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# Identifying the value of the ACT score as a predictor of student success in respiratory care, radiography, and nursing at Southeast Kentucky Community and Technical College

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IDENTIFYING THE VALUE OF THE ACT SCORE AS A PREDICTOR OF

STUDENT SUCCESS IN RESPIRATORY CARE, RADIOGRAPHY,

AND NURSING AT SOUTHEAST KENTUCKY COMMUNITY

AND TECHNICAL COLLEGE

By

Rebecca Jon Parrott-Robbins

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Submitted to the Faculty of
Mississippi State University
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for the Degree of Doctor of Philosophy
in Community College Leadership
in the Department of Leadership and Foundations

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Candidate for Degree of Doctor of Philosophy

The purpose of this study was to investigate—by utilizing data obtained from the Kentucky Community and Technical College System (KCTCS) PeopleSoft database— whether the American College Testing (ACT) assessment was a predictor of student success for students who had graduated from respiratory, radiography, and nursing programs at Southeast Kentucky Community and Technical College (SKCTC). In addition, the study sought to determine whether the pre-program grade point average was a predictor of student success. The analysis was based on existing data for three random samples of 100 students each drawn from graduates of respiratory, radiography, and nursing programs for the years 2000 to 2005 for a total of 300 participants.

ACT composite scores and pre-program grade point averages (GPAs) at the time of entrance along with the students' final GPAs at the end of the program of study were obtained from the college's database. A multiple regression analysis was performed, with final GPAs as the response variable and ACT scores and pre-program GPAs as

predictors. Also, in terms of evaluating the individual contribution of each predictor, the part correlations were analyzed. The analyses were performed using Statistical Package for Social Sciences (SPSS), version 16.

The findings of the study indicate that the pre-program grade point averages were a stronger predictor of the final GPAs than the ACT scores. In addition, the ACT scores were not shown to be a significant predictor of the final grade point averages, after controlling for the pre-program GPAs that were recorded at the time of entry into the programs of study.

DEDICATION

This dissertation is dedicated to my wonderful sons, Eric and Evan.

Eric, in your selfless and caring way, you have shown great patience and understanding during the years I was in school. I am honored by your steadfast support and take great pride in the remarkable maturity you have shown. I truly appreciate your wonderful attitude as I worked to position myself to provide a better life for us. I will forever cherish the times we spent lying on my bed as you colored on all of my papers. As you grew older, you never complained that I wanted to keep moving forward with my education. I have heard you say on many occasions to your friends that your "mother is getting a PhD," and I could tell that you were proud, not only of my commitment but also of your own dedication for the past 16 years.

To my little Evan, who followed in Bubba's footsteps of coloring on mommy's papers: You have been such an understanding and loving child. I am so thankful that you were so patient and sweet while I worked diligently to complete a dream that I have had for many years. Probably not fully understanding the work I was doing, you nonetheless took my word and realized how important my education was to me and never complained.

You both inspire in me that life is good no matter what the circumstances, and you both bring sunshine to my day. In each of your own ways, you have been a light for me during the hardest and darkest times, and without your unequivocal love and support,

this dissertation would have never been possible. I thank you and love you both so dearly,

and I wish you all the happiness and success in the world.

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Dr. Bruce Ayers, Southeast Kentucky Community and Technical College (SKCTC) President, a mentor, role model, and friend: You encouraged me with kind words and confident advice and helped me to see that this was something that I could achieve "with no questions asked." You gave me the chance to demonstrate to our college family that—despite my relatively young age—I could pursue this dream while continuing to serve our institution in an important leadership role, and more importantly, to serve the college well. This enabled me to grow and learn from so many worthwhile experiences, experiences that I now carry with me during my life outside of work. Your experience and dedication have enabled me to see what true leadership is and should be. You are an example of how to show humility when successful and how to learn from the mistakes in life. I am also grateful for your dedication and love for our rural area and SKCTC, which motivated you, I believe, to work tirelessly until a doctoral program was

iv

available to the people of our remote area. Without that tenacity, my dream of earning a doctoral degree would have never been possible.

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Charles Sellars, retired SKCTC Chief Student Affairs Officer, a mentor, role model, and friend: Your words of wisdom, counsel, and advice, not only for my career but for my personal life as well, will be forever cherished. You took me under your wings without hesitation and were never afraid to correct me or be there for me unconditionally. Your strong dedication to your employees and to your family showed me what true commitment is. I admire your sense of morality as well as the integrity that you exhibited at the workplace. You were never afraid to do the right thing. The foundation that you laid for me is part of why I carry the drive to never stop developing my leadership abilities. Thank you for giving me "your regrets" from your professional career so that I may learn from them and grow even stronger. That includes telling me that I needed to get my PhD and "fly as much as possible" so that I will never be put in a situation of regret for not accomplishing as I was capable of.

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Finally, but not least, John Parrott, my father, my guiding star: You instilled in me a mindset that made this dream a reality. Without your character, integrity, boldness, consistency, and commitment, I am certain I would not have been able to build a foundation for life that has helped me through this process and many others that have been fraught with peril. Because of you, I now have confidence to be who I am today. You never let me believe that because I am a woman I would in any way be limited. These attributes that you instilled in me have always been the driving force that has helped me to press on through the most trying and difficult periods in my life.

# TABLE OF CONTENTS

# LIST OF TABLES

ix

LIST OF FIGURES

x

CHAPTER 1

INTRODUCTION

**Introduction and Background of Study**

The community college dates from the early years of the 20th century. Several

social forces contributed to the community college rise. The most prominent were the

need for workers trained to operate the nation's expanding industries, the lengthened

period of adolescence, and the drive for social equality, which was enhanced by opening

more schools (Cohen & Brawer, 2003). Cohen and Brawer noted that community

colleges became the first points of access for many, and by the late 1970s, 40% of all

first-time-in-college freshmen were in 2-year institutions.

The opening of community colleges helped universities to maintain selective

admissions requirements and thus take only those freshmen and sophomores that they

wanted (Cohen & Brawer, 2003). Cohen and Brawer found admission requirements for

most community colleges remain consistent with that of traditional open access.

However, over the years, there have been concerns as to whether an admissions test

should be required, with an overwhelming amount of research. Research that

concentrates on program admission standards within community colleges is minimal.

Founded in 1960, Southeast Kentucky Community and Technical College

(SKCTC) is a public, comprehensive community and technical college under the

1

governance of the Kentucky Community and Technical College System (KCTCS; Southeast Kentucky Community and Technical College [SKCTC], 2010). The college serves the KCTCS Southeast district, made up of Bell, Harlan, Letcher, and Knox counties, and also attracts students from neighboring Tennessee and Virginia. With a main campus in Cumberland, SKCTC also operates full-service campuses in Harlan, Pineville, Middlesboro, and Whitesburg, all of which are located in the most mountainous part of the state. The Southeast is an area characterized by narrow roads that wind through narrow valleys that look up to 11 of the state's 15 highest mountain peaks. The mountains contain rich seams of high-grade, metallurgical-grade coal. The coal mining industry is the region's primary industry, with health care and education also major employers.

SKCTC offers more than 50 programs that can lead to the awarding of credentials in several fields (SKCTC, 2010). These include the following: Associate in Arts and Associate in Science degree programs that are designed to prepare individuals to succeed in baccalaureate programs at senior colleges and universities; Associate in Applied Science degree programs and certificate programs, all of which prepare students for immediate employment; and continuing education programs and training activities that are designed to strengthen the existing workforce and enhance community development.

While the college offers courses and programs in several fields, including mining, the college places a great deal of emphasis in the allied health field, awarding credentials in nursing (licensed practical nursing and registered nursing), respiratory care, clinical laboratory technology, radiography, medical assisting, surgical technology, medical transcription, and medical coding. Most students who are admitted to these programs

2

would have already completed several prerequisite courses (K. Guyn, personal communication, 2009).

From the completion of these courses, the student's pre-program grade point average is established. The pre-program grade point average is one of the variables that is considered when examining the correlation value of the American College Testing (ACT) assessment with college success once students are enrolled in an allied health program (K. Guyn, personal communication, 2009).

