The acquisition of a degree, though desirable, is not required to experience these outcomes (American Association of Community Colleges, 2012). It is important then to focus on student persistence especially in the first year of college where attrition is the highest (Tinto, 2012). Having an impact on persistence and retention is complicated and no one action or combination of actions is the answer (Tinto, 2012). College has been

for the Caucasian, middle-class thus leaving first generation and minority students at a disadvantage when it comes to understanding college norms (Karp & Bork, 2012). The predominant profile of graduates from colleges today are female, Caucasian or Asian, high-income and come from college-educated families (Tinto, 2012, Wang & Parker, 2011). Noel-Levitz (2007) reports that students bring with them a strong desire to complete their education so they can find a good job and be financially better off. However, students lack effective study skills and compounded by working in excess of twenty hours per week this impacts college success and as such graduation rates have not significantly improved over the past fifteen years.

Persistence and retention are important topics within higher education and have been studied repeatedly, yielding interventions to positively impact college completion; however, no one approach has made significant gains in this area. Researchers, including Tinto (1975), have found that retention has both social and academic components that need to be integrated. Moss and Young (1995) found that the students' level of integration and faculty interaction impacted persistence, while Karp and Bork (2012) found that specific academic habits, cultural know-how, managing multiple roles, and help-seeking behaviors made a positive impact. Significant challenges remain for those who are at greater risk for not completing college: low income, part-time, commuter students (Tinto, 2012), and men (Perrakis, 2008). Xuereb (2014) conducted a study that revealed that academic workload, course-related problems, and competing priorities resulted in students withdrawing from their courses.

The American Federation of Teachers (2011), through focus groups, found that most students attended college so they can obtain employment and have an opportunity for self-improvement. Students reported that the lack of academic advising, high costs, and the perception of limited available time and balance with other priorities served as the greatest barriers to completing college. In order to promote student success, the focus groups recommended that there be greater flexibility in general education requirements, ensure that appropriate courses are offered when needed, and assure that faculty are accessible.

Tinto (2012) has continued his work on student persistence and noted that a college's actions influence persistence, but that students' decisions to remain in college or to leave are dependent on multiple factors that impact that decision. The traditional, more affluent, residential, full-time student is more likely to complete than the low-income, part-time, commuter student (Tinto, 2012). Nontraditional students choose to attend or reenter college for reasons that differ from traditional college students. Because of the differences which motivate nontraditional students to return to college, social factors seem to play less of a role in persistence than do barriers such as job commitments, child care, or transportation (Spanard, 1990).

At the center of these discussions are not only four-year colleges and universities, but public community colleges as well. In recent years, community colleges have been tasked with improving their overall retention and completion rates (American Association of Community Colleges, 2012; McClenney, McClenney & Peterson, 2007). Completion rates have been recorded as dismal at best. Completion rates vary from 14

to 52% at community colleges with an overall completion rate of 31% over three years (Bundy, 2014; Roach, 2009, December). Rosenbaum, Redline, and Stephan (2007) noted completion of any degree by community college students was 34% within eight years.

Gains in retention and graduation rates require that many actions be considered and taken as no one effort will result in dramatic increases. These actions must be supported by the college administration so that effective implementation and long-term support exists (Goldrick-Rab, 2010).

Reason, Terenzini, and Domingo (2007) found that social and personal competence was positively impacted when student's perceptions of institutional support through internal practices and values supported academic, personal, and social needs. These perceptions foster retention in first year students, and shape student learning when students are provided with cognitively challenging learning opportunities and support. Stovall (2000) found that student success courses may be linked with higher retention and graduation rates and that minorities in predominantly white colleges may benefit from such courses as they help with integration into the college community, diminish social isolation, and increase personal dissatisfaction.

COMPLETION CONSIDERATIONS: COMMUNITY COLLEGE MISSION AND OPEN ACCESS

Experts within the community college setting know that there is more to meeting the needs of a community college student than a completion measurement as defined by the Department of Education. According to Shannon and Smith (2006), students may have actually accomplished their goal by taking only a handful of courses.

Community colleges have historical underpinnings based on open access for all students, a mission that can have multiple meanings. Open access can eliminate barriers to obtaining a college education. However, according to the American Association of Community Colleges (2012), open access can also create barriers to the college completion agenda. Community colleges faced with retention issues find that their open-access philosophy may allow for a greater number of failures. Crews and Aragon (2004) noted that, while 77% of community college students intend to complete a degree, only 10% of underprepared students will actually attain a degree unless some type of intervention is implemented, with minority students representing an even lower rate of completion. Students may be admitted to the community college without having completed high school or without having to demonstrate any particular level of academic skill or ability.

Bailey (2009a) noted that these disparities create a very diverse pool of students who may be attending a community college. In some cases, students may be high performing academically, have a strong support system, and have their financial and physiologic needs taken care of. In other situations, students may be underprepared to attend college and may not be able to read or write at college levels, or have basic Math skills. According to Bundy (2014) as well as Shannon and Smith (2006), these students may have other barriers, such as socio-economic, transportation, or child care issues that may impact their ability to attend college and stay focused on their educational and professional goals. Mullins (2010), in fact, stressed that, in order for the United States to remain competitive, students must not only have access to higher education, they must

also complete a program of study. Community colleges offer a large group of college-age students with the most hope of a college education, including first-generation college students, low-income students, and students of color. These underserved populations have an unacceptably low proportion of persistence to degree completion (Grimes & David, 1999). Community colleges in rural areas may also have a disproportionate number of underprepared students. However, according to a study by Moss and Young (1995), persistence of these students is impacted by faculty interaction and the student's perception of integration. Attewell, Heil, and Reisel (2011) found that financial need and being a nontraditional student negatively impacted degree attainment, while integration into the college community positively impacted completion. According to their study, academic preparation was not a significant predictor of degree attainment and nor was remediation.

According to a study completed by McClenney, McClenney, and Peterson (2007), data on student experiences that focus on retention and persistence to improve degree completion are critical. Changing the emphasis from access to completion is important in helping to promote college graduates. Mullins (2010) emphasized that is also important to ensure that colleges maintain opportunity by democratizing education and helping students achieve credentials that lead to employment or transfer. Roach (2009) stressed that this is going to require that funding is available and that accountability measures are in place to facilitate these efforts.

Completion rates are impacted when students transfer from college to college. The community college philosophy of open access actually makes transferring between

community colleges uncomplicated; however, these lateral transfers make completion more difficult. Bahr (2009) found that approximately 47% of community college students transfer to other institutions and about 13% of these are lateral transfers. Lateral transfers are highest among African American and Asian students and lowest in female and older students (Bahr, 2009).

COMPLETION CONSIDERATIONS: UNPREPARED STUDENTS AND DEVELOPMENTAL EDUCATION

Developmental education places heavy burdens on institutions even with all of the efforts put forth; the success and completion of students progressing through developmental education into college credit courses and graduating is poor. Many never begin their developmental studies, and fewer than 20% of these students will pursue a bachelor degree (Feldman & Zimble, 2012). Kozeracki (2002) notes that developmental education has been criticized for lowering educational standards and encouraging students with inadequate skills to enroll in college — leading to high attrition. Others argue that those skills should have been obtained in high school and should not be funded a second time — within community colleges — as offering developmental education courses places a drain on community colleges' academic resources. Research also indicates that it is unclear if remedial courses help with success in college-level courses; instead it may be beneficial to incorporate these skills into college-level courses to facilitate completion (Romano, 2011). Others note that investing in developmental education helps to maintain societal well-being by providing an opportunity for higher education which helps to offset unemployment, low wage jobs, welfare participation,

and incarceration (Kozieracki, 2002). Many feel that, because of these questionable impacts, developmental education is not a model that can be sustained in its present form, and early assessment and intervention must occur in the K-12 system to demonstrate improved learning (Pusser & Levin, 2009).

There is a need to develop best practices to motivate students to persist through developmental coursework and show progress rather than grow frustrated (Roach, 2009, May). Bailey (2009b) notes that developmental students are less likely to complete college mainly because of the increase time required to complete a degree by having to take developmental courses. The ability to improve degree completion is dependent on getting the students in college-level courses, providing academic support, and contextualizing their education within an area of interest (Bailey, 2009b).

Research indicates that the underprepared student is a significant challenge for colleges. Minority and disadvantaged students come underprepared more often than their peers (Fike & Fike, 2008, Gardiner, 1994, Hamilton, 2001). Many times students must take multiple courses in developmental education that do not apply to their college degree. Students become disillusioned and feel college is not for them, as it can feel like a return to high school. When students place three levels below college level, they rarely complete college (Bailey, 2009a). While this does not mean that these students cannot be successful in college, rather, it is important to ensure that these students receive assistance to impact their success (Bailey, 2009a). Willingham and Price (2009) identified successful approaches in developmental reading by incorporating indirect and direct instructional methods to improve the student's vocabulary. The

learning experience for underprepared students is enhanced when the college supports developmental education and individualized instruction and supplementary tutoring occurs (Perin, 2002). Students who successfully complete their developmental education courses demonstrate persistence in college (Fike & Fike, 2008).

Research also focuses on the intrinsic and extrinsic factors that impact student's completion in college. Students may benefit from being placed in college-level courses and receive additional academic support services that integrate study skills, counseling and advising, and culturally responsive instruction (Bailey, 2009a, Perspectives, 2014, September). College success is not always determined through higher placement, as people with weaker preparation but higher motivation may actually work harder to achieve success (Jacobson, 2006). Noble and Sawyer (2013) supported that developmental education students are less successful than non-developmental students with respect to GPA and persistence over time. However, students who attend part time, take developmental education courses, and earn strong grades appear to benefit and complete their degrees. The researchers suspect that non-cognitive factors, such as psychosocial factors, family, and life situations may impact this finding as well.

Upwards to 60% of students are academically underprepared for college and fewer than 25% will earn degrees within eight years (Adams, 2010). Efforts at early assessment of at-risk students by looking at early ACT scores and having students take academic summer programs while in high school have been proposed. Encouraging dual enrollment and offering individual instruction have been options to improve the transition to college. However, strained budgets continue to plague these efforts.

Valencia College has started using a cohort model with entering students who need remedial coursework. The cohorts are placed into study groups and, to date, they have seen an increase in graduation rates with this approach (Adams, 2010).

Developmental education is focused in the areas of reading, writing, and Math. Goldstein & Perin (2008) found that students who took developmental education courses for reading and writing performed at the same levels as college-ready students when taking other college courses, and thus academic success may likely improve if developmental courses are taken when indicated. Crews and Aragon (2004) looked at the value of developmental writing and found that participation in a developmental writing course at the start of their college experience, before taking college-level coursework, had a long-term positive impact on the student's GPA.

COMPLETION CONSIDERATIONS: IMPROVING RETENTION AND PERSISTENCE

Reason (2009) has researched student retention and persistence and efforts to improve these have overall been ineffective in making a significant difference. There is an understanding that the college, faculty, and student all interact, which has an impact on college success; however, persistence being a multidimensional problem cannot be easily resolved. Understanding the differences in students will help in understanding persistence. According to Reason (2009), academic preparation and self-efficacy dramatically impact persistence, and when differences in income and preparation are eliminated, then ethnic or race concerns are also diminished. Making an impact on persistence requires that the institution understands the students' concerns and

develop approaches for each group that engages them directly. Stuart, Rios-Aguilar and Deil-Amen (2014) have postulated that community college students may be more motivated to complete their degree so that they have increased opportunities for employment.

When students enroll into college immediately from high school, retention and completion are positively impacted when the students are academically prepared and benchmarks are met on the ACT (Radunzel & Noble, 2012a). Hanover Research (2014) reported that students had a better academic experience and outcome if they possessed strong intrinsic motivation and had a clearly defined academic plan that was noted to lead to improved persistence and academic performance.

Historically, the poor and minorities have had to face the greatest hurdles to overcome in completing college. In an effort to improve completion several areas of support could help in that effort such as performance-based funding, FAFSA simplification, student life skill courses, smaller counselor/student ratios, career pathways and others (Goldrick-Rab, 2010).

COMPLETION CONSIDERATIONS: PATHWAYS AND ACADEMIC PERFORMANCE

Several researchers have addressed interventions that lead to completion (Bailey, Jaggars, & Jenkins, 2015; Roach, 2009, May), and they have emphasized the role that two-year institutions need to play in strengthening student support systems and providing extensive counseling and guidance programs that provide structured pathways to completion. Rosenbaum, Redline, and Stephan (2007) identified that

completion can be impacted positively if information is available to students to make informed decisions about the college experience, including taking the guesswork out of which courses to take and having structured paths to completion improve completion rates. The ability to provide advising and counseling for students and identifying their innate abilities is important in accomplishing this outcome.

Student success requires concentrated efforts to clearly outline a pathway to completion, and faculty play a role in providing classroom environments that engage students in their learning. This does not mean students are not responsible for their learning, as they must invest in their learning to achieve positive results (Tinto, 2012). Grades may also affect retention and persistence rates. Retention and persistence to college graduation was seen in students who had higher scores on the ACT and high school GPA, as well as demonstrated ability to do well in a college orientation course and establish a solid first quarter college GPA (Hyers & Zimmerman, 2002). Ackerman, Kanfer, and Calderwood (2013) found that students who completed AP courses and had higher high school GPAs had substantially higher rates of completion in college. Smith (2015) also found that high school GPA and ACT reading scores appeared to be associated with higher rates of college completion.

COMPLETION CONSIDERATIONS: MINORITIES

Many times first generation, low income, and racial and ethnic minorities have been students in need of developmental education. According to Bailey (2009a), developmental education has also been linked with low completion rates, especially if a

student must take two or more developmental courses. Bragg and Durham (2012) emphasize that, as policy is devised and implemented, access and equity can not be negatively impacted by the completion agenda. Therefore, whatever actions are taken, it will be imperative to ensure that the highest risk students are not left behind and that services are available to assure access and equity to all students.

Szelenyi and Chang (2002) found immigrants to show a high level of achievement especially if they attended high school abroad; however, many times language was a barrier to successful completion. Hamilton (2001) reinforced this problem, saying that, since community colleges promote open access, it is important to shape college policies that support equity so educational quality and attainment can be reached. It is important to note that immigrants to the United States are expected to continue to increase and lead to increasing needs within developmental education programs. According to Sportsman (2012), in order to make an impact on attrition, especially with low income and minority students, specific criteria must be identified that improve attrition. These criteria will help to prepare students to meet certain standards so they are program-ready.