This research project was aimed at providing insight into whether the ACT was an accurate predictor of student success in three selected allied health programs that require a minimum score for admissions. This information can be used to develop admission standards within the institution that provide opportunities for students typically overlooked and accommodate the overwhelming demand for health-care professionals in the community by providing more trained workers.

## Problem Statement

The need for SKCTC to identify successful characteristics of allied health students is probably greater today than ever before. A weakened national economy has resulted in unprecedented numbers of individuals who are now seeking new employment opportunities that offer them a combination of better pay and job security (W. B. Ayers, personal communication, September 18, 2008). Allied health offers both, a fact that has not been lost on an ever-increasing applicant pool.

SKCTC uses a selective admission process to select students for entry into the allied health programs (K. Guyn, personal communication, 2009). Selective admissions is

3

necessary because the number of individuals who are applying for admission usually exceeds the available slots many times over. SKCTC President W. B. Ayers stated the following:

> Admission committees meet to select the most qualified and deserving applicants for the allied health programs, using criteria such as ACT composite scores, COMPASS (an ACT-affiliated test) scores, overall grade point averages, and grade point averages in prerequisite courses. Students are not entered into the applicant pool unless they have an ACT score of 20 or an equivalent score on the COMPASS. The students who are selected are viewed as those who will not only successfully complete the program requirements but also pass the mandatory licensing examination and become exemplary health-care providers. While the college has established an objective process for the selection of students for allied health programs, the process is not fail proof. Anecdotal information suggests that students who are admitted with low ACT scores, for example, often do as well as those who score much higher (W. B. Ayers, personal communication, September 18, 2008).

Many of the students who attend SKCTC and seek entry into an allied health program have had to take remedial courses before applying for entry into a particular program (W. B. Ayers, personal communication, September 18, 2008). Indeed, the average ACT score for entering freshmen for 2008 was 17, among the lowest in the KCTCS (Kentucky Community and Technical College System [KCTCS], 2009). The average ACT score possibly could change due to KRS 158.6453, which states that all of Kentucky's public school juniors now must participate in the ACT, which assesses

4

English, reading, mathematics, and science and is scored on a scale of 1 to 36; the cost of the exam is paid for by state funds (Kentucky Revised Statutes, 2009).

The State of Kentucky has guidelines for admission to state-supported postsecondary education institutions. State statutes establish minimum admission requirements for entering Kentucky's public colleges and universities along with conditional admissions qualifications, transfer admissions and advising obligations, and dual credit provisions (Kentucky Council on Postsecondary Education [KCPE], 2009). The state also establishes institutional responsibilities for mandatory assessment and placement of students who enter postsecondary institutions underprepared for college-level work (KCPE, 2009). The Kentucky Council on Postsecondary Education (KCPE) also reported that these regulations were last revised in 2000. Since that time, the 2009 Kentucky Board of Education approved a new, more rigorous high school curriculum. These changes reflect recent research that suggests a need for students to take high school courses beyond the standard core requirements (KCPE, 2009). A KCPE report released in February 2007, titled *Securing Kentucky's Future: A Plan for Improving College Readiness and Success*, also recommended several changes in the assessment and placement regulations to provide more support for underprepared first-time college students (KCPE, 2009). Changes in the structure of KCTCS, where the majority of underprepared students are enrolled, and in KCPE administrative regulations that speak to admissions criteria need to be captured and used to update state statute regulations that best capture the ability of these underprepared students (W. B. Ayers, personal communication, September 18, 2008). In recognition of the need to improve the level of preparation for high school students, the Kentucky Department of Education mandated

5

that the ACT be taken during the junior year (Kentucky Department of Education, 2009). Unquestionably, this step is being taken to allow high schools to tailor their senior year to meet needs identified from the test results. Many of the KCTCS colleges, including SKCTC, are working closely with high schools, aligning faculty in various disciplines, offering dual credit courses, and, in some instances, administering the COMPASS to sophomores.

Regardless of a student's preparedness, SKCTC uses the ACT or COMPASS as a predictor of success (W. B. Ayers, personal communication, September 18, 2008). Kentucky uses the ACT (Kentucky Department of Education, 2009). The concept for the ACT program emerged in the 1950s, and the organization itself was founded in 1959 (American College Testing [ACT], 2009). At the time, U.S. political and demographic developments were inspiring major changes in attitudes about, and approaches to, higher education (2009). Prior to 1959, there was just one national college-entrance testing program, a program that focused on identifying the most academically able students for admission to the nation's selective universities (2009). The remainder of college students was admitted either on the basis of scores earned on entrance exams offered by individual states and colleges or on the basis of family ties (2009). In the late 1950s, large numbers of students were approaching college age and wanted to attend college (2009). Financial aid to students was increasing, and most colleges wanted to increase their enrollments (2009). Within this environment, the ACT's founders established The American College Testing Program, Inc., now known as ACT (2009). ACT's first testing program, the ACT Assessment, was designed to serve four purposes: to help students make better decisions about which colleges to attend and which programs to study and to provide information

6

helpful to colleges both in the process of admitting students and in ensuring their success after enrollment (2009).

The ACT organization suggests that the ACT assessment is one form of a standardized test that provides a measure of students' academic achievement and readiness prior to enrolling in college (2009). The test is designed to measure academic skills that are taught in typical college-preparatory curricula in high school that are necessary in the first year of college (2009). The basis for educators to use is that high scores on the individual tests and the overall composite score show that a student is proficient in the areas of English, mathematics, science, and writing and thus ready for college-level work (2009). Many, if not all, use the ACT scores to help determine if a student is academically prepared for the first year of college (Morgan, 1992).

As the nation's view of education evolved to embrace lifelong learning, ACT's programs and services have similarly grown and evolved—helping people plan for and assess learning and training throughout their lives, while in school or the workplace. As a result, ACT has played an increasingly important role in the nation's educational enterprise, by contributing to the scope of the nation's educational vision and delivering programs that support that vision (ACT, 2009).

## Research Questions

The following questions were proposed for this research study. All were analyzed using multiple regression.

1. Is the ACT test a valid predictor of academic success for graduates from respiratory, nursing, and radiology technology programs?

7

2. Are pre-program grade point averages (GPAs) a valid predictor of academic success for graduates from respiratory, nursing, and radiology technology programs?

## Hypothesis

The null hypothesis (Ho) of this study is stated as follows: There is no statistically significant difference in students' final GPAs who are admitted with a pre-program GPA of 2.0 or higher and have met or exceeded the college's minimum standardized ACT score than students' final GPAs who are admitted with a pre-program GPA of 2.0 or higher and have not met the college's minimum standardized ACT score.

## Purpose of the Study

The purpose of this study was to investigate—by utilizing data obtained from the KCTCS PeopleSoft database—whether the ACT assessment was a predictor of student success for students who had graduated from respiratory, radiography, and nursing programs at SKCTC. In addition, the study sought to determine whether the pre-program grade point average was a predictor of student success. Currently, the admission/selection process for respiratory, radiography, and nursing programs, as noted previously, is based on a number of factors, but regardless of the criteria being used, the minimum ACT composite score set by each program is considered to be of utmost importance because the division chairs feel that entrance should not be granted unless a minimum ACT score is met. W. B. Ayers stated the following:

SKCTC's respiratory, radiography, and nursing admission requirements call for a pre-program GPA of 3.0. This is an elevated criterion because the college has an

8

open admissions policy with only an assessment and placement policy in effect if the minimum ACT score of 20 or equivalent COMPASS score is not met. This can be problematic for students who appear to succeed in the college entry criteria and not the program of choice criteria. (W. B. Ayers, personal communication, September 18, 2008)

College admission committees generally feel that accepting students with a lower ACT composite score is a disadvantage toward the goals of success and retention for the college and the student (K. Guyn, personal communication, 2009). With the findings from this study, determination may be possible to which of these variables (pre-program grade point average or ACT) is a better prediction of academic success. According to Division Chair of the Allied Health Division at SKCTC, K. Guyn (2009), information gathered from allied health faculty members was inconclusive, with some instructors suggesting that they felt that the pre-program grade point standing—usually obtained after having taken several prerequisite courses—was a more reliable indicator than the ACT; others, however, felt just the opposite and argued that the ACT in and of itself was the best predictor of success (K. Guyn, personal communication, 2009). Many argue that the students who have ACT scores of 20 or slightly below (18 or 19) but had high GPAs (3.0 and above) were just as successful as those with high ACT scores in each of these programs (K. Guyn, personal communication, 2009).