Additional factors that may affect retention are student age, race, and gender. Calcagno, Crosta, Bailey, and Jenkins (2007) found in one study that older students were more likely to complete a degree and graduate than traditional students. This finding was in opposition to other studies that show that younger students complete college at a greater rate. Perrakis (2008) notes that men, regardless of race or ethnicity, are completing fewer degrees; however, if male students feel a sense of attachment, they

tend to have higher retention rates. Additionally, if they feel capable of college-level work, they then to persist to degree completion. Among minority groups, Native Americans have some of the poorest completion rates. There are many barriers that lead to this outcome; however, persistence in college is impacted by the family, the tribal community, and the ability to give back to their people. Research indicates that, in order to have a positive impact on completion, interventions must be focused on developing collaborative programs with the college and the tribe (Guillory & Wolverton, 2008).

Minority students have made gains in completing high school and earning a college degree, improving their economic standing; however, many minorities still have higher percentages of families living in poverty (McGlynn, 2007). Rodriguez (2009) notes that gender disparities exist among all racial groups in terms of college enrollment and completion and are especially high among Hispanics. These findings still exist, as access has increased, and college success has decreased. Among gender groups, the number of men attending college is declining, leading to completion gaps between men and women. These declines are being seen in Caucasians, African Americans, and Hispanics with only Asians showing higher completion rates (DeVise, 2010). Ransom and Lee (2012) have identified racial and gender disparities that exist in higher education for various factors such as family obligations and affordability. To make an impact in these areas, they propose preparing all students so they are college- and career-ready and developing culturally appropriate persistence and retention programs.

Positive efforts do exist: Hispanic students who participated in Advancement Via Individual Determination (AVID) in high school were found to have better academic preparation and college readiness. AVID is a program to help underrepresented groups in the area of college success. It focused on several areas, but note taking was a foundational skill that was found to be useful in college. In addition, students who had four years of Math and took AP courses were found to be better prepared for college coursework. In most areas, students who participated in AVID and attended a community college did as well as university students. In many settings, community college students were noted to have taken fewer college credits in high school, requiring them to take more remedial courses; thus, they had a higher risk of not being on track to graduate within six years from a university (Huerta, Watt & Reyes, 2013).

Research indicates that a holistic approach to education is needed, especially for first generation college students who are academically at risk because they do not understand what is expected of them to be successful in college. Attewell, Lavin, Domina, and Levey (2006) found that students who come from low socioeconomic status, are African American, and present from high school academically underprepared, are typically not able to make it through developmental education and tend not to graduate. High self-efficacy and beliefs of success are important factors for the student to have an impact academic success, but developmental needs must also be addressed (Grimes & David, 1999).

The evidence supports that educational levels do impact earning potential. As education increases so do earnings. Females and minorities who continue their

education see the greatest increases in earning potential. These positive gains in socioeconomic levels can be the motivating factor to encourage community college attendance and completion and then seek to progress onto four-year universities. Belfield and Bailey (2011) also found that additional benefits of continued education have been seen related to better health outcomes, a decrease on welfare reliance and crime.

COMPLETION CONSIDERATIONS: STANDARDIZED TESTING AND PREDICTING STUDENT SUCCESS

Standardized testing has been used for student placement into college for several decades. Standardized exams help with determining student achievement in college (Atkinson & Geiser, 2009). Sparkman, Maulding, and Roberts (2012) found high school GPA and standardized tests to be the best predictors of college success.

The ACT Computer-Adaptive Placement Assessment and Support System (COMPASS) is a comprehensive assessment for course placement and diagnostic testing. According to ACT (2012), the assessment provides a high degree of accuracy in a short period of time. The assessment helps in determining if the student is ready for college credit courses. The exam has had extensive reliability and validity testing done and has been administered to Caucasians, African Americans, Hispanics/Latinos, and Asian Americans in an effort to minimize ethnic bias. Linear regression and correlation have been conducted to establish validity of test scores and the outcomes achieved by students. The reading portion of the exam assesses comprehension and vocabulary. The

writing portion assesses usage and mechanics of writing as well as rhetorical skills. The Math portion differentiates Mathematical achievement (ACT, 2012).

American College Testing (ACT) has evaluated the performance of students and established that if students achieve a COMPASS writing score of 77, reading score of 89, and college algebra score of 52 that they have a 75% chance of earning a “C” or better in corresponding college courses. ACT has also noted that a composite score of 18 in English, 22 in reading, and 22 in college algebra on the ACT will also result in a 75% chance of earning a “C” or better in college courses (ACT Research & Policy, 2013). However, it is important to note that ACT recognizes that factors other than standardized test scores impact student retention and completion in college. Student motivation, strong study habits, and high school GPA all have a bearing on student retention and completion (Allen & Scoring, 2005). Radunzel and Noble (2012b) identified that the ACT Benchmarks determining college readiness are useful in predicting long-term success in college. They further identified that long-term college success is associated with a higher ACT Composite score. High school GPA is useful in helping to predict long-term college success when ACT Composite scores are lower and high school GPAs are higher.

Mzumara and Shermis (2001) looked at the predictive validity of COMPASS Math, reading, and writing and connected these to student success in the college environment. Their premise was that properly placing students into the appropriate courses based on their abilities would provide the student with a more positive college experience, greater satisfaction, and better retention. It would also allow the college to

know how to allocate college resources. According to ACT (2012), while the COMPASS scores do measure knowledge and skills that are needed to succeed and result in better performance of the student, they do not measure affective variables of achievement. The findings thus indicate that the COMPASS scores cannot be used alone in determining success, as the student's previous academic record also has an effect on student achievement. This finding was further supported by the work of Hughes and Scott-Clayton (2010) who note that COMPASS is a reliable and valid tool for predicting grades in college-level coursework but overall student outcomes are not as easy to predict when non-cognitive variables impact these outcomes. Barr, Rasor, and Grill (2002) found that they could not predict success based on the COMPASS scores obtained in reading, writing, and Math and the decision-making process that placed them into certain courses. A suggestion was to have instructors develop specific entrance skills to enter the course.

Henschler (2006) looked at COMPASS reading scores and success in a written communication course. The results concluded that there was not a good predictor of success in the writing course based on the COMPASS reading score. Based on these studies, researchers agree that while the COMPASS testing instrument is a valid instrument and does provide an indication of how students will perform, the scores are should not stand alone and there are alternate methods to predicting success.

COMPLETION AND OCCUPATIONAL PROGRAMS

Conceptual models examined in the area of career and technical education have applied Tinto's work to seek understanding of success in community college occupational programs. According to Hirschy, Bremer, and Castellano (2011), the student's characteristics, the college environment, and local community environment all interact to impact student success. Minkler (2002) noted that learning communities have the ability to improve student success, lead to intellectual development, result in satisfaction with classes, and enhance faculty/student relationships. The literature supports that student characteristics such as socioeconomic factors, academic preparation, commitments, and responsibilities impact college completion (Attewell, Heil & Reisel, 2011; Karp & Bork, 2012). The college environment plays a critical role in academic and social integration. With occupational students, the college and local community must provide career integration through exposure to work environments. Student success is impacted based on the attainment of the student's educational goal (Hirschy, Bremer, & Castellano, 2011). Underprepared students may experience greater learning if what is being taught to them is contextualized to their area of study. Psychological theories of motivation support this method of learning (Perin, 2011).

A focus on preparing students for college before they even arrive by taking standardized exams, remediating, participating in college bridge programs, and participating in dual enrollment programs can help better prepare students for college. Helping students examine what careers they are interested in while in high school and then providing contextualized learning and incorporating technology may prove to be

more stimulating, thus improving outcomes by making the academic field more relevant and tangible. Such approaches to preparing students will help to ensure students understand how to study and learn (Feldman & Zimbler, 2012).

NURSING PROGRAM COMPLETION CONSIDERATIONS

Retention of nursing students is critical, as the need for registered nurses remains strong. An aging population requiring healthcare especially with chronic health conditions is creating a demand for registered nurses with a 19% expected growth rate (HRSA, 2013, US Bureau of Labor Statistics, 2013). It is also important to note that 55% of registered nurses are 50 years or older and that more than one million registered nurses are expected to retire within the next ten to fifteen years (American Association of Colleges of Nursing, 2014). Health Resources and Services Administration (HRSA) (2013) indicates that the majority of registered nurses, 60%, graduate with an associate degree; however, more individuals are returning to seek additional degrees once they have passed the NCLEX-RN and are practicing within the profession. Efforts to support nursing student retention have a positive social impact by being able to meet the workforce needs of the future. However, the nursing profession will continue to face workforce demands even with nearly 100% increase in nursing student graduates over the past decade (HRSA, 2013).

Understanding factors that impact nursing student retention and interventions to positively retain nursing students are crucial in increasing the number of nursing student graduates. Sportsman (2012) identified that financial concerns, personal factors,

and academic support were three areas that impacted nursing student retention. Efforts that focused on students developing new skills and understanding within the nursing discipline as well as changes in policies and curriculum could impact retention rates.

Several studies, including Tipton et al., (2008) and Wolkowitz and Kelley (2010) found that standardized exams and grade point averages have been helpful in determining a certain level of program readiness. However, nursing programs establish requirements that vary from program to program and are meant to support student success, yet it is not clear if they have much of an impact on attrition (Foster, 2010; Gilmore, 2008). Peters (2010) found that students who took developmental courses did complete the nursing program and passed the NCLEX-RN, and Pritchard (2010) found that COMPASS reading scores correlated with program completion.

Developing diversity and cultural competence within the nursing profession is very important. With increases in minority populations across the country, it is important that nurses be representative of the populations they serve. Historically, minority nursing students have been retained in low numbers; however, efforts focused on structured tutoring and mentoring did help at-risk students (Igbo et al., 2011; Sutherland, Hamilton, & Goodman, 2007). Evans (2008) found that support in the form of counseling, mentoring, tutoring, and financial support tailored to individual need assisted underprepared nursing students and positively impacted minority nursing student retention. Faculty mentoring and developing effective professional relationships with nursing students that promote critical thinking can also positively impact retention. Work experience in healthcare along with good study habits and motivation impact

completion (Rogers, 2010). Bernard (2010) found that completion in a nursing program was dependent on several factors such as the nursing faculty; clinical lab experiences;; personal factors like determination, passion, and academic ability; and support from peer groups, family, and friends. Luthy, Peterson, Lassetter, and Callister (2009) found that integrating writing across the nursing curriculum improved critical thinking, personal reflection, and communication, as writing about the content required that the students have a better understanding of the material.

The literature has well documented the disparity of minority populations and that socioeconomic status and poor academic preparation has placed barriers to successful college completion. Attrition in nursing programs has long been a concern. In Texas, nursing attrition statewide had been documented at 56%. The Texas Higher Education Coordinating Board set a goal of 85% retention. Attrition in nursing programs has been associated with inadequate prerequisite course preparation, poor study behaviors, and underestimating the rigor of the nursing curriculum (Douglas, 2009; Gilmore, 2008; Sayles, Shelton & Powell, 2003). Through a HRSA sponsored grant, monies were allocated to high-risk students to increase diversity within nursing and help to address barriers to academic preparation. A focus on study skills, communication, critical thinking, and socialization within the profession were targeted to make a positive impact on attrition (Igbo et al., 2011). Efforts to improve diversity in nursing, thus being better able to meet the demands of the populations they are serving, have been in place and in 2010, approximately 25% of all licensed registered nurses were minorities, which

is an increase of 5% over the past decade. Additionally, men presently comprise about 9% of the workforce (HRSA, 2013).

Evans (2008) examined the socio-cultural and educational barriers between Anglo origin and Hispanic/Latino and American Indian origin. In this particular study, Anglo-origin students had stronger support to go onto college and seek a professional career. While this support typically came from the family, in many cases there was also a better socioeconomic support system that was missing for the Hispanic/Latino and American Indian students. The ability to support these students and see them through to program completion is vital in promoting a culturally diverse and sensitive nursing workforce. The ability to connect with ethnically diverse populations is strengthened when populations can closely identify with healthcare workers that look like them. Native Americans dropout at disproportionately high rates, often due to family obligations. Completion was increased when the tribal community made a commitment to support access to healthcare and have caregivers who were culturally sensitive to tribal needs (Campbell, 2007; Guillory & Wolverton, 2008).

NURSING PROGRAM SUCCESS INDICATORS

The same factors that affect success and completion among the general student population are true for ADN students. Samra (2006) found that completion in a college ADN program was dependent on college GPA, grades in core science and English courses, and few or no repeated course work. Demographic data also indicated that older, Caucasian, as well as primary language as English were also associated with

program completion. Douglas (2009) noted that class attendance, high school preparation, good study skills, a connection with nursing faculty, and a desire for a well-paying job influenced student retention. Students with prior degrees and higher cumulative GPAs have also shown success in associate degree nursing programs (Cooper, 2012). Remedial course work was found to have some impact on student success in completing a nursing program and successfully passing the NCLEX-RN (Peters, 2010). Pritchard (2010) found that COMPASS reading scores demonstrated a correlation with completing the practical nurse program.

Standardized exams have been used extensively in the nursing profession and, thus, student efforts on these tests have also been studied to determine their links to success and completion rates. The NCLEX-RN is a national examination that demonstrates competency for entry into practice for the nursing candidate who has just recently completed a registered nurse program in either an associate or bachelor degree program. However, before students reach this point they have been exposed to a variety of other standardized examinations in high school or other settings. Such examinations are meant to capture the student's understanding or competence in various areas. Some of these examinations are the ACT, SAT, COMPASS, NET, TEAS, HESI and a variety of others.

In an effort to predict success within the nursing program and to select students who may have the greatest chance of program completion, these standardized examinations may provide some guidance (Alameida et al., 2011; Sayles, Shelton, & Powell, 2003; Wolkowitz & Kelley, 2010). Other studies have shown that NCLEX-RN

success has been associated with cumulative GPA, nursing course GPA, and individual class performance (Alameida et al., 2011; Shirrell, 2008; Tipton et al., 2008).

Boudreaux (2004) looked at practical nursing students and found that GPA was an indicator of student success throughout the program. Additionally, placement reading and writing assessment scores were found to be significant in the satisfactory completion of the practical nurse program and success on the NCLEX-PN. ACT English scores in reading and writing and overall GPA were found to be factors that impacted success in an associate degree program (Gilmore, 2008). Foster (2010) found that nursing students who had higher mean GPAs were more likely to complete the nursing program and biology appeared to be the strongest predictor of student success compared to four other prerequisite courses.

The prediction of nursing student success has been studied and has resulted in a variety of findings. Since an ongoing need for registered nurses exists it is important that the most qualified applicants for a nursing program are chosen. HESI has produced an admission assessment (A²) instrument that evaluates six academic areas and three personal areas. The HESI A² was found to be a predictor of student success and could be a tool used for selection of applicants along with other criteria (Murray, Merriman & Adamson, 2008).

SUMMARY

The literature indicates that underprepared college students present challenges to college completion. Developmental education aims to prepare students to handle

college-level academic rigor and to be program-ready for their chosen profession. Student persistence and retention is dependent on intrinsic and extrinsic motivational factors, as well as their self-efficacy. Additionally, college integration and socialization, as well as support systems for the student, can impact retention. College completion is complex and requires social and personal competence. Many variables impact completion especially in first generation, low income, minority, and male student populations. Student retention is negatively impacted when developmental education courses must be taken over multiple semesters.

The community college mission of open access can create barriers to completion. Student preparation can vary greatly within the same classroom, but it is important to focus on helping them obtain a credential that leads to employment or transfer. Developmental education, though plagued with poor outcomes, provides opportunities for students to complete college. Factors that motivate a student vary but providing support in terms of advising and clear pathways to completion may help. Greater disparities in college completion exist among minorities and gender. Efforts to ensure equity for students must be identified so populations can be better served by having role models for them to identify with.

Predicting long-term student success in college has been difficult and generally is dependent on multiple factors. This study will examine if students who enter college program-ready complete the nursing program at a significantly greater rate than students who are not program-ready and if there are any differences in completion

between race and gender. Since registered nurses must be licensed to practice nursing this study will see if program readiness has any impact on the NCLEX-RN pass rate.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

PURPOSE OF THE STUDY

Nursing program retention and completion is important. This study examined how program readiness impacted nursing program completion and if Math, reading or writing ability further impacted completion. The ability to support minorities and men in nursing can have a positive impact on the profession, which many times may include first generation college students who may not be familiar with how to transition into the college environment. Efforts aimed at decreasing attrition and improving retention can impact completion and this study will evaluate the effectiveness of program readiness.

RESEARCH QUESTIONS

Determining if a student who comes to college program-ready has greater success within the nursing program can be valuable data in addressing attrition and program completion. Additionally, determining if reading, writing, or Math ability as determined by test scores shows any correlation in program completion can help in making program recommendations that may aid in student completion. Identifying the program completion rate among minorities and males is important to understand since they positively impact the nursing profession. Finally, evaluating if students can pass the

NCLEX-RN is important since this is required to obtain licensure in order to practice as a registered nurse.

1. Do nursing students who enter college program-ready in reading, writing, and Math complete the nursing program at a significantly greater rate than students who are not program-ready in any area of reading, writing, or Math at the time they enter college?
 - a. Do students who enter college program-ready in reading complete the nursing program at a significantly greater rate than students who are not program-ready in reading?
 - b. Do students who enter college program-ready in writing complete the nursing program at a significantly greater rate than students who are not program-ready in writing?
 - c. Do students who enter college program-ready in Math complete the nursing program at a significantly greater rate than students who are not program-ready in Math?
2. Do statistical differences in program completion exist among racial groups or by gender?
 - a. Is there a difference in program completion between Caucasians and minorities?
 - b. Is there a difference in program completion between males and females?
3. Do nursing students who enter college program-ready in reading, writing, and Math pass the NCLEX-RN exam at a significantly greater rate than students who are not program-ready in any area of reading, writing, or Math at the time they enter college?

HYPOTHESES

- There is no statistical difference between program-ready and not program-ready students and the completion of the nursing program.
- There are no statistical differences among racial groups or gender and completion of the nursing program.
- There is no statistical difference between program-ready and not program-ready students and passing the NCLEX-RN exam.

ASSUMPTIONS

The following assumptions are made in regard to this study, which are basic principles that are accepted as true based on reasoning but without proof (Polit & Beck, 2004). It is assumed that students who took a standardized exam, like the ACT or COMPASS, applied themselves and took the exam seriously to achieve the highest score they could based on their ability. Students are motivated to complete the nursing program since they have invested time and money to prepare to enter the program. Additionally, the inability to complete the program prevents them from working as a nurse. Finally, the findings of this study could help other nursing programs impact program completion at their institution.

LIMITATIONS AND DELIMITATIONS

The limitations of the study, are shortcomings of the study that cannot be controlled for, and the delimitations, are choices made by the researcher and are discussed (Polit & Beck, 2004). Since admission criteria into nursing programs vary between institutions the researcher decided to study only nursing students from one Michigan community college. The use of a convenience sample population makes generalizing any findings difficult to other institutions. However, study findings could be used to see if similar results could be identified at other colleges.

The sample population was identified as program-ready or not program-ready as determined by the standardized placement exam score obtained by the student. Since the college is a community college with open access the sample population may have a

larger proportion of students who are not program-ready. Students are maintained on a validation list and enter the program based on their placement on the list. Program-ready students may start at the community college and then transfer to a local university especially if they have the ability to be selected into the university's program sooner.

Students are allowed to use the highest score obtained when determining reading, writing, and Math ability from a standardized exam. These exams can be repeated and the COMPASS exam can be repeated up to three times in a year. Reliability measures have been established by the testing companies, which allow for the retests; however, it is important to note that even though the highest score is being used to determine program readiness, other scores may exist which may be lower. This study will not compare all scores obtained by the student to determine if there is any impact on completion since the college has always allowed the highest score to be applied. At the present time there is no time limit on how old the scores can be; thus, a student could be placed using scores that are only a few months old to years old. Students may return after being out of college for a period of time and are considered program-ready based on an old test score, but their present abilities in reading, writing, and Math are unknown.

Students leave the nursing program for personal reasons. Students who did not continue in the nursing program for personal reasons were in the sample but a degree was not earned and they were considered a non-completer. While the scope of this study did not look at non-cognitive measures, such as socioeconomic status, or family

support, and how those factors may have impacted completion, the researcher was aware that those factors, in fact, do impact completion.

The literature review indicated that high school GPA can be determinant in college completion. However, the college has never requested students to provide their high school GPA; thus, this information is not captured in the college system for most of the students. The high school GPA is only present if it was voluntarily provided on admission to the college. For this reason high school GPA was not examined in this study.

This study looked at racial and gender program completion. This study did not disaggregate the data into specific minorities because there were not always sufficient number of minorities in a particular group to make an appropriate analysis. Socioeconomic status within this group and the impact on completion were not evaluated in this study.

The data used in this study were collected in the college's database, and were used to determine differences between groups in terms of program readiness and completion. The study looked at the three tracks within the program: Full-time, Part-time, and Transition students. Because of the demographic characteristics of students in each of these groups, differences within the groups may exist; however, this study looked at all of the groups collectively when answering the research questions.

RESEARCH DESIGN

The design for the study was a non-experimental *ex post facto* design. This design method was selected because the data already existed in the student management system. The data were pulled by cohort group, each student was classified as program-ready or not program-ready, and the students identified as having completed the nursing program. The data were not manipulated or modified for this study since this was a retrospective review of the variables and the results. The population that was studied was a convenience sample of Full-time track nursing students, Part-time track nursing students, and licensed practical nurses or paramedics seeking to become registered nurses (Transition track). The Full-time track students follow a traditional fall and winter semester rotation over four semesters and cohorts started every fall and winter semester. The Part-time track students went year around for seven semesters and started in a fall semester. The Transition track students attended for four semesters that went year around and the cohort started in the winter semester. The cohorts were analyzed using archived data from Fall 2011, Winter 2012, Fall 2012, Winter 2013, Fall 2013 and Winter 2014.

The independent variable was either being program-ready or not program-ready. Program readiness was determined by the student's ability in reading, writing, and Math as determined by a standardized exam score from ACT or COMPASS. The ACT score reflected program readiness for reading and writing at 20 and for Math at 19. The COMPASS score for reading was 81, writing as 70 and Elementary Algebra Math at 13. Program readiness was determined by using all three of the components which included

reading, writing, and Math. The researcher also analyzed each component of reading, writing, and Math separately to see if program readiness within a specific component had any impact on program completion.

The dependent variables were program completion and successfully obtaining a passing attempt on the NCLEX-RN exam. Program completion was determined by a student obtaining an Associate's degree in Applied Science of Nursing. A student's NCLEX-RN exam status was reported to the college from the State Board of Nursing.

The dependent variable could possibly be impacted by a moderating variable. In the study, gender and minorities were two moderating variables. Because minorities and men in nursing have been underrepresented as registered nurses, racial and gender data were examined to see if program readiness had any impact on program completion between these groups.

The variables consisted of nominal data sets. Nominal labels were applied to note program-ready or not program-ready. A zero was used to indicate not program-ready in reading, writing, or Math and a one was used to indicate program-ready in reading, writing, and Math. Program completion was noted when the Associate's degree in Applied Science degree was awarded. The NCLEX-RN exam was noted as using a zero for never passing, a one for passing the exam on the first attempt, and a two for passing the exam on two or more attempts. Gender was labeled male or female. Race was categorized as Caucasian with all other races were grouped together as Minorities. The Caucasian group included all students who declared they were Caucasian and all unknown races and non-resident aliens. The placement of the unknown and non-

resident aliens into the Caucasian group were expected to have less of an impact on these results since that sample size was larger. The Minority group included the Hispanic, Black/African American, Asian, American/Alaskan Native, and Two or More Races.

THREATS TO VALIDITY AND RELIABILITY

The research design and how the data were analyzed impacts the reliability and validity of the study (Vogt, 2007). In this study reliability was impacted if the data were entered incorrectly into the student management system. A student was noted as either being program-ready or not program-ready depending on the score obtained on the ACT or COMPASS exam. If the data were not entered correctly, the result would be having unreliable data. The same was true of the results obtained on the NCLEX-RN exam. A data entry error would not only impact validity but will also influence reliability. The majority of the data in this study was nominal data; thus, in this particular study, data input and extraction errors had the potential to impact reliability.

Threats to validity, both internal and external, exist. External validity was impacted if the analysis resulted in improper generalization to other populations while internal validity may be threatened if the research question was not properly answered (Vogt, 2007). In this study a convenience sample was utilized; thus, findings are not generalizable to a larger population. The purpose of this study was to determine if program readiness had an impact on completion and NCLEX-RN exam pass rates. The information obtained was useful for understanding nursing program attrition at Delta

College but cannot be used for other programs. The findings of this study, while not generalizable, may help other programs identify areas within their programs that may affect attrition.

The data used for this study consisted of the students' COMPASS reading, writing, and Math scores. Most students took the COMPASS exam upon admission to the college. Utilizing the COMPASS exam minimized reliability and validity issues since this exam has been through psychometric evaluation (ACT, 2012).

Nonetheless, reliability and validity among students could be affected because students are not required to take the COMPASS exam if they have taken another national standardized exam that is also used for determining college readiness. Admission to the college and assessment of the student's ability in reading, writing, and Math can also be determined by other exams, such as the ACT. In determining program readiness, any accepted standardized test that evaluated the student's aptitude in reading, writing, and Math can be used; thus, differences among exams could impact reliability and validity in the sample.

Students took the COMPASS exam if they had no other exam results to determine program readiness. However, because the test is offered in less formal circumstances, they may not have come mentally prepared to take the exam, or they may have not taken the exam seriously. This could have resulted in students being incorrectly placed as being not program-ready if they did not understand the significance of the exam.

There were no concerns related to unethical treatment of students as all of the students included in the study had completed the program and had taken their NCLEX-RN examination. All data collected were historical data and were extracted from the student record database keeping the information anonymous. All data were aggregated so it was not possible to identify individual students.

EXCLUSIONS

The sample population was a convenience sample of students who were admitted into the nursing program and for this reason there will be few, if any, exclusions. All students were either classified as program-ready or not program-ready and having completed or not completed the nursing program. Additionally, the sample noted the gender and race of the student and the student's ability to pass the NCLEX-RN exam. If a student's gender or race was missing, the data noted that the information was not available.

If students had not attempted the NCLEX-RN exam, they were eliminated from this study. Program graduates must make their first attempt at completing the NCLEX-RN exam within two years of completion of the RN program. Once the first attempt of the exam is made, successful completion of the exam must be obtained within one year.

Students, within the defined cohorts, who had not completed the program and remained actively enrolled in the program were excluded from the study. The students being considered for this study all would have completed the nursing program by

Winter 2015 unless they failed a semester and had the ability to repeat and had not done so. These students also would not have been able to take the NCLEX-RN exam.

SAMPLING

The sample population included validated nursing students who had completed their prerequisite coursework for the RN program at Delta College and had successfully registered for clinical entry. The cohorts of inclusion for the study included full-time RN students from Fall 2011, Winter 2012, Fall 2012, Winter 2013, and Fall 2013. The part-time RN students included those from Fall 2011 and Fall 2012. The nursing transition students — licensed practical nurses and paramedics — included those from Winter 2012, Winter 2013, and Winter 2014.

The data sample consisted of students from these cohorts who met the following criteria: They were originally self-selected for entrance into Delta's Nursing program, meaning they had (1) completed all program course requirements, and (2) entered the program through the Validation Waitlist process. These cohorts were also studied because the program's requirements for admission did not change during this time period.

The sample N for this study consisted of a maximum of 450 students: 60 students were admitted with each cohort for the Full-time track, and 30 students for each cohort in the Part-time and Transition track.

The study sample was split into two groups: program-ready and not program-ready upon entrance into college. If the student was an undergraduate without any

degree completion, an ACT or COMPASS score was required to determine program readiness. Students who completed a bachelor or higher degree were considered program-ready even if no standardized test scores were provided. Transfer students who successfully completed English and Math requirements were considered program-ready. All students had the option to take the COMPASS exam if they wished, even if they had met other standards for entry.

The study population was a convenience sample; however, there is no reason to believe that the sample population was composed of individuals who were not representative of the usual student population being accepted into the nursing program. Thus, it is reasonable to infer that the findings of this study can be used to make decisions to impact this specific nursing program. Because admission criteria vary among institutions and among nursing programs, the specific findings of this study should not be generalized to larger populations or other nursing programs within community colleges. However, the findings can be shared, and the study could be replicated if it was determined that it would be beneficial for other institutions.