Those faculty members at SKCTC who provide anecdotal information that suggests that high ACT scores are necessary for student success in allied health appear to have influenced admission committees at SKCTC more than have those who advocate on behalf of high grade point averages (K. Guyn, personal communication, 2009). Thus,

9

there is a leaning toward high test scores even in cases where students may not have high GPAs. Research in the field suggests that a combination of factors is important. Studies by Grippando (1973), Dowd (1983), and Jensen (1989) examined individual success in nursing, respiratory, and radiography programs and found the best predictors of students' academic success were the natural science sub-scores on the ACT, high school grade point averages, class ranks, ages, and composite ACT scores. Even though there may be such studies, for the purpose of this study there were none found for allied health students—specifically in the three fields used in this study—within rural community colleges that have exclusively examined GPAs and standardized ACT scores as predicting factors of success.

The study examined students with high and low pre-program grade point averages, standardized ACT composite scores, and the students' subsequent success in the three selected programs at SKCTC. Each provided the information required to determine whether or not pre-program GPAs and the ACT scores predicted success in the health programs.

**Significance of Topic**

Providing a curriculum that prepares students for college and the degree to which the ACT is able to predict their success in higher education has been a topic of concern by researchers for many years. Some studies suggest there is little correlation between ACT scores and college success (Morgan, 1992); however, there have been just as many studies that indicated the standardized ACT assessment is accurate in depicting success for college students (Morgan). The ACT assessment measures academic skills and

10

knowledge that are taught in typical college-preparatory curricula in high school and is intended to facilitate both college admissions and course placement decisions (ACT, 2009). If ACT scores are valid for their intended uses, students taking rigorous college-preparatory course work in high school will obtain higher ACT scores than those who do not, and students with higher ACT scores will be more successful their first year in college than students with lower test scores. Standardized admissions tests like the ACT assessment will reflect differences in the educational preparation of high school students—in particular the courses they take, the grades they earn, their high school ranking, and the quality of the education they receive (Noble & Sawyer, 2004; Zwick, 1999).

Many studies that have sought to determine if the high school GPAs considered without also using an entrance test are an accurate indicator of college success (Myers & Pyles, 1992). Myers and Pyles pointed out that many theories within these studies focused on large disparities between high schools in their grading practices and the rigor of their courses. A high-ranking or high-GPA student from one school could differ substantially from a high-ranking or high-GPA student from another institution in his or her preparedness for college-level work (Myers & Pyles). Even within schools, students' high school ranks or grade averages do not reflect the rigor of the courses students take. The potential result is that students who appear to be prepared for college, based on high GPA, but who are actually underprepared, would have difficulty in achieving good grades and persisting to graduation (D'Souza, 1995; Krauthammer, 1998; Noble & Sawyer, 2002; Orfield & Miller, 1998; Selingo, 2000; Stewart, 1998). Conversely, students from high-quality schools with lower high school ranks or grade averages who

11

are actually prepared for college are less likely to be admitted (D'Souza, 1995; Krauthammer, 1998; Noble & Sawyer, 2002; Orfield & Miller, 1998; Selingo, 2000; Stewart, 1998).

Due to the scarcity of research in this area, creating standards for admission criteria based on the findings would be difficult. Nor do these studies focus on the ACT test being the single most identifiable measure of success for students applying to allied health programs.

The history of the ACT program illustrates how the test was initially designed for assessment and placement, but some may argue that the ACT should not be used for an admission criterion into college or a designated program. Identifying whether the minimum ACT score should be considered as one of the primary criteria for admitting students to these programs will make the process not only easier for students but also more efficient for the college. This study will help the college delineate criteria by which applicants should be evaluated and identify areas in which the admissions process can be enhanced. The information may be used to develop admission standards within the institution that provide opportunities for students typically overlooked and accommodate the overwhelming demand for health care in the community by providing more trained workers.

Determining the extent to which ACT scores and pre-program grades can help to predict academic success would be immensely beneficial to admissions personnel. This study may offer findings that could result in improvements in the admissions process for the respiratory, radiography, and nursing programs at SKCTC. Therefore, this research study was aimed at providing insight into whether the ACT assessment was a valid

12

predictor of student success in three selected allied health programs that required a minimum ACT score for admissions.

## Definitions of Terms

The following definitions provide clarification for terms used in the study. Key variables include pre-program GPAs, ACT scores, and final GPAs.

<u>ACT</u> (American College Testing, Inc.), now known as ACT, is an independent, not-for-profit organization that provides a broad array of assessment, research, information, and program management solutions in the areas of education and workforce development (ACT, 2009).

<u>The ACT</u> assesses high school students' general educational development and their ability to complete college-level work. The multiple-choice test covers four skill areas: English, mathematics, reading, and science. The writing test, which is optional, measures skill in planning and writing a short essay (ACT, 2009).

<u>Developmental courses</u> are courses that are primarily remedial in nature, which are designed to assist students to overcome academic deficiencies and be better prepared to take and pass regular course offerings. These courses are frequently offered on a pass/fail basis and carry non-degree credit. They are most often not used in calculating grade point averages (SKCTC, 2010).

<u>GPA</u> refers to the grade point average, which is the ratio of the number of points gained to the number of credit hours attempted. Typically, an A counts four points for each credit hour carried; a B counts for three points; a C, two points; a D, one point; and an E, zero points. Thus, a student would earn 12 quality points for an A

13

in a 3-hour course and four quality points for a C in a 2-hour course. To calculate overall standing, the student would add all quality points and divide this number by the number of hours carried. Courses in which grades of W and I have been given are ignored, but a grade of E is included even though it counts zero credit hours in fulfilling the requirements for a degree (SKCTC, 2010).

Graduation refers to the completion for graduates who complete a specific number of credit hours at the associate degree level—ranging from 60 to 72—in a prescribed curriculum in a community college to earn one of three degrees: (1) Associate in Arts (AA), (2) Associate in Science (AS), or (3) Associate in Applied Science (AAS). The first two are generally conferred on students who will be transferring to a 4-year college or university to earn a baccalaureate degree. They are often referred to as "pre-baccalaureate degrees." AAS degrees are awarded to students who are enrolled in a technical curriculum program that prepares them for immediate employment. (All allied health programs referred to in this study are AAS programs.) To graduate from SKCTC, a minimum of 24 credits for a degree must be completed within a KCTCS institution. Moreover, at least 25% of the approved curriculum credits must be completed at the community and technical college granting the degree (SKCTC, 2010).

Kentucky Community and Technical College System (KCTCS) is the newest postsecondary education institution in the Commonwealth (KCTCS, 2010).

Kentucky Council on Postsecondary Education (KCPE) for the Commonwealth of Kentucky coordinates change and improvement in Kentucky's postsecondary

14

education system as directed by the Kentucky Postsecondary Education
Improvement Act of 1997 (KCPE, 2009).

Pre-program GPA is the overall grade point average achieved in classes before entry into
one of the programs that was calculated in the admissions process for each of the
three selected programs (SKCTC, 2010).

Rural, according to the 2000 Census Bureau, is defined as open country and settlements
with fewer than 2,500 residents that is located outside of an urban area. For
purposes of this study, the researcher notes that there are several communities
within southeast Kentucky with populations that exceed 2,500; however, there is
no community with a population that exceeds 13,000, and the majority of the
population lives outside of incorporated areas.

Southeast Kentucky Community and Technical College (SKCTC) was founded as the
Southeast Center of the University of Kentucky (UK) in 1960. When the
Commonwealth of Kentucky created the University of Kentucky Community
College System in the mid-1970s, the college was re-designated as Southeast
Community College and made a part of the UK system (SKCTC, 2010).

Success means graduation from the respiratory, radiography, and nursing program 2
years from the program's start date with an overall GPA of 2.0 (SKCTC, 2010).

Final GPA refers to the grade point average from all academic years recorded on the final
transcript after the student has completed required course work from SKCTC
(SKCTC, 2010).