DATA COLLECTION

The data used for this study are maintained in the Ellucian Colleague student records system and were extracted into a database. The system identified students admitted into the nursing program during the timeframe defined. The COMPASS reading, writing, and Math scores or ACT scores were included in the student records and were used to determine if a student was program-ready or not program-ready.

Students were considered program-ready if they had either (a) ACT score of English 20 or greater and Math 19 or greater; or (b) COMPASS score of Reading 81 or greater, Writing 70 or greater, and Elementary Algebra Math 13 or greater. The database tracked student progression through the nursing program to completion. The NCLEX-RN exam result was entered manually into the database since this information was gathered after the student graduated.

Because the study was done retrospectively, all data were recorded in the system. Any issues with validity and reliability, then, were related to the data being incorrectly entered or data not existing.

DATA ANALYSIS

In analyzing the data, the researcher included descriptive statistics. The total N included students from the defined semesters and any exclusions noted as previously outlined. The data were grouped according to program-ready and not program-ready as defined by standardized testing scores. The groups were then reviewed to see if any statistical significance existed to see if program readiness had any impact on completion. Additionally, the groups were reviewed to see if any statistical significance exists between (a) reading scores and program completion, (b) writing scores and program completion, (c) Math scores and program completion, (d) racial groups and program completion, as well as (e) gender and program completion. The data were reviewed to see if students who were program-ready passed the NCLEX-RN at a significantly greater rate than those not deemed program-ready.

The data were analyzed using a two-sample Z proportions test. This test showed if two groups had any differences between them by measuring two proportions based on a dichotomous break, such as program-ready or not program-ready. Both one-tailed and two-tailed Z-tests were utilized to determine any statistical significance between groups. A one-tailed Z-test was used when determining if one group was significantly greater than another group. A two-tailed Z-test was used when determining a difference between two groups. The Z-test was used in this study since the sample sizes were large enough to compare the two groups to determine if the population means differed between them (Triola, 2010). Once a significance level was determined a Z score could be determined. Z-tests were used to answer all of the research questions.

DISCUSSION AND CONCLUSION

The understanding of student readiness for college-level work and program completion is important, and this study examined the extent that readiness can impact student success. As such, it was important to know if students who tested as not program-ready complete the nursing program at the same rate as students who are defined as program-ready. The philosophical concept of open access versus selective admission has been a long time debate within community colleges. However, if there was evidence that program readiness impacts program completion and passing the NCLEX-RN exam, then consideration of these factors should be examined to see how they may impact student retention and attrition. Efforts that promote student success

and persistence should be evaluated to align with national efforts related to completion and guided pathways.

The implications of this research may impact the admission processes of the nursing program at Delta College. Completion rates are a concern for a wide array of constituents. There are financial implications to the college when student attrition occurs and the space cannot be filled with another student. Usually, it is not possible to fill an opening within the clinical portion of the program once a cohort has started because of the specialized education that has occurred being very time intensive. The inability to fill an open seat within the program impacts completion and graduation rates. The lower number of graduates has an impact on the ability to fill vacancies at area healthcare institutions.

Healthcare programs are in demand at local colleges and universities. This demand has created extensive wait times to get into the clinical portion of the program unless a college or university utilizes a selective admission process. These wait times can impact student readiness and may have actually placed them in jeopardy of failing the program because they have forgotten information in prerequisite courses and thus increased attrition and decreased program completion.

Review of the data may indicate that a more selective process to enter the nursing program may be warranted. Even though this can be viewed as an impediment to open access one can also note that students who do enter the program will have a greater chance for success. If a more selective process is used to enter the program wait

times may also decrease because not all currently validated students may meet the new requirements.

CHAPTER 4: RESULTS AND FINDINGS

INTRODUCTION

The purpose of this study was to identify if program readiness had any impact on completion. Many factors can impact a student's progression through college; however, nursing students may experience greater levels of attrition due to program guidelines, which do not allow for more than two course failures within the clinical portion of the nursing program. The ability to decrease attrition within nursing programs is beneficial for students and colleges and universities as well as employers. One aspect that may impact program completion can be the student's level of program readiness in reading, writing, and Math.

Because the nursing profession has sought to increase gender and racial diversity to improve the overall quality of care provided to diverse populations, this study compared completion rates for males and females, and for minority and Caucasian students. Finally, this study examined success rates on the NCLEX-RN exam based on the students' level of readiness for the program.

DESCRIPTIVE STATISTICS RESULTS

This study included a sample N of 453 nursing students. The students were from three program tracks within the program. They were admitted into the program from

Fall 2011 through Winter 2014. Table 1 shows the breakdown of the sample population by program track and semester of enrollment. The total number of students in the Full-time track was 296 or 65.34% of the sample population. The total number of students in the Part-time track was 58 or 12.80% of the sample population. The Transition track represented 99 students or 21.85% of the sample population as noted in Table 2.

Table 1: *Enrollment by Program Track and Semester*

Program Track	Semester						Grand Total
	11/FA	12/WI	12/FA	13/WI	13/FA	14/WI	
Full-Time	58	60	60	59	59		296
Part-Time	30		28				58
Transition		33		34		32	99
Grand Total	88	93	88	93	59	32	453

Table 2: *Program Track by Student Count and Percentage of Total Sample Population*

Program Track	Student Count	Percent of Total
Full-time	296	65.34%
Part-time	58	12.80%
Transition	99	21.85%
Grand Total	453	100.00%

The study sample included 399 female students or 88.08% of the total population, while males represented 54 students or 11.92% as noted in Table 3.

Table 3: *Sample Population by Gender*

Gender	Student Count	Percent
Female	399	88.08%
Male	54	11.92%
Grand Total	453	100.00%

Table 4 highlights that Minorities represented 69 students or 15.23% of the study population and Caucasians represented 384 students or 84.77% of the study population.

Table 4: *Sample Population as Caucasian or Minority*

	Student Count	Percent
Caucasian	384	84.77%
Minorities	69	15.23%
Grand Total	453	100.00%

The number of students who completed the program included 272 students or 60.04%, while 181 or 39.96% students did not complete the program (see Table 5). Program completion by program track demonstrated that the Full-time track averaged a 63.18% completion rate, while the Part-time track had a 55.17% completion rate and the Transition track had a 53.54% completion rate.

Table 5: *Program Completion by Program Track*

Program Track	Program Completion		Non-Program Completion	
	Student Count	Percent	Student Count	Percent
Full-time	187	63.18%	109	36.82%
Part-time	32	55.17%	26	44.83%
Transition	53	53.54%	46	46.46%
Grand Total	272	60.04%	181	39.96%

There were 223 students or 49.23% who were program-ready and 230 students or 50.77% who were not program-ready (see Table 6). By program track, 54.39% of the Full-time students were program-ready, while the Part-time and Transition tracks had 39.66% and 39.39% program readiness respectfully.

Table 6: *Program Readiness by Program Track*

Program Type	Program-Ready		Not Program-Ready	
	Student Count	Percent	Student Count	Percent
Full-time	161	54.39%	135	45.61%
Part-time	23	39.66%	35	60.34%
Transition	39	39.39%	60	60.61%
Grand Total	223	49.23%	230	50.77%

Table 7 presents a comparison of program readiness and completion rates.

There were 223 students who were program-ready, and 71.30% of those students, 159 students, completed the program. There were 230 students who were not program-ready, and 113 or 49.13% of these students completed the program.

Table 7: *Comparing Program Readiness and Completion*

Program Completion	Program-Ready		Not Program-Ready		Total Student Count	Total Percent
	Student Count	Percent	Student Count	Percent		
Yes	159	71.30%	113	49.13%	272	60.04%
No	64	28.70%	117	50.87%	181	39.96%
Grand Total	223	100.00%	230	100.00%	453	100.00%

A comparison of program completion rates (see Table 8) indicates 35.10% of total sample population was program-ready and completed the program, while 24.94% of the sample population was not program-ready and completed the program. Of the students who did not complete the program, 25.83% of the sample population was not program-ready and 14.14% of the sample population was program-ready.

Table 8: *Comparing Program Readiness and Completion as a Percentage of the Total Sample Population*

Program Completion	Program-Ready		Not Program-Ready	
	Student Count	Percent	Student Count	Percent
Yes	159	35.10%	113	24.94%
No	64	14.13%	117	25.83%
Grand Total	223	49.23%	230	50.77%

Program readiness and completion were evaluated by program track as shown in Table 9. Students who were program-ready completed the nursing program at a higher percentage in all program tracks. The Full-time students completed at 73.29%; the Part-time students completed at 82.61%; and the Transition students completed at 56.41%. Students who were not program-ready completed the program in the Full-time track at 51.11% and Transition track at 51.67%, while the Part-time track completed at 37.14%.

Table 9: *Program Completion Compared to Program Readiness by Program Track*

	Program Completion				Total Student Count
	Yes		No		
	Student Count	Percent	Student Count	Percent	
Program-Ready					
Full-time	118	73.29%	43	26.71%	161
Part-time	19	82.61%	4	17.39%	23
Transition	22	56.41%	17	43.59%	39
Program-Ready Total	159	71.30%	64	28.70%	223
Not Program-Ready					
Full-time	69	51.11%	66	48.89%	135
Part-time	13	37.14%	22	62.86%	35
Transition	31	51.67%	29	48.33%	60
Not Program-Ready Total	113	49.13%	117	50.87%	230
Grand Total	272	60.04%	181	39.96%	453

Program completion by gender was examined in relationship to being program-ready or not program-ready in Table 10. This table includes the entire sample

population. There were 399 females in the nursing program sample. Of females who were program-ready, 137 (34.34%) completed the program, and 50 (12.53%) did not. Of the females who were not program ready, 107 (26.82%) females completed the program, and 105 (26.32%) did not. In total, for females, 244 (61.15%) completed the program regardless if they were program-ready or not. There were 54 males in the nursing program sample. Of males who were program-ready 22 (40.74%) completed the program and 14 (25.93%) did not. Six (11.11%) males who were not program-ready completed the program and 12 (22.22%) did not. In total, for males, 28 (51.85%) completed the program regardless if they were program-ready or not.

Table 10: *Degree Completion by Gender and Program Readiness*

	Female		Male		Total Student Count	Total Percent
	Student Count	Percent	Student Count	Percent		
Degree Completed						
Program-Ready	137	34.34%	22	40.74%	159	35.10%
Not Program-Ready	107	26.82%	6	11.11%	113	24.94%
Total	244	61.15%	28	51.85%	272	60.04%
Degree Not Completed						
Program-Ready	50	12.53%	14	25.93%	64	14.13%
Not Program-Ready	105	26.32%	12	22.22%	117	25.83%
Total	155	38.85%	26	48.15%	181	39.96%
Grand Total	399	100.00%	54	100.00%	453	100.00%

Program completion based on minority status and program readiness is outlined in Table 11. The entire sample population was reviewed. The sample was not evaluated by various racial segments because the total numbers in each group were fewer than 30, and doing statistical analysis would not have been accurate in populations lower

than 30. The total number of Caucasian students in this study was 384, and the total number of Minority students were 69. Caucasians who were program-ready and completed the program equaled 146 (38.02%) and 58 (15.10%) did not complete the program. Caucasians who were not program-ready and completed the program were 89 (23.18%) and 91 (23.70%) did not complete the program. In the Minority sample 13 (18.84%) students were program-ready and completed the program, while 6 (8.70%) who were program-ready did not complete. Of the students who were not program-ready 24 (34.78%) did complete the program and 26 (37.68%) did not complete the program.

Table 11: *Program Completion by Caucasian/Minority Identification and Program Readiness*

	Caucasian		Minorities		Total	Total
	Student	Percent	Student	Percent	Student	Percent
	Count		Count		Count	
Degree Completed						
Program-Ready	146	38.02%	13	18.84%	159	35.10%
Not Program-Ready	89	23.18%	24	34.78%	113	24.94%
Total	235	61.20%	37	53.62%	272	60.04%
Degree Not Completed						
Program-Ready	58	15.10%	6	8.70%	64	14.13%
Not Program-Ready	91	23.70%	26	37.68%	117	25.83%
Total	149	38.80%	32	46.38%	181	39.96%
Grand Total	384	100.00%	69	100.00%	453	100.00%

Students must take the NCLEX-RN exam upon completion of the nursing program in order to practice as a registered nurse. The total number of students who completed the program was 272. Of the 272 students, 246 (90.44%) passed the NCLEX-RN exam on

their first attempt. 23 (8.46%) students passed the NCLEX-RN exam on a second or subsequent attempt, and 3 (1.10%) students never successfully completed the NCLEX-RN exam. The program tracks all demonstrated fairly consistent passing rates as noted in Table 12. Generally, all program tracks passed the NCLEX-RN exam on the first attempt, which is the standard used in evaluating nursing programs for accreditation, between 88.68% and 90.91%. Each program track experienced one student who was never able to pass the NCLEX-RN exam.

Table 12: *NCLEX-RN Exam Results by Program Track*

NCLEX Result	Full-time		Part-time		Transition	
	Student Count	Percent	Student Count	Percent	Student Count	Percent
Passed First Attempt	170	90.91%	29	90.63%	47	88.68%
Passed Two or More Attempts	16	8.56%	2	6.25%	5	9.43%
Never Passed	1	0.53%	1	3.13%	1	1.89%
Grand Total	187	100.00%	32	100.00%	53	100.00%

Table 13 shows the NCLEX-RN exam results for students based on program readiness. The NCLEX-RN exam pass results based on the students' status as program-ready versus not program-ready show only very slight differences in percentage.

Table 13: *NCLEX-RN Exam Results Based on Program Readiness*

NCLEX Results	Program-Ready		Not Program-Ready		Total Student Count	Total Percent
	Student Count	Percent	Student Count	Percent		
Passed First Attempt	142	89.31%	104	92.04%	246	90.44%
Passed Two or More Attempts	16	10.06%	7	6.19%	23	8.46%
Never Passed	1	0.63%	2	1.77%	3	1.10%
Grand Total	159	100.00%	113	100.00%	272	100.00%

Degree completion and Math readiness were compared in Table 14. Of the students, 292 students were determined to be Math-ready; of those 185 (63.36%) completed the nursing program, and 107 (36.64%) did not complete the nursing program. Of the Math-ready students 159 were program ready and completed — a total of 54.45% of the students who completed in this grouping. Of the students, 87 students who were not program-ready and not Math-ready completed the nursing program, while 74 students who were not program-ready and not Math-ready did not complete the program. Program-ready students accounted for 76.37% of the Math-ready students.