15

## Summary

Obviously, the importance of the ACT has been heightened in Kentucky as a result of new regulations from the KCPE that raise minimum scores necessary for enrollment into credit courses (KCPE, 2009). While these regulations concentrate primarily on the students graduating from high school who must seek remediation before entering into credit programs in general, they, nonetheless, indirectly impact placement into allied health curricula. These changes may mean that SKCTC needs to evaluate the use of the ACT as an instrument for decision making in the admissions process for the allied programs.

CHAPTER II

LITERATURE REVIEW

**Literature Overview**

Research on the ACT's composite score as a criterion for determining college
success is available in many areas of educational research. However, research on whether
the ACT is a better predictor of college success than that of a student's pre-program GPA
is rather limited (Myers & Pyles, 1992). There were several studies completed on the
ACT scores as a good predictor of academic success and/or the GPAs while in high
school but not specific to a comparison of both the ACT scores and pre-program GPAs as
predictors of success (Myers & Pyles, 1992).

As indicated previously, the majority of college faculty and admissions
counselors at SKCTC tended to rely on the ACT scores as a reliable predictor of the
academic abilities of students. This led to a dramatic increase in allied health division
chairs and committees requiring a minimum ACT score before students could be
admitted to these programs (K. Guyn, personal communication, 2009). This requirement
took on additional significance at the college as enrollment grew, with large numbers of
individuals who lost employment or accepted lower-paying positions because of the
economic downturn now seeking entry into the highly competitive allied health field (W.
B. Ayers, personal communication, 2009).

17

## Community College Characteristics

Community colleges have different student characteristics than that of most senior colleges and universities due primarily to the low tuition cost and convenience of location (American Association of Community Colleges [AACC], 2006). They attract a wide range of students in terms of gender, age, financial stability, and race (AACC, 2006). The fact that the demographics at these 2-year institutions reflect such diversity allows students from all walks of life to fit comfortably into the community college environment (AACC, 2006). The diversity has always been an advantage for community colleges and especially so in rural areas such as southeast Kentucky (W. B. Ayers, personal communication, 2009). A common occurrence, for example, is for a working mother to apply for admission to the college after having been out of school for several years with no prior ACT score and no prior knowledge of the weighted importance that the ACT has in the admissions requirements into the allied health programs (W. B. Ayers, personal communication, 2009). This example illustrates why SKCTC should identify its student population characteristics and focus on whether or not ACT scores are an accurate enough predictor for success at the institution.

## Predictors of Success—Community College Programs

What leads to success at 4-year institutions is not necessarily a predictor of success at a rural community college. Cress (1996) suggested that because community colleges include transient student populations, students with a wide range of ability and academic goals, and large numbers of adjunct faculty, assessment should focus on the

18

improvement of campus instructional and support programs to increase student success rather than on national comparisons.

D. Marshall (2005) found that one community college in rural Maryland has two possible pre-admission options for selection into its associate degree nursing program. One option is to take the ACT and attain a composite score of at least 18. The second option is to complete five college-level general education courses. The student's admission GPA is determined based on the five required general education courses (Nursing Admission Information, 2005). The applicants are ranked and selected using the highest GPAs and ACT scores. All students who enter the associate degree nursing program must have successfully completed a practical nursing program and meet the prerequisite requirements for college-level mathematics. Transfer students and developmental students can apply to the nursing program, and in these cases, prior knowledge of the student's scholastic status would assist the nursing faculty in providing appropriate tools to assist the student in becoming academically successful (Marshall, 2005).

Bontekoe (1992) suggested that the ACT perception is that students with a score of 28 or better can plan on being accepted into all but the most academically elite institutions. Students with a score of 19 or better are guaranteed entry into almost any standard liberal arts institution, while students with scores less than 18 may well have to settle for a 2-year community college or a less competitive state or private institution. Bontekoe (1992) further suggested that this perception provides support for the rationalization that a student with a high ACT score would be a near certain honor student at all of the nation's typical 2-year, state-funded community colleges.

19

Rounds and Andersen (1985) in their research project of three standardized tests for entrance into community colleges found that the ACT was used more widely than any other instrument. Rounds and Anderson's study showed a higher correlation between academic success and the ACT scores if the students had completed a rigorous academic curriculum in high school rather than a less rigorous, non-academic curriculum.

Hall and Gahn (1994) examined predictors of success for students after they had been dismissed because of poor academic performance and been readmitted to the same or similar program even after having been enrolled in other programs. Hall and Gahn found that the positive impacting factors included the GPAs at dismissal and the GPAs earned while away (in both cases, the higher the GPAs, the more likely the success). The ACT scores as well as the time away did not impact the students' success.

Baird (1969) found for students completing 2 years of study at a community college, the ACT scores were not as beneficial as the high school GPAs in predicting college success but that the ACT scores were more accurate in predicting specific grades in designated courses. According to Baird, "The best predictor of college achievement is similar achievement in high school" (1969, p. 425).

### Predictors of Academic Success—Baccalaureate Programs

Though some recent studies suggested that standardized tests such as these have a mere 40% success rate in predicting college success, a massive new study by Berry and Sackett (2009), (as cited in Bronson & Merryman, 2009) came up with a very different result. Berry and Sackett examined 5.1 million grades from 167,000 students, spread over 41 colleges. They obtained the students' standardized test scores from the College Board as well as the list of schools each student asked the College Board to send scores. By

isolating the overlaps—where students had applied to the same colleges and taking the same courses at the same time with the same instructor—the researchers extracted a genuine apples-to-apples subset of data. Their results showed that standardized tests such as the ACT and SAT correlated with college grades 67% of the time. The result was that the standardized test score was a far better predictor of college grades. When properly accounting for the self-selection bias, the scores correlated with college GPAs around 67% (Bronson & Merryman, 2009).

Standardized tests such as the ACT and SAT have come under increasing criticism in recent years because they have failed to convincingly predict college success, and the exams are thought to favor privileged students who can afford to take them multiple times and take expensive prep courses (Grove, 2009). Garrett (2009) suggested that in the past few years, standardized tests have come under fire from higher education leaders who have said the tests were written to favor White, upper-middle-class high school students. Myers and Pyles (1992) explored using both ACT scores and high school grades as predictors of success in college. Myers and Pyles stated, "The use of both factors would overcome the objections to using only the ACT score, which itself was not a good predictor of college success for many minority students" (p. 9).

A report released in September 2008 by a commission formed by the National Association for College Admission Counseling suggested that ACT and SAT scores are not the best measures for college success and should play a smaller role in the admissions process (Garrett, 2009). In the report, Garrett explained the following:

College success is a term of sufficient breadth that includes degree attainment, a wide range of GPAs, and the acquisition of experiences and skills that will propel

21

a student into the work force, graduate education, or responsible citizenship. For this broad definition of success, standardized admission tests...are insufficient predictors of students' likelihood of overall success. (p. 2)

Garrett (2009) also pointed out that students applying to Sewanee, The University of the South, no longer will have to take college entrance exams such as the ACT or SAT before applying to attend the liberal arts school. Garrett quoted D. Lesesne, Dean of Admissions at the college:

I think educators have given standardized tests more power than they actually possess. There is ample evidence suggesting that means other than standardized tests can be useful in predicting college success, and Sewanee will continue to uphold high academic standards in our admission considerations. (p. 49)

However, there are also several studies that support the use of the ACT as a valid predictor of college success. In addition to those cited, Rowan (1978) reported in his 4-year study at Murray State University, a Kentucky institution, that the ACT had a strong correlation to the college GPAs, concluding at yearly intervals the ACT predicted the final GPAs upon graduation. Garner (1981) reported a similar finding at Louisiana State University with higher ACT scores predicting the final academic standing upon graduation illustrated by the final GPAs.

## Summary

For this study, the crucial issue was whether or not the ACT was a legitimate criterion for program admission decisions at SKCTC, especially considering the demographic makeup of the college. A summary of research on the ACT composite

22

scores and pre-program GPAs as reliable criteria for admissions into college and/or

specified programs is presented.