Table 14: *Determination of Degree Completion Based on Math Readiness*

	Math-ready		Not Math-ready	
	Student Count	Percent	Student Count	Percent
Degree Completed				
Program-Ready	159	54.45%		0.00%
Not Program-Ready	26	8.90%	87	54.04%
Total	185	63.36%	87	54.04%
Degree Not Completed				
Program-Ready	64	21.92%		0.00%
Not Program-Ready	43	14.73%	74	45.96%
Total	107	36.64%	74	45.96%
Grand Total	292	100.00%	161	100.00%

As depicted in Table 15, of the total sample population of 453 students, the largest percentage of students who completed a degree were Math-ready and program-ready, representing 35.10% of the population. Overall, 40.84% of Math-ready students completed the program. In addition, 87 students (19.21%) who were not Math-ready

and not program-ready completed the program. Almost one-quarter (23.62%) of students, while Math-ready, did not complete the program as well as another 74 students (16.34%) who were not Math-ready and not program-ready did not complete the program.

Table 15: *Comparing Math Readiness and Degree Completion as a Percentage of the Total Sample Population by Program Readiness*

	Math-ready		Not Math-ready		Total Student Count	Total Percent
	Student Count	Percent	Student Count	Percent		
Degree Completed						
Program-Ready	159	35.10%		0.00%	159	35.10%
Not Program-Ready	26	5.74%	87	19.21%	113	24.94%
Total	185	40.84%	87	19.21%	272	60.04%
Degree Not Completed						
Program-Ready	64	14.13%		0.00%	64	14.13%
Not Program-Ready	43	9.49%	74	16.34%	117	25.83%
Total	107	23.62%	74	16.34%	181	39.96%
Grand Total	292	64.46%	161	35.54%	453	100.00%

Degree completion and reading readiness are compared in Table 16. Of the 398 students who were determined to be Reading-ready, 250 (62.81%) completed the nursing program and 148 (37.19%) did not. The Reading-ready and program-ready students, numbered 159 (39.95%) who completed the program. Students who were not program-ready and not Reading-ready were more likely not to complete the nursing program based on the number of students in that category by percentage. Program-ready students accounted for 56.03% of the Reading-ready students.

Table 16: *Determination of Degree Completion Based on Reading Readiness*

	Reading-ready		Not Reading-ready	
	Student Count	Percent	Student Count	Percent
Degree Completed				
Program-Ready	159	39.95%		0.00%
Not Program-Ready	91	22.86%	22	40.00%
Total	250	62.81%	22	40.00%
Degree Not Completed				
Program-Ready	64	16.08%		0.00%
Not Program-Ready	84	21.11%	33	60.00%
Total	148	37.19%	33	60.00%
Grand Total	398	100.00%	55	100.00%

As illustrated in Table 17, of the total sample population, 398 students were Reading-ready (87.86%). Of these, 250 students (55.19%) who were Reading-ready completed the program, while 148 (32.67%) did not complete the program.

Table 17: *Comparing Reading Readiness and Degree Completion as a Percentage of the Total Sample Population by Program Readiness*

	Reading-ready		Not Reading-ready		Total Student Count	Total Percent
	Student Count	Percent	Student Count	Percent		
Degree Completed						
Program-Ready	159	35.10%		0.00%	159	35.10%
Not Program-Ready	91	20.09%	22	4.86%	113	24.94%
Total	250	55.19%	22	4.86%	272	60.04%
Degree Not Completed						
Program-Ready	64	14.13%		0.00%	64	14.13%
Not Program-Ready	84	18.54%	33	7.28%	117	25.83%
Total	148	32.67%	33	7.28%	181	39.96%
Grand Total	398	87.86%	55	12.14%	453	100.00%

As illustrated in Table 18, 340 students were Writing-ready. Of these students, 225 (66.18%) completed the program, and 115 (33.82%) did not complete the program. Of the Writing-ready students, the program-ready students comprised 46.76% of the students who completed a degree. Students who were not program-ready and not Writing-ready were less likely to complete. Program-ready students accounted for 65.5% of the Writing-ready students.

Table 18: *Determination of Degree Completion Based on Writing Readiness*

	Writing-ready		Not Writing-ready	
	Student Count	Percent	Student Count	Percent
Degree Completed				
Program-Ready	159	46.76%		0.00%
Not Program-Ready	66	19.41%	47	41.59%
Total	225	66.18%	47	41.59%
Degree Not Completed				
Program-Ready	64	18.82%		0.00%
Not Program-Ready	51	15.00%	66	58.41%
Total	115	33.82%	66	58.41%
Grand Total	340	100.00%	113	100.00%

Comparing percentages of the entire sample population based on Writing readiness is shown in Table 19. Within the sample population, 340 students (75.06%) were Writing-ready, and 113 students (24.94%) were not Writing-ready. Of the students who were Writing-ready, 225 (49.67%) completed the program, and 115 (25.395) did not complete the program. Among the not Writing-ready students, 66 students did not complete the program, while 47 students who were not Writing-ready completed the program.

Table 19: *Comparing Writing Readiness and Degree Completion as a Percentage of the Total Sample Population by Program Readiness*

	Writing-ready		Not Writing-ready		Total	Total
	Student	Percent	Student	Percent	Student	Percent
	Count		Count		Count	
Degree Completed						
Program-Ready	159	35.10%		0.00%	159	35.10%
Not Program-Ready	66	14.57%	47	10.38%	113	24.94%
Total	225	49.67%	47	10.38%	272	60.04%
Degree Not Completed						
Program-Ready	64	14.13%		0.00%	64	14.13%
Not Program-Ready	51	11.26%	66	14.57%	117	25.83%
Total	115	25.39%	66	14.57%	181	39.96%
Grand Total	340	75.06%	113	24.94%	453	100.00%

RESEARCH QUESTION #1: FINDINGS AND RESULTS

Research question #1 stated: Do nursing students who enter college program-ready in reading, writing, and Math complete the nursing program at a significantly greater rate than students who are not program-ready in any area of reading, writing or Math at the time they enter college? This question was important to answer to see if there are any differences in students who are program-ready versus not program-ready because this can have an impact on overall student retention and completion. This question looked at all three variables in determining program readiness tied to reading, writing, and Math scores.

Table 20 compares program-ready students to not program-ready students and their nursing program completion rates. Out of 223 program-ready students, 159 students (71.30%) completed the nursing program. Out of 230 not program-ready

students, 113 students (49.13%) completed the nursing program. A one-tailed Z-test was performed. A null hypothesis was used indicating no difference and expressed as $H_0: p_1 = p_2$. The alpha level (α) was set at 0.01 allowing for a 99% confidence level. The Z value obtained when comparing the two proportions was 4.81. The upper critical value for this one-tailed test was 2.33; thus, the null hypothesis was rejected and there was a difference between the two groups. Appendix A lists all of the Z Test performed for each of the research questions.

Table 20: *Comparison of Program Readiness to Program Completion*

	Program-Ready Students	Not Program-Ready Students	Grand Total
Program Completed	159	113	272
Program Not Completed	64	117	181
Grand Total	223	230	453

Upper Critical Value=2.33; Z Score=4.81; $\alpha=0.01$

RESEARCH QUESTION #1A: FINDINGS AND RESULTS

Research question #1a stated: Do students who enter college program-ready in reading complete the nursing program at a significantly greater rate than students who are not program-ready in reading? This research question is looking at one factor of program readiness related to reading preparation. Reading and writing preparation have been associated with nursing program completion (Boudreaux, 2004; Gilmore, 2008). Reading is an essential function within the nursing profession, as many components of the registered nurse position require reviewing materials and then providing teaching to the patient and their families. Reading also extends to understanding how to operate

new equipment and to ensuring that pharmacy orders are properly entered, received, and administered to the patient.

Table 21 compares Reading-ready students to not Reading-ready students and their program completion rates. Out of 398 Reading-ready students, 250 (62.81%) completed the nursing program. Out of 55 not Reading-ready students, 22 (40.00%) completed the nursing program. A one-tailed Z-test was performed. A null hypothesis was used indicating no difference and expressed as $H_0: p_1 = p_2$. The alpha level (α) was set at 0.01 allowing for a 99% confidence level. The Z value obtained when comparing the two proportions was 3.23. The upper critical value for this one-tailed test was 2.33; thus, the null hypothesis was rejected and there was a difference between the two groups.

Table 21: *Comparison of Reading Readiness to Program Completion*

	Reading-ready Students	Not Reading-ready Students	Grand Total
Program Completed	250	22	272
Program Not Completed	148	33	181
Grand Total	398	55	453

Upper Critical Value=2.33; Z Score=3.24; $\alpha=0.01$

RESEARCH QUESTION #1B: FINDINGS AND RESULTS

Research question #1b stated: Do students who enter college program-ready in writing complete the nursing program at a significantly greater rate than students who are not program-ready in writing? Writing has been linked with success in nursing programs (Boudreau, 2004; Gilmore, 2008) and has been associated with improved critical thinking (Luthy, Peterson, Lasseter & Callister, 2009). The registered nurse must

also have the appropriate writing and spelling abilities. It is critical that nurses transcribe orders properly and recognize the difference between medications that may have similar names and spelling but are used for very different purposes. The nurse must also make good observations and then record them.

Table 22 compares Writing-ready students to not Writing-ready students and their program completion rates. Out of 340 Writing-ready students, 225 (66.18%) completed the nursing program. Out of 113 not Writing-ready students, 47 (41.59%) completed the nursing program. A one-tailed Z-test was performed. A null hypothesis was used indicating no difference and expressed as $H_0: p_1 = p_2$. The alpha level (α) was set at 0.01 allowing for a 99% confidence level. The Z value obtained when comparing the two proportions was 4.62. The upper critical value for this one-tailed test was 2.33; thus, the null hypothesis was rejected and there was a difference between the two groups.

Table 22: *Comparison of Writing Readiness to Program Completion*

	Writing-ready Students	Not Writing-ready Students	Grand Total
Program Completed	225	47	272
Program Not Completed	115	66	181
Grand Total	340	113	453

Upper Critical Value=2.33; Z Score=4.62; $\alpha=0.01$

RESEARCH QUESTION #1C: FINDINGS AND RESULTS

Research question #1c stated: Do students who enter college program-ready in Math complete the nursing program at a significantly greater rate than students who are not program-ready in Math? This question is significant to understand because nurses use Math skills every day, primarily in the preparation and administration of

medications. Throughout the program, students must demonstrate a level of Math competency each semester by demonstrating an understanding of Math principles on exams and in the clinical setting when working with their instructor or preceptor.

Table 23 compares Math-ready students to not Math-ready students and their program completion rates. Out of 292 Math-ready students, 185 (63.36%) completed the nursing program. Out of 161 not Math-ready students, 87 (54.04%) completed the nursing program. A one-tailed Z-test was performed. A null hypothesis was used indicating no difference and expressed as $H_0: p_1 = p_2$. The alpha level (α) was set at 0.01 allowing for a 99% confidence level. The Z value obtained when comparing the two proportions was 1.94. The upper critical value for this one-tailed test was 2.33; thus, the null hypothesis was not rejected as there was no difference between the two groups. A one-tailed Z-test was performed at the 0.05 alpha level and the upper critical value was 1.64 and at that confidence level the null hypothesis was rejected meaning there was a difference between the two groups.

Table 23: *Comparison of Math Readiness to Program Completion*

	Math-ready Students	Not Math-ready Students	Grand Total
Program Completed	185	87	272
Program Not Completed	107	74	181
Grand Total	292	161	453

Upper Critical Value=2.33; Z Score=1.94; $\alpha=0.01$

RESEARCH QUESTION #2A: FINDINGS AND RESULTS

Research question #2a stated: Is there a difference in program completion between Caucasian and minority students? This question is important because of efforts to increase the number of minorities within the nursing field. Patients and their families

who can identify with nurses who resemble them have seen better health outcomes (Campbell, 2007). Additionally, should there be differences in completion rates among Caucasians and minorities then additional investigation should be completed to understand why the disparities exist. Historically, nursing has been a predominantly Caucasian, female profession; thus, unintentional biases may exist in teaching strategies and exam questions that may favor this group.

Table 24 compares the students' minority status and completion rates. Out of 384 Caucasian students, 235 (61.20%) completed the nursing program. Out of 69 minority students, 37 (53.62%) completed the nursing program. A two-tailed Z-test was performed. A null hypothesis was used indicating no difference and expressed as $H_0: p_1 = p_2$. The alpha level (α) was set at 0.01 allowing for a 99% confidence level. The Z value obtained when comparing the two proportions was 1.18. The upper critical value for this two-tailed test was 2.58; thus, the null hypothesis was not rejected indicating that there was no difference between the two groups.

Table 24: *Comparison of Program Completion by Racial Identification of Caucasian or Minority*

	Caucasian	Minorities	Grand Total
Program Completed	235	37	272
Program Not Completed	149	32	181
Grand Total	384	69	453

Upper Critical Value=2.58; Z Score=1.18; $\alpha=0.01$

RESEARCH QUESTION #2B: FINDINGS AND RESULTS

Research question #2b stated: Is there a difference in program completion between males and females? This question is important because, like minorities, men in the nursing profession are not very common. The ability for men to practice in the

nursing profession expands opportunities for employment. Also as gender biases change, men will be more accepted within the nursing profession. Again it is important to assure that unintentional biases do not limit completion through teaching strategies or exam questions.

Table 25 compares females to males and their program completion rates. Out of 399 female students, 244 (61.5%) completed the nursing program. Out of 54 male students, 28 (51.85%) completed the nursing program. A two-tailed Z-test was performed. A null hypothesis was used indicating no difference and expressed as $H_0: p_1 = p_2$. The alpha level (α) was set at 0.01 allowing for a 99% confidence level. The Z value obtained when comparing the two proportions was 1.31. The upper critical value for this two-tailed test was 2.58; thus, the null hypothesis was not rejected indicating that there was no difference between the two groups.

Table 25: *Comparison of Program Completion by Gender Identification*

	Female	Male	Grand Total
Program Completed	244	28	272
Program Not Completed	155	26	181
Grand Total	399	54	453

Upper Critical Value=2.58; Z Score=1.31; $\alpha=0.01$

RESEARCH QUESTION #3: FINDINGS AND RESULTS

Research question #3 stated: Do nursing students who enter college program-ready in reading, writing, and Math pass the NCLEX-RN exam at a significantly greater rate than students who are not program-ready in any area of reading, writing, or Math at the time they enter college? This question is important because once students complete the nursing program, they cannot practice as a registered nurse until they

pass the NCLEX-RN exam and obtain their license. By answering this question program-ready and not program-ready students are assessed in two environments. The first level of assessment is completion of the nursing program, which is determined by passing all of the courses and program competencies. The second level of assessment is successful completion of a third party standardized exam, which is the NCLEX-RN exam.

Table 26 compares program-ready to not program-ready students and their results on the NCLEX-RN exam. Of the 159 students who were program-ready, 158 (99.37%) passed the NCLEX-RN exam. Of the 113 not program-ready students, 111 (98.23%) passed the NCLEX-RN exam. A one-tailed Z-test was performed. A null hypothesis was used indicating no difference and expressed as $H_0: p_1 = p_2$. The alpha level (α) was set at 0.01 allowing for a 99% confidence level. The Z value obtained when comparing the two proportions was 0.89. The upper critical value for this one-tailed test was 2.33; thus, the null hypothesis was not rejected indicating that there was no difference between the two groups.

Table 26: *Comparison of Program Readiness and NCLEX-RN Exam Results*

	Passed	Failed	Grand Total
Program-Ready	158	1	159
Completed Program	158	1	159
Not Program-Ready	111	2	113
Completed Program	111	2	113
Grand Total	269	3	272

Upper Critical Value=2.33; Z Score=0.89; $\alpha=0.01$

CONCLUSION / SUMMARY

The study sample consisted of 453 students from the Full-time track, Part-time track and Transition track. The sample consisted of 399 females and 54 males and this was expected since nursing is largely a female dominated profession. Caucasians students numbered 384 and 69 students were Minorities.

Program completion was greatest in the Full-time track and lowest in the Transition track. Program readiness was greatest in the Full-time track and lowest in the Transition track. Program-ready students completed 71.3% of the time while not program-ready students completed 49.13% of the time. Students that were program-ready completed at a greater rate in all program tracks.

Math-ready students numbered 292. Math preparedness represented the smallest number of students. Reading-ready students numbered 398 and were the largest group of students. There were 340 Writing-ready students and this group completed at the greatest percentage at 66.18%. Statistical analysis found differences in completion between program-ready students and not program-ready students. These differences in completion were noted in reading, and writing at the 0.01 alpha level and at 0.05 alpha level for Math. There was no difference between the groups in Math at the 0.01 alpha level.

Female students complete at a greater percentage than male students but statistically there is no difference in completion between the two groups. However, program-ready males appear to have a greater propensity to not completing then program-ready females. Caucasian students complete at a greater percentage than

Minority students, however, statistically there is no difference between the two groups in completing the program.

Students who completed the nursing program demonstrated high passing rates on the NCLEX-RN exam. There was no statistical difference in students passing the NCLEX-RN exam between students who were program-ready or not program-ready.

CHAPTER 5: ANALYSIS OF FINDINGS

INTRODUCTION

The analysis of findings in this study will begin to identify potential recommendations for the nursing program at Delta College. The study has investigated program readiness and completion, completion among gender and racial groups, and passing rates on the NCLEX-RN exam. All of these variables are important in assessing student success. Most importantly the findings will make a meaningful impact on students, the program and the community that we serve.

The sample population was a convenience sample from several semesters over the time period of Fall 2011 through Winter 2014 and included students within all of the registered nurse tracks, including the Full-time track, Part-time track, and Transition track. The study included a total of 453 students. The majority of the students were from the Full-time track, followed by the Transition track, and then the Part-time track. The representation of students is representative of the actual student population. Nursing is a female-dominated profession, so it was not surprising to have 88.08% of the sample population be female, while males comprised 11.92%. The sample population included 84.77% Caucasian and 15.23% Minority students, again closely representing the overall student population at the College, which has 81.02% Caucasian and 18.98% Minority student populations.

ANALYSIS OF RESEARCH QUESTION #1

The hypothesis was stated as: There will be no statistical difference between program-ready and not program-ready students and the completion of the nursing program.

In this study sample the overall program completion was 60.04%, indicating an almost 40% attrition rate. The Full-time track was the only track that saw greater than 60% completion, while the Transition track saw the lowest percentage of completion at 53.54%. Additionally, program-ready students completed at a much higher percentage (71.30%) than not program-ready students (49.13%).

Of these students, 223 students were program-ready or 49.23% of the sample population; thus, the program-ready sample population was almost equal to the not program-ready students, which numbered 230. Although the program-ready to not program-ready students were almost equally represented, as a whole this was not true when comparing program tracks. The Full-time track had the greatest percentage of program-ready students (54.39%) while the Transition track had the lowest percentage of program-ready students (39.39%) and, thus, the greatest percentage of not program-ready students.

Although students who were program-ready completed at a much higher percentage (71.30%) and represented 35.01% of the entire sample population, students who were not program-ready were able to complete 49.13% of the time when compared to other not program-ready students. Comparing not program-ready students who completed, as a percentage of the entire sample population, they comprised

24.94% of the population. This result demonstrates that factors other than program readiness also impact completion. This can be stated in reverse fashion for the program-ready students, as some students who were program-ready did not complete though at a much smaller percentage than not program-ready students.

Students who were program-ready completed in all program tracks at a higher percentage than those who did not complete. Students who were not program-ready completed at a higher percentage except for the Part-time track where the students did not complete at a greater percentage.

These findings support the results of the Z-Test that indicated that the null hypothesis was to be rejected and indicating that there was a statistically significant difference in program-ready students completing the nursing program. This finding supports the work by Feldman & Zimble (2012) that indicated underprepared students are at greater risk of not completing college. However, the finding that not program-ready students are just as likely to complete as not to complete aligns with the work of Fike and Fike (2008) who found that students who successfully completed their developmental education demonstrated persistence in college.

ANALYSIS OF RESEARCH QUESTION #1A

The hypothesis was stated as: There will be no statistical difference between program-ready and not program-ready students and the completion of the nursing program when considering reading preparation.

The number of Reading-ready students in the sample population was 398 students, or 87.86% of the total. Reading readiness represented the largest number of students in this study when compared to Math- or Writing-ready students. The number of Reading-ready students who completed the nursing program as a whole was 250 students; 55.19% of the sample population. The Reading-ready students also completed the nursing program in the greatest number as compared to Math- or Writing-ready students. When you look at only Reading-ready students, 62.81% completed the nursing program. This percentage of completion, within the Reading-ready only group, actually represents the lowest completion rate when compared against Math- or Writing-ready students. In the Reading-ready group, if students were not program-ready, they had almost equal chance of completing or not completing the program.

When a Z Test was performed the null hypothesis was rejected as there was a statistically significant difference between Reading-ready and not Reading-ready students and completion of the program. Students who demonstrated a better ability to read were more likely to complete the program as reading comprehension can have an impact on learning (Goldstein & Perin, 2008; Mzumara and Shermis, 2001).

ANALYSIS OF RESEARCH QUESTION #1B

The hypothesis was stated as: There will be no statistical difference between program-ready and not program-ready students and the completion of the nursing program when considering writing preparation.

The number of Writing-ready students in the sample population was 340 students, or 75.05% of the total. The group of Writing-ready students was the second largest group of students in the study when compared to Reading- and Math-ready students. The number of Writing-ready students who completed the nursing program as a whole was 225 students; 49.67% of the sample population. The program completion rate for the Writing-ready students was 66.18%. This was the largest percentage of completion in the nursing program when compared to Reading- and Math-ready students.

The null hypothesis was rejected, when a Z Test was performed, as there was a statistically significant difference between Writing-ready and not Writing-ready students and completion of the program. Students who were writing-ready completed at the greatest percentage. The ability to write and to clearly articulate thoughts may have a positive impact on learning and a student's success in college (Crews & Aragon, 2004; Goldstein & Perin, 2008; Mzumara & Shermis, 2001).

ANALYSIS OF RESEARCH QUESTION #1C

The hypothesis was stated as: There will be no statistical difference between program-ready and not program-ready students and the completion of the nursing program when considering Math preparation.

The number of Math-ready students in the sample population was 292 students, or 64.46% of the total. Students in the Math-ready category represented the smallest number of students in the study compared to Reading- and Writing-ready students. The

number of Math-ready students who completed the nursing program was 185 students; 40.84% of the sample population. When only comparing the Math-ready students who completed the nursing program that percentage increased to 63.36%.

The not Math-ready students comprised 35.54% of the sample population and represented the largest number of not program-ready students who did complete the nursing program, which was 87 students or about 19.21% of the sample population.

The Z Test demonstrated that the null hypothesis was to be rejected, at the 0.05 alpha level, as there was a statistically significant difference between Math-ready and not Math-ready students and completion of the program. However, at the 0.01 alpha level, there was no statistically significant difference between Math-ready and not Math-ready students and the completion of the program. This finding was important as the level of Math required for the nursing program did not equate to college readiness. The level of Math competency that students must demonstrate is at the elementary algebra level and not at college-level algebra. In the findings of this study, program readiness, in reading and writing, impacted completion as students were at college-ready levels. This finding may indicate that the lack of difference between the two groups, at the 0.01 level, was because the Math requirement was not as hard to attain. Math is important within nursing as a variety of nursing skills require understanding Math. Additionally, students who pursue additional degrees in nursing will need to demonstrate a higher level of math ability. The nursing program requires every student to pass a Math competency each semester while in the program, however, math skills may need to be reinforced and possibly increased.

ANALYSIS OF RESEARCH QUESTION #2A

The hypothesis was stated as: There will be no difference in completion rates between Caucasian and Minority students.

The sample population consisted of 384 Caucasian students and 69 Minority students. Overall, 61.20% of the Caucasian students completed the program compared to 53.62% of the Minorities. The Minorities completed at a percentage that was lower than the overall completion percentage of 60.04% for the entire sample population. Of the Caucasian students who completed the program, the largest percentage were program-ready, while of the Minority students, the largest percentage of students who completed were not program-ready. Both the Caucasian and Minority students were at risk for not completing the program if they were not program-ready; however, as mentioned, being not program-ready did not exclude students from completing.

The null hypothesis was not rejected when comparing Caucasian and Minority students, meaning there was no difference in completion rates between the two groups.

This result is a positive finding for the nursing profession overall because of the need to increase minority representation. However, it should be noted that 72.46% of the Minorities in this sample population were not program-ready compared to 46.88% of the Caucasians who were not program-ready. This difference in program readiness establishes a barrier to completion when considered with the first research question findings, indicating that students who are program-ready complete at a greater rate. It would also be positive to note that, even though many Minority students may not be

program-ready upon entering college, their completion rates are no different than the Caucasian students. This result would indicate that effective strategies are being implemented to assist with completion.

ANALYSIS OF RESEARCH QUESTION #2B

The hypothesis was stated as: There will be no difference in program completion between males and females.

The sample population consisted of 399 female students and 54 male students. Overall, 61.15% of the female students completed the program compared to 51.85% of male students. Males completed at a percentage that was lower than the overall completion percentage of 60.04% for the entire sample population. Female students who are not program-ready are just as likely to complete the program (26.82%) as they are to not complete the program (26.32%). While males who are not program-ready are more likely not to complete (22.22%) than to complete (11.11%).

One finding that was interesting to note was that males who were program-ready were twice as likely *not* to complete as the females. The percentage of program-ready males who did not complete was 25.93%; for the females that percentage was 12.53%.

The null hypothesis was not rejected when comparing female and male students, meaning there was no difference in completion between the two groups. This finding is important since there is an emphasis within the nursing profession to increase the number of men in the field.

The percentage of male students who are program-ready is 66.67%, compared to female students at 46.87%. This finding may indicate that male students are properly prepared for the program but may experience attrition for reasons that are not related to program readiness. Part of this attrition could be related to a lack of socialization because the nursing profession, as well as the program's instructors and visible role models, are primarily female dominated. While many female students fight gender stereotypes in STEM fields, male students face similar barriers within traditionally female roles such as nursing.

ANALYSIS OF RESEARCH QUESTION #3

The hypothesis was stated as: There will be no statistical difference between program-ready and not program-ready students and passing the NCLEX-RN exam.

Within this population, 272 students completed the program. All three program tracks passed the NCLEX-RN exam with fairly consistent percentages that ranged from 88.68% to 90.91% on their first attempt. All but three students passed the NCLEX-RN exam on subsequent attempts. When comparing program-ready students to not program-ready students again there was very little variation between the groups.

The null hypothesis was not rejected when a Z Test was performed that indicates no difference between the groups. This finding is significant because it demonstrates that students regardless of their program readiness status upon entrance into college can pass the NCLEX-RN exam. This finding would support that students who persist through the nursing program obtain the education and competencies they need to be

successful on the NCLEX-RN exam and for entry into practice. The similar pass rates between program-ready and not program-ready students further supports that students who persist through to program completion may possess some common characteristics.

The first research question, however, does indicate that there was a difference in completion between program-ready and not program-ready students. One would suspect that students who invest significant time, money, and resources into gaining admission into the nursing program would have the desire to finish the program. Students who completed the program, regardless of their program readiness status, then had the motivation, resources, cognitive abilities, or know how to not only complete the program but go on to pass the NCLEX-RN exam.

SUMMARY / CONCLUSION

In this study program-ready students completed at a statistically significant difference than not program-ready students. It was noted that program-ready students completed 71.30% of the time. Whereas, not program-ready students were just as likely to complete (49.13%) as not complete (50.87%). In the areas of reading, and writing the students who were program-ready completed at a statistically significant difference than not program-ready students. In the area of Math students completed at a statistically significant difference at the 0.05 level but not at the 0.01 level indicating that the level of Math required to get into the nursing program may impact this finding. The literature supports that students who are better academically prepared do have higher college completion rates but academic preparedness will not guarantee college

completion. The work by Tinto (2012) and Karp and Bork (2012) note that factors besides academic achievement impact student retention and completion.