CHAPTER III

METHODOLOGY

**Introduction**

The sample consisted of 300 individuals, comprising the 2000–2005 respiratory, radiography, and nursing graduating classes, who had valid ACT composite scores in the PeopleSoft database. Students who had previously earned an associate's or baccalaureate degree were included in the study because they completed the same prerequisites as did students who had not completed a degree. Moreover, the research notes that even when students had not previously completed a degree prior to their entry into one of the three programs, many of them had completed several college hours and were not far from associate degree completion. A composite academic profile was calculated for each of the selected graduating classes from 2000–2005 to determine the pre-program GPAs of each class and the average total ACT scores. During this period, the total number of students enrolling in the three programs in combination was 575. The actual number of graduated students—with valid ACT scores—randomly selected was 60 per year during the 2000 through 2004 academic years, which totaled 300 for this study.

## Measurements

Program success in each of the three allied health programs selected was defined by grade point average of a 2.0 or better at graduation and completion of the specified enrolled program. The final grade point average was obtained from individual transcripts for each graduate included in this study. Two admissions criteria variables were also identified as potential predictors of success: pre-program grade point averages and ACT scores. The pre-program GPAs were obtained from individual transcripts for each student, and the PeopleSoft database was accessed to obtain each ACT score. All data, collected from academic transcripts and the PeopleSoft database, were included by the investigator on a spreadsheet using non-traceable identifiers.

## Data Entry Procedures

The college maintains a computerized database (PeopleSoft) to which the researcher had access. Student records for the 300 students were accessed, including the actual ACT scores and transcripts to obtain the pre-program GPAs. The actual ACT scores, the pre-program GPAs, and the final GPAs were all entered into SPSS. The ACT scores and pre-program GPAs were entered as the independent variables, and the dependent variable was the final GPAs. The final GPAs earned after students completed a program of study were used for this study to determine overall success.

Approval to conduct the study was obtained from Mississippi State University's Institutional Review Board (IRB) for the Protection of Human Subjects in Research. The proposed research was also approved by the President of SKCTC, Dr. W. B. Ayers.

The researcher's dissertation committee approved the project in November 2008, and a letter seeking permission to conduct the study at SKCTC was sent to the institution's president. Upon approval, data retrieval and analysis began immediately, utilizing the PeopleSoft database. The projected time for the final report was late December 2009.

## Data Analysis Procedures

A multiple regression analysis was used in order to predict final GPAs based on the ACT scores and pre-program GPAs. With ACT scores, pre-program GPAs, and final GPAs available, the researcher determined if pre-program GPAs or ACT scores predicted final GPAs. After studying the ACT scores on final GPAs and pre-program GPAs on final GPAs, the test was observed to determine which variable was the best predictor or had the most significant effect on successful completion of a 2.0 GPA or higher.

## Assumptions

An assumption for the research was that all information retrieved for each student was correct and unaltered. Moreover, an additional assumption was that each year was correctly documented for entry and graduation so that no other records were included outside of the specified years for this study and that the information from the students' transcripts were correctly transferred into PeopleSoft from records being kept at SKCTC campuses offering allied health programs. Furthermore, assumptions were made that all information was entered, calculated, and documented into the spreadsheet without any errors.

26

**Delimitation**

A delimitation of the proposed study was the sample consisted of only students who had graduated from SKCTC's respiratory, radiography, and nursing (RN and LPN) programs. The study was specific and beneficial to the college and cannot be generalized to other institutions. The research on students' GPAs and ACT scores involved the specific institution or limited groups of students, thus limiting the research applicability due to the limited pool of subjects. The study could be expanded with a larger and more diverse sample size.

**Limitations**

This research study does not address the question of specific grades that would result from different ACT scores because the study's focus was on program completion, with a grade point average of 2.0 or higher, as the measure of success. An obvious observation is that colleges differ in terms of program requirements and perhaps the difficulty level of their particular allied health curricula; however, the research does not clearly identify nor classify what a particular ACT score is likely to predict, either with grade point averages or program completion.

A second limitation is that the faculty representing program committees and faculty senate committees, both of which may be charged with interpreting and in some instances changing admissions criteria, changed during the years used for this study. Some faculty may have stricter views and opinions concerning the admission standard of above a 2.0 GPA and an ACT score of 20 or above. During the 2000–2005 academic years for this study, the ACT and GPA for admission criteria remained the same. Also, faculty members' opinions sometimes differ concerning the number of students who

27

should be admitted to a program during each academic year. Furthermore, the curriculum has undergone several changes throughout the last 8 years. Lastly, health-care regulations may also have changed during the period of study. These changes may have resulted in some inconsistency in grading practices.

Another limitation was that the program committees have changed the minimum ACT score required for students to be accepted into each program. As of today, the admission committees have maintained the admission criteria to be a 20 or above on the ACT and no less than a 2.0 GPA. As the demand for health-care workers increases, the number of students accepted into allied health programs also increases, sometimes resulting in the acceptance of students with lower ACT scores. Thus, there is a possibility that the criterion has been altered to accommodate health-care demands and certain students were admitted that fell below the regular standard admission guidelines.

Further, the study was limited to the researcher's area of work and, therefore, may involve researcher bias. In order to use pre-program GPAs or the ACT scores as predicting factors of success, a study of this nature would conceivably be strengthened by broadening another study to include other factors that often play an important role for each student's success (e.g., financial support, family support, location, and transportation).

## Preliminary Data Analysis

The researcher addressed whether the ACT scores and the pre-program GPAs were valid predictors of academic success of graduates in respiratory, nursing, and radiography technology programs. Prior to conducting the regression, the data were screened for missing data and outliers as well as linearity, normality, and

28

homoskedasticity. A scatterbox plot (Figure 1) is shown that represents all association between the variables. To find out whether both or either independent variables proved to be valid predictors, the researcher performed a multiple regression analysis based on data obtained from the student records in PeopleSoft. The purpose of choosing a multiple regression model was to predict final GPAs, which were the dependent variable, based on the ACT scores and the pre-program GPAs. Also, the individual contribution of each predictor (ACT scores and pre-program GPAs) was assessed in order to determine if either predictor had a stronger influence on the final GPAs than the other. The histogram (Figure 2) of residuals did not show any strong signs of lack of normality, and the plot of residuals (Figure 3) versus predicted values showed some moderate outliers, but there was not a clear pattern that showed any obvious sign of heteroskedasticity, which means that it appears that all the assumptions of a linear regression model are met.
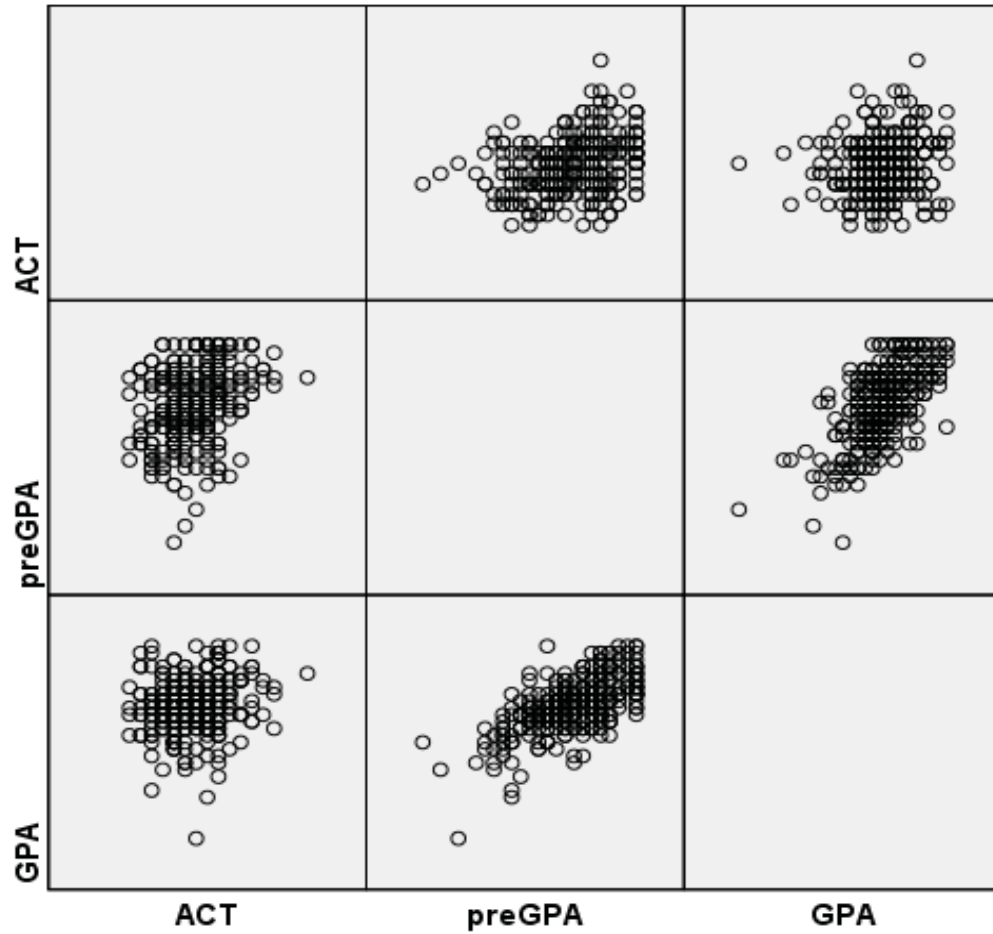
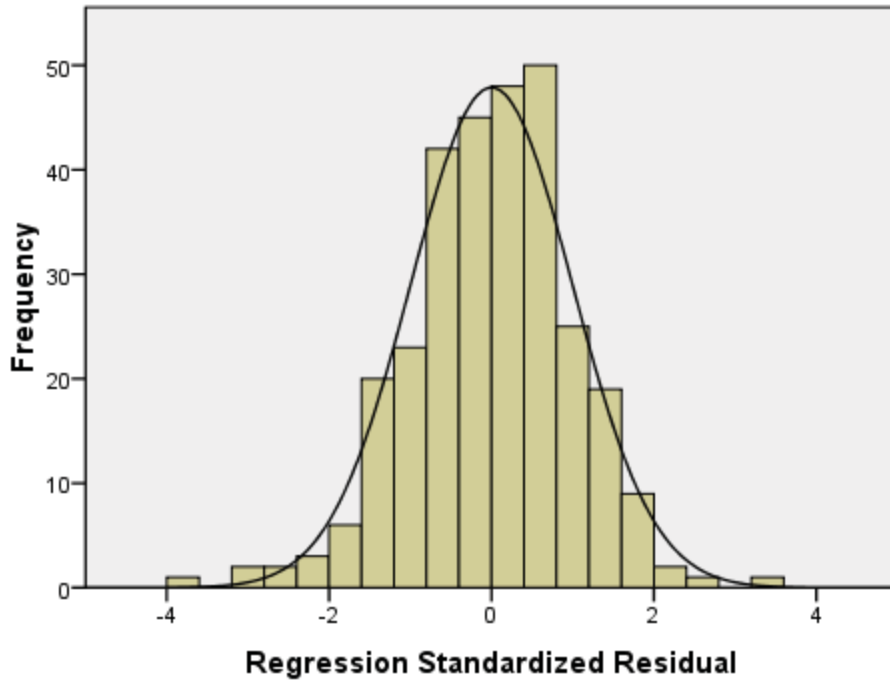Figure 1