There were no differences found in the completion of minorities or males in the nursing program. These findings were seen as positive findings since efforts have been aimed at increasing minorities and men in nursing. Though minorities and men are completing at the same rate as Caucasian and female students there are some additional findings to highlight. Minority students are represented as a larger percentage of not program-ready students which increases the risk for them not completing as program-ready students do complete at a greater rate. In this study program-ready men fail to complete at greater percentage than female students which could be related to issues with socialization and gender stereotypes. Finally, program-ready students and not program-ready students complete the NCLEX-RN exam with the same level of proficiency. This finding supports that students are being prepared for entry into practice equally upon completion of the program regardless of the student's level of program readiness.

CHAPTER 6: CONCLUSIONS AND IMPLICATIONS

INTRODUCTION

The purpose of this study was to examine if program readiness had any impact on nursing program completion. Program readiness was determined by the student's reading, writing, and Math scores obtained on the ACT or COMPASS exams. This study also examined students' ability to pass the NCLEX-RN exam since they cannot practice nursing until they obtain licensure by taking and passing the NCLEX-RN exam. Two subgroups were evaluated within the sample population related to gender and minorities to determine if any differences in completion were noted. Examining these outcomes are important because they impact the profession of nursing and nursing education and can help identify students at risk.

The students enrolled in a nursing program must be competent entry-level practitioners upon completion of the program of study. The student's knowledge and abilities are evaluated throughout the program. One can assume that as students take prerequisite courses to enter the nursing program, they have made a career decision to become a nurse; thus, their intent is to be focused on completing the program of study. With so much invested into their education and chosen career, it can be devastating if they cannot complete the nursing program or pass the NCLEX-RN exam. Program completion is not only important to the student but to the college, since attrition from

nursing programs decreases the number of graduates and impacts program sustainability from an economic perspective. Additionally, with the demand for registered nurses remaining strong it is important to focus on strategies that improve retention.

ADDRESSING PROGRAM READINESS

In this study the researcher found that students who were program-ready upon entering college completed the nursing program at a significantly greater rate. Students who were program-ready in reading and writing also completed the program at significantly greater rates. Students who were program-ready in Math completed at significantly greater rates at the 0.05 level but not at the 0.01 level, indicating that the Math requirement may impact this finding. From a purely academic perspective, this is logical. Students who have better academic preparation most likely had higher high school GPAs, may have come from a better socioeconomic background, and may have parents who have attended college; all of which are factors that positively impact completion (Feldman & Zimble, 2012; Tinto, 2012; Wang & Parker, 2011). Other studies have found that reading and writing preparation have been associated with successful program completion (Boudreaux, 2004; Gilmore, 2008).

Program attrition is a concern, and in this study approximately 40% of the students who entered the program did not complete. Of the students who did not complete, 64 students were program-ready while 117 students were not program-ready, demonstrating that students who were not program-ready were almost twice as

likely not to complete. However, of the 272 students who completed the nursing program, 159 or 58% were program-ready, while 113 or 42% were not program-ready. Therefore, even though program readiness was a significant factor in program completion, a fairly large sample of students also completed the nursing program even though they were not initially tested as being program-ready. It is these students who are the success stories of community colleges and who support the mission of open access. Though this study did not evaluate factors that impact student success for the underprepared student, prior research has indicated that positive faculty interaction and integration into the college environment positively impacts completion (Attewell, Heil, & Reisel, 2011; Moss & Young, 1995).

The ability to positively impact students who are not program-ready and get them to completion is no easy task. Students in this study who were not program-ready were just as likely not to complete the program as they were to complete the program and were almost exactly evenly split between the two groups. Completion is a multifaceted concept and according to Karp and Bork (2012) is impacted by academic habits, cultural know-how, balancing multiple roles, and help-seeking behaviors. Tinto (2012) complements their retention model by noting that retention is positively impacted by establishing expectations and a clear pathway to completion, providing support and feedback and keeping students involved. Colleges assume that every student who enters the nursing program would want to complete the program, as they have made significant investments in time and financial resources, and likely view nursing as a lifelong career.

There is no easy answer to the persistence and completion challenges that plague colleges and universities. There are interventions that help with completion such as guided pathways (Bailey, Jaggars & Jenkins, 2015); however, this approach alone will not solve the completion issue. There will always be other factors that impact student completion such as transportation, childcare issues, or lack of support from family to encourage a student to complete. What is that characteristic that keeps a student focused to persist and complete college when they are faced with challenges that prevent them from achieving their educational goals? Prior research has focused on a person's strong sense of intrinsic motivation in helping them to achieve a goal (Allen & Sconing, 2005; Hanover Research, 2014; Rogers, 2010) and that a person may actually work harder to achieve success if they are motivated to achieve that goal (Jacobson, 2006).

Research presently being conducted is focused on "grit." Grit has been defined as persistence over time in achieving one's goals and overcoming barriers (Goodwin & Miller, 2013). Traits associated with grit are goal directedness, motivation, self-control, and positive mind-set (Goodwin & Miller, 2013). Sparkman, Maulding, and Roberts (2012) note that emotional intelligence or the ability to function effectively within a given environment may impact persistence and completion. The ability to transition into college is not only related to academics but the ability to contribute and cooperate within a group, show understanding and resist making impulsive decisions. Grit and emotional intelligence are closely aligned as they both identify that a positive outlook, collaboration, and intentional decision-making may impact goal attainment. Research

has demonstrated that contextualizing learning may help students better understand the material they are learning and play a role in completion (Perin, 2011). With a better understanding of how grit and emotional intelligence may impact goal attainment, it may be prudent for colleges and programs to see if an accurate assessment of these traits can be measured and be used to help students identify their strengths or weaknesses to improve program completion.

Developmental education is seen at times as a barrier to student completion versus better preparing students for success in college. Hodara and Jaggars (2014) found that accelerating developmental education sequencing and getting students into college-level courses did help in college completion. However, for some students acceleration did not lead to long-term success thus indicating that not all students may benefit from accelerated developmental education. In this study, not program-ready students were just as likely to complete the nursing program as to not complete the nursing program. Another reason for this finding may be that developmental education in Math and English is not the only determinant to program readiness. Zeidenberg and Jenkins (2012) found that overall GPA in college courses was a strong predictor of completion. They also found that other introductory gateway courses may also influence college completion. For example, a student pursuing a nursing degree will need to take anatomy and physiology. The grade earned in that course may be a good indicator of long-term success. Completers generally had higher grades in these gateway courses. Grades may also be a measure of motivation, prior learning, and the result of other commitments (Zeidenberg & Jenkins, 2012). If indeed poor academic performance

in college is noted in not only Math and English but also in other introductory gateway courses, in order to impact completion both academic and non-academic measures need to be put in place for the students to help them succeed. One approach to helping students complete is by providing structure to the students by having a guided pathway that provides a goal and allows the students to monitor their progress towards their goal. This is not done in isolation, though, as advising plays an important part in following up with the student and assisting them with barriers they may encounter as well as acclimating to the college environment (Jenkins & Cho, 2014).

ADDRESSING MINORITIES

In this study, there were no significant differences in the completion rates of Minority and Caucasian students, and the representative sample in the study did mirror the overall percentage of minorities enrolled at the College. This finding is significant since many times completion rates for minority students are not as good as the general population. Although the findings related to minority student completion were positive, that does not mean that there are not barriers to completion that these students must overcome. First, even though minority enrollment in the nursing program mirrors the overall college population, the nursing profession as a whole still lacks significant number of minorities and still fewer minority faculty. Secondly, while completion rates among minority students in this study were comparable to those of Caucasian students, based on percentage, more minorities are not program-ready. Many factors impact students' ability to complete college, especially if they are not program-ready. While it

appears that the sample population in this study demonstrates these students' ability to perform as well as Caucasian students, it does not mean that they may not benefit from additional student support.

One factor that may play an important piece in their completion efforts is motivation. Many times minority students may come from lower socioeconomic status and may be the first individual in their family to attend college. As already noted, a higher percentage arrive not program-ready, a trend that is supported in the literature. These challenges may be the motivating force behind their success or giving them the grit to complete. The desire strive to become better and to provide a better life for their family may be that motivation. Evans (2013) noted that minority students have the intention to graduate; however, academic preparation, socioeconomic factors, and campus climate can impact retention. To support minorities and to increase diversity overall, Evans (2013) recommends that financial support be available, like-faculty available to serve as role models, opportunity for effective faculty-student relationships, and equity in admission criteria. The needs of minority students are complex related to being underprepared and lacking family support or financial resources. The students' understanding of higher education is advantageous in helping students succeed (Carthon, Nguyen, Pancir & Chittams, 2015).

ADDRESSING GENDER

In this study, there was no correlation between the students' gender and the completion of the nursing program. The percentage of men in the sample population

was 11.92%, and the percentage of men completing the program was 10%. The percentage of men in the nursing profession nationally is approximately 9.6%; thus, the percentage of men in the nursing program is fairly representative of national findings. Although no significant differences in completion were noted between genders, a couple of observations are important to note. In this study a greater percentage of program-ready men did not complete the program. These results support previous research: Perrakis (2008) found that men overall are completing fewer degrees, and Ransom and Lee (2012) found that family obligations and affordability were impacting men in completing degrees.

Additional reasons that program-ready men may not be completing the nursing program may revolve around gender differences within the field. Nursing is a female dominated profession and, thus, male role models within the field may be difficult to find, leading to social isolation. Male nursing students may also have difficulty communicating with nursing faculty who are primarily female. Stott (2006) found that male nursing students experienced isolation related to not feeling comfortable communicating both to other nursing students and to nursing faculty, as well as being asked to do things that were “assumed” to be more male specific, such as lifting patients and taking their shirt off to have an ECG performed. Stott (2006) also found that men were drawn to the technical aspects of nursing, leading to perceptions that men were less caring, even though the students themselves were identified as demonstrating caring attitudes. It appears that biases and gender differences may impact completion; therefore, it is important to remain conscious to ensure that men

are not being treated any differently than female students and that efforts are focused on ensuring that male students are staying engaged.

Finally, a study done by Salamonson, Everett, Cooper, Lombardo, Weaver, and Davidson (2012) found that students who selected nursing as their first choice of study were more likely to complete. They also found that men and students working more than 16 hours per week were less likely to complete the nursing program. Since program-ready men in this study did not complete at a higher percentage, it is possible that nursing was not their first career choice. Additionally, this issue clearly transcends gender, leading to the question: Are students who work more than 16 hours per week placing themselves at risk for not completing the program?

ADDRESSING NCLEX-RN EXAMINATION

In this study, there was no difference in NCLEX-RN exam pass rates between program-ready and not program-ready students. This finding affirms that program outcomes and competencies are preparing students for entry into practice. Standardized exams have come under scrutiny for having biases that may present challenges for minorities related to completion. In this study, none of the students who failed the exam were minority or male students.

In efforts to support students in completing the NCLEX-RN exam successfully, the nursing program has subscribed to an online preparatory NCLEX review and remediation service. This software allows students to take proctored exams and they receive feedback on how they did in various areas of nursing content. This allows the students

to identify their areas of strength and also identify areas where they should focus additional efforts. This software program is available to the students throughout the program and provides support over several semesters. The consistent use of this product improves a student's learning and comprehension of core nursing concepts and provides predictive analysis of a student's ability to pass the NCLEX-RN exam.

RECOMMENDATIONS

Recommendation #1: Decreasing Attrition

In this study, program readiness was found to have an impact on program completion. Program readiness was evaluated in the areas of reading, writing, and Math. In each of these areas, it was found that students who were program-ready completed the program at a significantly greater rate. The attrition rate with this sample population was just under 40%. The researcher also further identified that students who were not program-ready had an almost equal chance of completing the program or not completing the program.

Based on these findings, the researcher recommends that the nursing discipline discuss opportunities to decrease attrition within the program and identify metrics for evaluation. Although a 40% attrition rate is high, it is not beyond the findings in the literature based on other nursing program attrition rates. The discipline should discuss all programmatic recommendations for change with the Division Chair, Academic Administration, and Student and Educational Services Administration for additional input and implementation concerns. It would also be prudent to identify nursing

programs of similar size and composition, who have attrition rates below 20%, and see what measures they have taken or have implemented that have improved retention. Evaluation of programs that have effectively implemented measures to decrease attrition may provide some promising practices for the students who are not program-ready but have the potential to complete the nursing program.

Recommendation #2: Decrease Repeating Courses or Increasing Selective Admissions Criteria

Grades, college GPA, and intention to become a nurse have all been linked with program completion. Additionally, grades may demonstrate a level of motivation. The researcher did not formally research if students repeated courses because they failed them or did not achieve the grade needed for the program, but it is the recommendation of this researcher that the discipline investigate if repeating key courses should be limited to a certain number of attempts, possibly two, which may improve program completion rates.

Since program-ready students demonstrate a significantly greater completion rate, an alternate recommendation would be to use selective admission criteria that would promote a greater completion rate within the nursing program. This recommendation has merit as many nursing programs utilize a selective admission process for entry. Should this recommendation be further evaluated, it would be important to obtain attrition information from colleges that use a selective admission process to see the impact the policy has on student retention. This recommendation also has significant implications related to open access, which has been a hallmark of

community colleges since their inception. However, the completion agenda is challenging institutions to see if practices can be evaluated to have better outcomes and changes that are implemented need to assure equity to underrepresented groups.

Recommendation #3: Required Advising and Orientation Sessions

Since retention is positively influenced by strong academic habits, cultural know-how, help-seeking behaviors (Karp & Bork, 2012) as well as expectations, support, assessment, and feedback (Tinto, 2012), it is the recommendation of this researcher that nursing program students have required counseling and advising sessions with an assigned faculty advisor who would meet with the student at least one time a semester and review key areas to ensure the student is not at risk of stopping out of the nursing program — for academic or non-academic reasons. These sessions may also strengthen student and faculty relationships, which were also found to improve retention.

Implementing this idea would take input from the college's Counseling and Advising Department and would require that certain key aspects be covered in each session. Faculty education would need to be provided to ensure that faculty understood the intent of the advising sessions and how they may impact retention.

The researcher also recommends that a pre-program orientation/expectation workshop be offered prior to students validating for the program. The context for this workshop would be to inform students of program requirements and expectations as well as answer their questions that they may have about the program. Offering this orientation/expectation workshop would begin to develop a relationship that

demonstrates to the student that the program cares about them and getting them to completion.

Recommendation #4: Reevaluate Part-time Completion Plan

The researcher recommends that the completion rate of the part-time students be reevaluated once a cohort completes the new part-time track sequence. The students included in this study were students who were following the old part-time track sequence that required being enrolled for 2 ½ years. The part-time track was reassessed and the students now complete in two years but go year around for six continuous semesters. Based on literature findings, the shortened pathway should improve completion.

Recommendation #5: Increase Support for Minority and Male Students

This researcher recommends that efforts to support minority enrollment and completion in the nursing program continue. Although completion rates between Caucasian and Minority students did not differ, it may be beneficial to interview students utilizing a focus group approach to gather additional information. The focus group discussions could seek minority students' perspectives on what interventions may be helpful in better supporting them in the program through to completion.

Similarly, while there was no difference in completion rates between male and female students, this researcher recommends, in an effort to support males in nursing, that focus group discussions also occur with the men in the nursing program to gather

their perspectives on what interventions may be helpful in better supporting them in the program through to completion.

At this time, the researcher has no recommendations related to the NCLEX-RN exam as the findings in the study support that students are passing the NCLEX-RN exam at an exceptional percentage and the software product being used within the program appears to be meeting the program's needs.

Recommendation #6: Evaluate Math Requirement

The math requirement to enter the nursing program is not at a college ready level. This study found that there is no difference in completion between program-ready and not program-ready students at the 0.01 alpha level and this researcher is recommending that the Math level be further evaluated. The evaluation should look at nursing students who have college ready Math scores to those who do not and see if there is any statistical significance in program completion between the groups. This recommendation is based on ACT's findings that students who have COMPASS scores of 77 or higher in writing, 89 or higher in reading and 52 or higher in college algebra have a 75% chance of obtaining a "C" or better in their college courses (ACT Research & Policy, 2013).

FURTHER RESEARCH

In investigating the research questions designed for this study, even more questions surfaced that, if investigated, may prove to be beneficial to the nursing

program. The following questions arose which may prompt additional research in the area of program readiness and program completion.

Area for Future Research #1

The literature noted that college GPA may be a determinant in college completion. Further examination of this sample population may provide additional information as to any correlation between program completion and student GPA. Related to overall GPA are individual grades in program courses. Research indicates that grades may be an indicator of motivation and impact college completion. Research could be done to see if students who fail prerequisite courses or have to repeat prerequisite courses to achieve the parameters set by the program may be at greater risk for not completing their program of study.

Area for Future Research #2

Program completion encompasses multiple facets that involve both academic and nonacademic factors. This study looked at program readiness as one factor in completion. Some of the findings from this research indicate that non-cognitive factors most likely also are impacting program completion. Research studies in the area of grit and motivation may provide additional findings that may positively impact program completion.

Area for Future Research #3

Research has indicated that students who attend college full time have greater rates of completion. Additional research on this sample population could be analyzed to

determine if the number of semesters enrolled in college has any correlation with student completion rates. Because the majority of students enrolled at Delta College attend part-time, an analysis could be done to see if the number of enrolled semesters and credits attempted impact completion.

Area for Future Research #4

Students transfer, for a variety of reasons, into Delta College, and they all want to complete an educational goal. This study did not examine transfer students; however, additional research could be conducted to see if transfer students complete at the same rate as students who have only taken courses at Delta College.

CONCLUSIONS AND IMPLICATIONS

This study, although not generalizable to a greater population, has the ability to positively impact students and their practice at this community college and may offer recommendations for similar programs nationwide. Overall, students who complete the program pass the NCLEX-RN exam and obtain licensure so they can practice as a registered nurse. However, several recommendations have been made that could have a positive impact on completion rates, especially for not program-ready students. The ability to decrease attrition will not only have a positive impact on the students, but will also positively impact the college and community as more registered nurses will be prepared and available to fill the ongoing and upcoming need for nurses. Additionally, efforts to support minority and male students to completion and becoming registered nurses will be beneficial to the community. Patients will be able to better identify with

nurses who are similar to them and young children will begin to identify role models to exemplify and see themselves becoming as they decide on a career path.

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APPENDIX A: Z TEST RESULTS FOR RESEARCH QUESTIONS

Research Question #1:

Do nursing students who enter college program-ready in reading, writing, and Math complete the nursing program at a significantly greater rate than students who are not program-ready in any area of reading, writing or Math at the time they enter college?

Z Test for Two Proportions

Successes in Group 1	159
Sample Size Group 1	223
Proportion Group 1	0.713004484
Successes in Group 2	113
Sample Size Group 2	230
Proportion Group 2	0.491304348
Average Proportion	0.600441501
Difference in Two Proportions	0.221700136
Hypothesized Difference	0
a	0.01
Z	4.816235024
<hr/>	
Two-Tailed Test	
Lower Critical Value	-2.575829304
Upper Critical value	2.575829304
p-value	1.46292E-06
Decision	Reject
<hr/>	
One-tailed Test (Lower)	
Lower Critical Value	-2.326347874
p-value	0.999999269
Decision	Do not reject
<hr/>	
One-Tailed test (Upper)	
Upper Critical Value	2.326347874
p-value	7.31461E-07
Decision	Reject
<hr/>	

Research Question #1a:

Do students who enter college program-ready in reading complete the nursing program at a significantly greater rate than students who are not program-ready in reading?

Z Test for Two Proportions

Successes in Group 1	250
Sample Size Group 1	398
Proportion Group 1	0.628140704
Successes in Group 2	22
Sample Size Group 2	55
Proportion Group 2	0.4
Average Proportion	0.600441501
Difference in Two Proportions	0.228140704
Hypothesized Difference	0
a	0.01
Z	3.237807456
<hr/>	
Two-Tailed Test	
Lower Critical Value	-2.575829304
Upper Critical value	2.575829304
p-value	0.001204521
Decision	Reject
<hr/>	
One-tailed Test (Lower)	
Lower Critical Value	-2.326347874
p-value	0.99939774
Decision	Do not reject
<hr/>	
One-Tailed test (Upper)	
Upper Critical Value	2.326347874
p-value	0.00060226
Decision	Reject
<hr/>	

Research Question #1b:

Do students who enter college program-ready in writing complete the nursing program at a significantly greater rate than students who are not program-ready in writing?

Z Test for Two Proportions

Successes in Group 1	225
Sample Size Group 1	340
Proportion Group 1	0.661764706
Successes in Group 2	47
Sample Size Group 2	113
Proportion Group 2	0.415929204
Average Proportion	0.600441501
Difference in Two Proportions	0.245835502
Hypothesized Difference	0
a	0.01
Z	4.622199046
<hr/>	
Two-Tailed Test	
Lower Critical Value	-2.575829304
Upper Critical value	2.575829304
p-value	3.79693E-06
Decision	Reject
<hr/>	
One-tailed Test (Lower)	
Lower Critical Value	-2.326347874
p-value	0.999998102
Decision	Do not reject
<hr/>	
One-Tailed test (Upper)	
Upper Critical Value	2.326347874
p-value	1.89847E-06
Decision	Reject

Research Question #1c:

Do students who enter college program-ready in Math complete the nursing program at a significantly greater rate than students who are not program-ready in Math?

Z Test for Two Proportions

Successes in Group 1	185
Sample Size Group 1	292
Proportion Group 1	0.633561644
Successes in Group 2	87
Sample Size Group 2	161
Proportion Group 2	0.540372671
Average Proportion	0.600441501
Difference in Two Proportions	0.093188973
Hypothesized Difference	0
α	0.05
Z	1.938180639
<hr/>	
Two-Tailed Test	
Lower Critical Value	-1.959963985
Upper Critical value	1.959963985
p-value	0.052601188
Decision	Do not reject
<hr/>	
One-tailed Test (Lower)	
Lower Critical Value	-1.644853627
p-value	0.973699406
Decision	Do not reject
<hr/>	
One-Tailed test (Upper)	
Upper Critical Value	1.644853627
p-value	0.026300594
Decision	Reject

Research Question #1c:

Do students who enter college program-ready in Math complete the nursing program at a significantly greater rate than students who are not program-ready in Math?

Z Test for Two Proportions

Successes in Group 1	185
Sample Size Group 1	292
Proportion Group 1	0.633561644
Successes in Group 2	87
Sample Size Group 2	161
Proportion Group 2	0.540372671
Average Proportion	0.600441501
Difference in Two Proportions	0.093188973
Hypothesized Difference	0
a	0.01
Z	1.938180639
<hr/>	
Two-Tailed Test	
Lower Critical Value	-2.575829304
Upper Critical value	2.575829304
p-value	0.052601188
Decision	Do not reject
<hr/>	
One-tailed Test (Lower)	
Lower Critical Value	-2.326347874
p-value	0.973699406
Decision	Do not reject
<hr/>	
One-Tailed test (Upper)	
Upper Critical Value	2.326347874
p-value	0.026300594
Decision	Do not reject

Research Question #2a:

Is there a difference in program completion between Caucasians and minorities?

Z Test for Two Proportions

Successes in Group 1	235
Sample Size Group 1	384
Proportion Group 1	0.611979167
Successes in Group 2	37
Sample Size Group 2	69
Proportion Group 2	0.536231884
Average Proportion	0.600441501
Difference in Two Proportions	0.075747283
Hypothesized Difference	0
a	0.01
Z	1.182721731
<hr/>	
Two-Tailed Test	
Lower Critical Value	-2.575829304
Upper Critical value	2.575829304
p-value	0.236919449
Decision	Do not reject
<hr/>	
One-tailed Test (Lower)	
Lower Critical Value	-2.326347874
p-value	0.881540276
Decision	Do not reject
<hr/>	
One-Tailed test (Upper)	
Upper Critical Value	2.326347874
p-value	0.118459724
Decision	Do not reject

Research Question #2b:

Is there a difference in program completion between males and females?

Z Test for Two Proportions

Successes in Group 1	244
Sample Size Group 1	399
Proportion Group 1	0.611528822
Successes in Group 2	28
Sample Size Group 2	54
Proportion Group 2	0.518518519
Average Proportion	0.600441501
Difference in Two Proportions	0.093010304
Hypothesized Difference	0
a	0.01
Z	1.309603271
<hr/>	
Two-Tailed Test	
Lower Critical Value	-2.575829304
Upper Critical value	2.575829304
p-value	0.190330081
Decision	Do not reject
<hr/>	
One-tailed Test (Lower)	
Lower Critical Value	-2.326347874
p-value	0.904834959
Decision	Do not reject
<hr/>	
One-Tailed test (Upper)	
Upper Critical Value	2.326347874
p-value	0.095165041
Decision	Do not reject

Research Question #3:

Do nursing students who enter college program-ready in reading, writing, and Math pass the NCLEX-RN exam at a significantly greater rate than students who are not program-ready in any area of reading, writing, or Math at the time they enter college?

Z Test for Two Proportions

Successes in Group 1	158
Sample Size Group 1	159
Proportion Group 1	0.993710692
Successes in Group 2	111
Sample Size Group 2	113
Proportion Group 2	0.982300885
Average Proportion	0.988970588
Difference in Two Proportions	0.011409807
Hypothesized Difference	0
a	0.01
Z	0.887899399
<hr/>	
Two-Tailed Test	
Lower Critical Value	-2.575829304
Upper Critical value	2.575829304
p-value	0.374594868
Decision	Do not reject
<hr/>	
One-tailed Test (Lower)	
Lower Critical Value	-2.326347874
p-value	0.812702566
Decision	Do not reject
<hr/>	
One-Tailed test (Upper)	
Upper Critical Value	2.326347874
p-value	0.187297434
Decision	Do not reject

APPENDIX B: RESEARCH APPROVALS

FERRIS STATE UNIVERSITY

Institutional Review Board for Human Subjects in Research

Office of Research and Sponsored Programs, 220 Ferris Drive, PHR 308 · Big Rapids, MI 49307

Date: January 12, 2016

To: Dr. Sandra Balkema and Mr. David Peruski

From: Dr. Gregory Wellman, IRB Chair

Re: IRB Application #151112 (*Determining Nursing Program Success Between Students Who Enter College Program Ready Compared to those not Program Ready and their ability to pass the NCLEX-RN Exam Upon Completion of the program*)

The Ferris State University Institutional Review Board (IRB) has reviewed your application for using human subjects in the study, "*Determining Nursing Program Success Between Students Who Enter College Program Ready Compared to those not Program Ready and their ability to pass the NCLEX-RN Exam Upon Completion of the program*" (#151112) and determined that it meets Federal Regulations *Expedited-category 2E*. This approval has an expiration date of one year from the date of this letter. **As such, you may collect data according to the procedures outlined in your application until January 12, 2017.** Should additional time be needed to conduct your approved study, a request for extension must be submitted to the IRB a month prior to its expiration.

Your protocol has been assigned project number (#151112), which you should refer to in future correspondence involving this same research procedure. Approval mandates that you follow all University policy and procedures, in addition to applicable governmental regulations. Approval applies only to the activities described in the protocol submission; should revisions need to be made, all materials must be approved by the IRB prior to initiation. In addition, the IRB must be made aware of any serious and unexpected and/or unanticipated adverse events as well as complaints and non-compliance issues.

This project has been granted a waiver of consent documentation; signatures of participants need not be collected.

As mandated by Title 45 Code of Federal Regulations, Part 46 (45 CFR 46) the IRB requires submission of annual reviews during the life of the research project and a Final Report Form upon study completion. Thank you for your compliance with these guidelines and best wishes for a successful research endeavor. Please let us know if the IRB can be of any future assistance.

Regards,



Ferris State University Institutional Review Board
Office of Research and Sponsored Programs

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1961 Delta Road • University Center, MI 48710
989-686-9000 • www.delta.edu

November 16, 2015

Institutional Review Board Committee
Ferris State University

Re: Use of Institutional Data

David Peruski, a doctorate student at Ferris State University, is working on his dissertation. In order to complete his topic, for his dissertation, he has requested access to institutional data at Delta College. In accordance with our policy and practices he can have access to the information he is requesting without seeking Institution Review Board approval at Delta College.

All data that he will be obtaining is retrospective and will be reported in an anonymous manner and is readily available in our student database. The findings of this study has the potential to positively impact students enrolled in our nursing program. The retrospective review of factors related to program readiness will identify if students who need additional program preparation complete the program at the same rate as students who are program ready upon admission to the college. The study will also look at student's ability to pass the NCLEX-RN exam upon completion of the program.

If additional information is needed please contact me at revacurry@delta.edu.

Sincerely,

Dr. Reva Curry, Vice President of Instruction & Learning Services