Scatterbox Matrix of All Variables
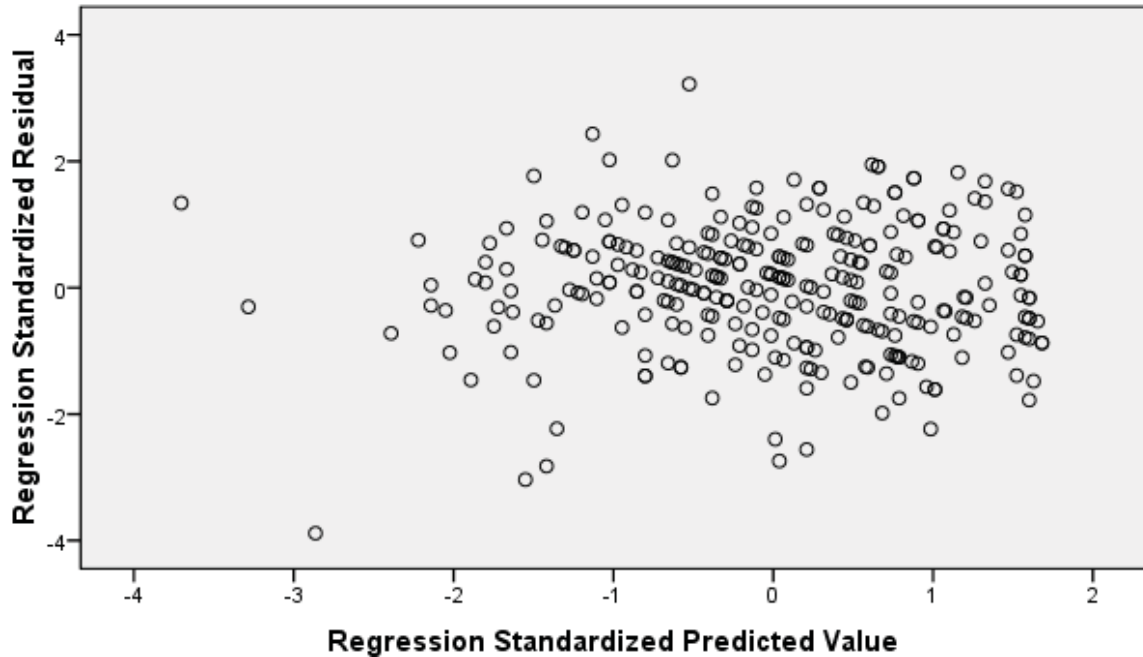
Figure 2

GPA Histogram

Figure 3

Scatterplot of all Variables

The researcher was responsible for entering the data obtained from the PeopleSoft database into the SPSS program. External validity was a concern as the study did not account for other factors, such as age, demographics, sex, race, and so forth, that may affect attrition. The research study also did not account for any financial, academic, or family support that the students may have been receiving at the time of acceptance into the college or program of study. Furthermore, the study was limited to SKCTC. Other colleges with demographic and socioeconomic criteria that differ from those at SKCTC may contribute more in predicting whether the ACT composite scores are a valid predictor for college success. This study may show different results if community colleges are researched that do not have the same level as SKCTC on remediation,

32

developmental courses, and academic support centers. Finally, this study included only three of twelve allied health programs at SKCTC; results might be different if the other nine allied health programs were included, along with other technical and pre-baccalaureate programs.

CHAPTER IV

FINDINGS OF THE STUDY

**Introduction**

The KCTCS PeopleSoft database was accessed for obtaining existing data for the study. Data were extracted for 300 students who were randomly selected from the three specific allied health programs and had graduated during the years of 2000 to 2005. The data obtained and results of the multiple regression analyses are presented in this chapter to show whether selected academic predictors related to the academic success of students who were graduates from allied health programs at SKCTC.

**Statistical Analysis**

The purpose of this analysis was to determine if the final GPAs could be predicted by either the pre-program GPAs or the ACT composite scores. A meaningful regression model was used in order to predict final GPA scores based on the ACT scores and the pre-program GPAs. Also, the individual contribution of the predictors was assessed in order to determine which predictor had a strong influence on the response variable (final GPAs).

For the purpose of the research questions stated in chapter one, a multiple regression analysis was performed, with GPAs (final) as the response variable and ACT scores and pre-program GPAs (pre-GPAs) as predictors. Also, in terms of evaluating the individual contribution of each predictor, the results were analyzed and interpreted. The data analysis was performed using SPSS, version 16.

**Results**

Standard multiple regression analysis was conducted using the independent variables (ACT scores and pre-program GPAs) and the dependent variable (final GPAs) to see if the GPAs could be predicted based on the ACT scores and pre-program GPAs. Based on the analysis presented, regression results indicated that the pre-program GPAs had a much stronger influence on final GPAs than did the ACT scores, $R^2 = .410$, $R^2 adj = .406$, $F(2,296) = 102.99$, $p = .000$, therefore significantly predicting final GPAs. In fact, the ACT scores were found not to contribute significantly as a predictor of the final GPAs after controlling for the pre-program GPAs. A scatterbox that depicts all the association between all the variables was previously shown in Figure 1. Linearity was presented by creating the scatterbox matrix. The correlation matrix (Table 1) between final GPAs and both predictors is significant ($p = .008$ and $p = .000$), but GPAs and pre-GPAs ($r = .639$) showed a stronger relationship. These results show that applying a multiple regression was meaningful. Based on the scatterplots and correlation matrix, both the ACT scores and pre-GPAs (pre-program GPAs) had a positive linear association with GPAs.

35

Standard multiple regression analysis was conducted using the independent variables (ACT scores and pre-program GPAs) and the dependent variable (final GPA scores) to see if the GPAs could be predicted based on the ACT scores and pre-program GPAs. Based on the analysis presented, regression results indicated that the pre-program GPAs had a much stronger influence on final GPAs than did the ACT scores, $R^2 = .410$, $R^2adj = .406$ (Table 2), which means that approximately 40.6% of the variation in GPAs is explained by ACT scores and pre-program GPAs. This indicates the model obtained only has a moderate predictive power. This amount of explained variation is not extremely low, and it is acceptable considering that the model is significant overall significant, as explained in the paragraph below.

From the ANOVA table (Table 3), it is found that the $F$-ratio is $F(2,296) = 102.99$, and the corresponding $p$-value is $p = .000$, which means that the model contributes significantly at explaining the variation in final GPAs. Furthermore, the ACT scores were found not to contribute significantly as a predictor of the final GPAs after controlling for the pre-program GPAs. This is because the $t$-stats associated to the ACT score is $t = -0.977$, and the corresponding $p$-value is $p = 0.329 > 0.05$, which indicates that the variable ACT scores are not individually significant. Table 4 shows that the model is significant overall, with $F = 102.992$ and $p = .000$. The model shows a moderately good quality overall, with 40.6% of the variation in GPAs explained by ACT scores and pre-GPAs.

A summary of regression coefficients is presented in Table 5. Table 5 shows that ACT scores did not seem to be significant individually ($p = .329$), whereas pre-GPAs were significant ($p = .000$). Again, the amount of variation explained that was attributable to pre-GPAs alone is 40.8%, whereas the amount of variation explained that was attributable to ACT scores alone was virtually 0%. The ACT scores did not make a significant contribution to the model after controlling for pre-program GPAs, as shown in Table 6.

The model found GPA = 1.282 - 0.007*ACT + 0.574*pre-program GPA, which means that for a 1-point increase in pre-program GPAs, we would observe an increase of 0.574 points in the final GPAs. Also, for an increase of the point in pre-program GPAs, we would observe a decrease of 0.007 points in the final GPAs.

The problem with this model is that the ACT scores are not individually significant as a predictor. The model found without including ACT scores as a predictor is (Table 7) GPA = 1.195 + 0.562*pre-program GPA. This means that for an increase of 1 point in pre-program GPAs, we would observe an increase of 0.562 points in the final GPAs.

Table 1

Correlation Matrix

|  |  | ACT | Pre-GPA |
|---|---|---|---|
| GPA | Pearson Correlation | .154[**] | .639[**] |
|  | Sig. (2-tailed) | .008 | .000 |
|  | $N$ | 299 | 299 |

**Correlation is significant at the .01 level (2-tailed).

Table 2

Model Summary

| $R$ | $R$ Square | Adjusted $R$ Square | $SE$ of the Estimate |
|---|---|---|---|
| .641[a] | .410 | .406 | .30938 |

a. Predictors: (Constant), pre-GPA, ACT
b. Dependent Variable: GPA

Table 3

ANOVA Presents the *F*-Test and Corresponding Level of Significance

|  | *SS* | *df* | *MS* | *F* | Sig. |
|---|---|---|---|---|---|
| Regression | 19.716 | 2 | 9.858 | 102.992 | .000[a] |
| Residual | 28.332 | 296 | .096 |  |  |
| Total | 48.048 | 298 |  |  |  |

a. Predictors: (Constant), pre-GPA, ACT
b. Dependent Variable: GPA

39

Table 4

Coefficients

| Model | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|---|---|
| | B | SE | B | | | Zero-order | Partial | Part | Tolerance | VIF |
| (Constant) | 1.282 | .157 | | 8.141 | .000* | | | | | |
| ACT | -.007 | .007 | -.046 | -.977 | .329 | .154 | -.057 | -.044 | .906 | 1.104 |
| Pre-GPA | .574 | .041 | .653 | 13.930 | .000* | .639 | .629 | .622 | .906 | 1.104 |

Significance *$p < .01$

40

Table 5

Model Summary

| Model | $R$ | $R$ Square | Adjusted $R$ Square | $SE$ of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R$ Square Change | $F$ Change | $df1$ | $df2$ | Sig. $F$ Change |
| 1 | .639[a] | .408 | .406 | .30936 | .408 | 205.061 | 1 | 297 | .000 |
| 2 | .641[b] | .410 | .406 | .30938 | .002 | .954 | 1 | 296 | .329 |

a. Predictors: (Constant), pre-GPA
b. Predictors: (Constant), pre-GPA, ACT
c. Dependent Variable: GPA

41

**Chapter Summary**

In this chapter the findings from the data analyses introduced in chapter one were presented. The chapter began with an introduction about the study, followed by statistical analysis of selected predictors of college success in allied health programs at SKCTC. For the purpose of the research questions contained within this study, a multiple regression analysis was shown, with GPAs (final) as the response variable and ACT scores and pre-program GPAs (pre-GPAs) as predictors, along with the results of the multiple regression model.

Multiple regression was used in this study to determine variables that would best predict college success defined as the final GPAs of students. The significance of the ACT test scores and the pre-program GPAs as well as the entire model were examined to predict college success defined final GPAs. Prior to conducting the regression, the data were screened for missing data and outliers as well as linearity, normality, and homoskedasticity. The study included a model summary, ANOVA, and coefficient tables.

Results of this study revealed that there is a correlation between pre-program GPAs and GPAs (final) and ACT scores and GPAs (final). This study also revealed that the pre-program GPAs were stronger in predicting college success than that of the ACT composite scores. However, further research is warranted in the area of determining college success, and another study may benefit in extending the research to high school GPAs on the prediction of college success.

42

CHAPTER V

SUMMARY, RECOMMENDATIONS, AND CONCLUSION

**Introduction**

This study was designed to examine selected predictors of college success in allied health programs at SKCTC. Specifically, the study examined ACT scores, pre-program GPAs, and final GPAs. Multiple regression was used to analyze the data to gain a better understanding on whether ACT scores and pre-program GPAs predicted college success.

With the majority of research concluding that the ACT scores are a valid predictor of college success, this study was beneficial to the college in that the finding would show whether the ACT scores were a better predictor for college success in specified allied health programs with designated admission criteria. The majority of research regarding the ACT composite score being a valid, if not the most valid, predictor of college success is based on a student's high school GPA before entering college (Morgan, 1992). Also, numerous research studies emphasize the reliability of the ACT score in providing data for college readiness (Morgan, 1992). However, in this study, after controlling for the pre-program GPAs, the ACT composite scores were statistically significantly low in predicting college success in the three allied health programs selected. Moreover, the study concluded that the pre-program GPAs were a more valid predictor than the ACT composite score in predicting student success in the three allied health programs selected.

43

The primary findings of this study are as follows: The model accurately predicted which variables were statistically significant on college success for the allied health programs at SKCTC. Based on the overall model, both the ACT scores and pre-program GPAs had a positive linear association with GPAs. This association seemed to be stronger for pre-program GPAs and final GPAs ($r = .639$, $p = .000$) than for ACT scores and GPAs ($r = .154$, $p = .329$). The independent variable (pre-program GPAs) was statistically significant in predicting college success. The other independent variable (ACT scores) did not contribute significantly to predict the GPAs after controlling for the pre-program GPAs.

Based on the analysis of the data, the null hypothesis that there is no statistically significant difference in students' final GPAs who are admitted with a pre-program GPA of 2.0 or higher and have met or exceeded the college's minimum standardized ACT score than students' final GPAs who are admitted with a pre-program GPA of 2.0 or higher and have not met the college's minimum standardized ACT score. In general, observations were that students who succeed by achieving a 2.0 GPA or higher in courses taken prior to admission into the allied health programs at SKCTC were just as successful, if not more successful, than those who are admitted into the allied health programs based upon their ACT composite scores.

The demographic nature and socioeconomic status of students who enroll at SKCTC—variables that were not studied—may have a greater impact on student success than do variables that were studied. However, demographics and social status are difficult to define and even more difficult to measure. Moreover, the college's strong remediation program—based on developmental courses required of all students who do not meet

44

admissions criteria—often is able to change a student's level of academic readiness prior to his or her entry into a particular allied health program and may render ACT scores less meaningful than they otherwise would be. When one adds to the course remediation academic skills centers that are available on each campus with one-on-one tutorial laboratories, the likelihood of student success, despite low ACT scores (normally recorded at the beginning of the first semester), is increased even more.

## Conclusion

The aim of this study was to determine whether the ACT composite scores were a valid predictor of college success in nursing, respiratory, and radiography programs at SKCTC. The study also examined whether the pre-program GPAs were a valid predictor of academic success. With the allied health division chairs leaning toward mandatory ACT scores for admissions into allied health programs at SKCTC and the State of Kentucky mandating that all high school students take the ACT assessment prior to admission, the results of this study could help college officials make decisions about who should or should not be admitted to the highly competitive three allied health programs examined—nursing, respiratory, and radiography.

Because the results of this study found 20 or above on the ACT to be a statistically significant lower predictor of academic success than pre-program GPAs, this admissions criterion may now need to be examined not as a primary but rather as a secondary or accommodating measure. Given the widespread use of the ACT, omitting the test as a criterion for admissions is unrealistic for determining acceptance to the allied health programs. However, from the research presented, the pre-program GPAs were a better, more reliable predictor of how students would perform in these programs.

45

The student population at SKCTC in all likelihood does not differ significantly from that of other rural community colleges. The average age of full-time students is 28; the average income is less than $25,000; and 88% receive federal financial assistance. Over 50% of the students are placed in some form of remediation before entering into higher level college courses. The typical entering college student who enters SKCTC has been out of high school for one or more years. With just these statistics alone, the importance of determining college success comes at the forefront. Where the institution does differ from other rural community colleges is the extent to which it provides a foundation of remedial educational and support services for students. Developmental education courses are mandated for students who do not meet college (not program) admissions minimum standards. These remedial efforts are backed up by strong academic support opportunities available on each of the college's campuses. The ACT is typically administered to students while they are still in high school or just prior to entry to the college. Given the emphasis that SKCTC places on helping students to succeed, the results are not a complete surprise to find that the pre-program GPAs are a more reliable predictor of academic success than is a score of 20 on the ACT.

Based on the multiple regression analysis, only the pre-program GPAs appear to be significant in predicting academic success. The implications of these findings will be particularly applicable for SKCTC student services staff, faculty advisors/division chairs, and the president's cabinet—all of whom are interested in learning more about the characteristics of successful allied health students. By identifying predictor variables that can serve as valid predictors of college success, this study can now provide the college with more successful characteristics of college students and, therefore, should help to

46

lessen withdrawal rates and increase retention. Other colleges and universities, especially those that are similar to SKCTC, should also be able to use the results of the study in making decisions about admitting students to allied health programs.

This study could serve as a foundation for other studies and future research on admission procedures not only for allied health programs but for others as well. Interestingly, although this study was conducted in a rural setting, the research may well have implications for urban settings that have students who have similar characteristics as those at SKCTC. This would be particularly true if those institutions also placed the same level of emphasis on helping students to succeed as does SKCTC.

The results of this study can also be a major help to SKCTC as the college communicates with area high schools from which students are graduating. The study suggests that although students may not score well on the ACT, the results have less to do with their innate intelligence than with their academic preparation. Once they are enrolled at SKCTC—and go through remedial programs—the likelihood of their success increases. Thus, if students were exposed to a more rigorous high school curriculum, their ACT scores would be higher on admission to the college, and they would not be required to spend time—and money—in remedial courses that do not count toward graduation. By sharing remedial courses with high school administrators and faculty, SKCTC could help them to redesign courses to be more applicable to allied health programs.

Finally, this study suggests that as valuable as they may, standardized test results should not be used in isolation when making decisions about admitting students to college programs. There are other variables that may be equally as important, and, sometimes, even more so. Hard work, determination, and strong goal orientation,

47

especially when coupled with exemplary remedial programs, often can lead to academic success despite low standardized test scores.

## Recommendations

The selection committee for SKCTC could use the pre-program GPAs just as equally as the ACT scores for admittance into their allied health programs. If the student does not meet the ACT minimum criteria, then the pre-program GPA could be in place considering the strong possibility for academic success shown in this study. Also, the committees could look at using the pre-program GPAs as a criterion alone without the ACT scores along with personal interviews for admittance into the allied health programs.

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51

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52

APPENDIX A

IRB APPROVAL LETTER

June 25, 2008

Rebecca Jon Parrot-Robbins
1300 Chichester Ave
Middlesboro, KY 40965

RE: IRB Study #08-170: Identifying the Value of the ACT/COMPASS Score as a Predictor of Student Success in Respiratory Care, Radiology and Nursing at Southeast Kentucky Community and Technical College

Dear Ms. Parrot-Robbins:

The above referenced project was reviewed and approved via administrative review on 6/25/2008 in accordance with 45 CFR 46.101(b)(4). Continuing review is not necessary for this project. However, any modification to the project must be reviewed and approved by the IRB prior to implementation. Any failure to adhere to the approved protocol could result in suspension or termination of your project. The IRB reserves the right, at anytime during the project period, to observe you and the additional researchers on this project.

**Please note that the MSU IRB is in the process of seeking accreditation for our human subjects protection program. As a result of these efforts, you will likely notice many changes in the IRB's policies and procedures in the coming months. These changes will be posted online at http://www.orc.msstate.edu/human/aahrpp.php. The first of these changes is the implementation of an approval stamp for consent forms. The approval stamp will assist in ensuring the IRB approved version of the consent form is used in the actual conduct of research. You must use copies of the stamped consent form for obtaining consent from participants.**

Please refer to your IRB number (#08-170) when contacting our office regarding this application.

Thank you for your cooperation and good luck to you in conducting this research project. If you have questions or concerns, please contact MSU IRB at irb@research.msstate.edu or by phone at .

Sincerely,

Katherine Crowley
Assistant IRB Compliance Administrator

cc: Dr. Ed Davis

APPENDIX B

LETTER OF PERMISSION TO SKCTC PRESIDENT AND APPROVAL

Dear President:

I am graduate student enrolled in a PhD program in community college leadership offered through Mississippi State University. Along with several of my colleagues from Southeast, Hazard and Somerset Community and Technical Colleges, I am part of a cohort that takes classes that MSU offers on Southeast's Middlesboro Campus.
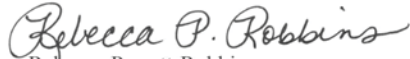
I am in the beginning stage of my dissertation. One of the first steps toward the dissertation process is obtaining permission from the appropriate personnel for research. I have chosen to use existing data within the KCTCS Peoplesoft system to base my research on. The data I wish to obtain is certain student grades for students in Respiratory Care, Radiology and Nursing, along with ACT scores. My plans are to select a group of 60 students from each program that is offered through Southeast Kentucky Community and Technical College, for a total of 180 students for the study.

My primary purpose for the study is to identify the variables that prove to be the best predictors of student success and bring forth the importance of high school GPA and class rank as predictors for college success and not just the traditional ACT score. The student data will be collected from the Peoplesoft software for all student records. The data that will be collected for this study will not be identifiable to a certain individual. It will be for reporting and research only.

I need your help in doing this. Would you be willing to provide me with permission to access the data in Peoplesoft concerning your institution? I, as Associate Dean of Student Affairs at Southeast already have access to gather this data, but as a student at Mississippi State University I need your approval to use your institution in the study. If so, please sign the attached permission form granting me permission to access your college's Peoplesoft database. I would like to reiterate that there will be no identifiable student information used in this study.

Once I have completed the dissertation, I will be happy to provide your college with my findings and or results.

Thank you for your consideration of this request.

Rebecca P. Robbins

Rebecca Parrott-Robbins
SKCTC Associate Dean of Student Affairs
Project Researcher

I, _W. Bruce Ayers_ President of <u>Southeast Kentucky Community and Technical</u> <u>College</u> do give Rebecca Parrott – Robbins permission to access my institution's Peoplesoft student database to gather information for her study to complete the dissertation process.

W Bruce Ayers