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A Study of General Education Assessment

A dissertation

presented to

the faculty of the Department of Educational Leadership and Policy Analysis

East Tennessee State University

In partial fulfillment

of the requirements for the Degree

Doctor of Education

by

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ABSTRACT

A Study of General Education Assessment

by

Debra Anne Leonard Scott

This study was a correlational investigation of the effect of student demographic characteristics, prior academic performance, college academic performance, and college status on general education achievement at a rural community college in Tennessee. The criterion variable in this study was student performance on the Academic Profile examination, a nationally normed standardized test published by the Educational Testing Service that is designed to measure academic skills in general education subject areas.

The population for this study included students at Walters State Community College located in Morristown, Tennessee, who had completed or were nearing completion of a minimum of 60 semester hours required for an associate degree and who had applied for graduation during the academic year 2003. All students in this study sat for the Academic Profile examination as a final requirement for graduation and their scores were posted in the college's student information system. Other data extracted from the student information system and used in this study include race, age, gender, evidence of financial need, zip code of permanent residence, type of degree earned, ACT composite score, placement test requirement, undergraduate grade point average, general education credit hours, grades earned in general education courses, evidence of college preparatory course participation, transfer status, and the dates of first and last terms graded. Variables were analyzed using descriptive techniques appropriate to the level of measurement of each variable including t-tests, analysis of variance (ANOVA), Pearson's r , and stepwise multiple regression.

The statistical analyses indicated that race, age, ACT composite score, placement test requirement, undergraduate and general education GPA, college preparatory course participation, and length of time between first and last semesters had a relationship to student performance on the Academic Profile examination. The ACT composite score was the strongest predictor of student performance on the examination.

Although this study addressed only a small number of variables affecting achievement in general education, it contributes to the literature by identifying interesting relationships among student variables that could be explored. The study also indicates that standardized tests that measure student general education achievement may not be the best assessment measures for public community colleges with open admission policies.

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CHAPTER 1

INTRODUCTION

Although community colleges are found all across the country today, not long ago these institutions were relatively new to higher education (Cohen & Brawer, 2003). The twentieth century marked the birth and rapid development of this postsecondary phenomenon. They are an American invention that put publicly funded higher education at close-to-home facilities beginning nearly 100 years ago with Joliet Junior College (Witt, Wattenbarger, Gollattscheck, & Suppiger, 1994). By 2003, the number of colleges offering the two-year degree increased to 1,701 (*The Chronicle of Higher Education*, 2003). One of the reasons community colleges developed so rapidly was to fulfill the growing demand for universal education brought about by the tremendous pressure for educated and skilled workers. Community college growth and change mirrored that of the American economy as it evolved from the agrarian age to the industrial age to the information age. Today the economy continues to be driven by technology and management of information that requires sophisticated workers. The ability of community colleges to respond to this need is one of the reasons they have been so successful. This success is documented by their explosive growth. In 2002-2003, community colleges in the United States awarded 578,865 associate degrees, and enrollment exceeded 5.5 million (*The Chronicle of Higher Education*).

The development of community colleges over the past five decades in Tennessee mirrors the national movement. According to Rhoda in Nicks et al. (1979), the findings and recommendations of the study, *Public Higher Education in Tennessee*, are regarded as the cornerstone of the state community college movement. This study by the legislative council of the Tennessee General Assembly began in 1955 and concluded in 1957. Coordinated by Dr. Truman Pierce and Dr. A. D. Albright, the study had two goals: “(a) to point up possible improvements in current programs of public higher education in Tennessee with present

resources, and (b) to provide a design for intelligent planning to meet future needs” (p. xviii).

Findings from the report established educational priorities of the state for the next two decades.

The recommendations stated:

All persons who can profit from it should have the opportunity of receiving a college education; provisions should be made for a larger percentage of the bright and more able students to attend colleges and universities; the program of higher education should be of significant variety and comprehensiveness; the program of higher education should include extensive services to people who are not formally enrolled in courses offered on the campus; higher education opportunities should be readily accessible to the youth of the state. (pp. xviii-xix)

The community college system was conceptualized as a means of meeting these priorities. The report called for a system of two-year institutions located within a 30- to 40-mile driving distance of every citizen in the state. In 1963, the Tennessee Legislature appropriated \$200,000 for the implementation of the plan. The first community college in Tennessee, Columbia State Community College, became operational in 1966; nine other two-year schools quickly followed. The State University and Community College System was established by Tennessee’s General Assembly in 1972 (Public Acts of 1972, Chapter 838) and governed by the Tennessee Board of Regents (TBR). By law, the TBR is responsible for the establishment, management, and coordination of each of the institutions it holds in trust (Phillips-Madson & Malo, 1999). The TBR oversees the state’s higher education institutions with the exception of those in the University of Tennessee system. The TBR system originally included six universities and nine community colleges, including Walters State Community College. The legislature subsequently transferred four technical institutes and 26 state technology centers to the system. The technical institutes were later upgraded to community colleges; the TBR currently includes 45 institutions, making it one of the largest higher-education systems in the nation. Since 1999, the TBR system has included 13 two-year institutions located from Blountville in the northeast to Memphis in the southwest (Phillips-Madson & Malo, 1999).

The associate, or two-year, degree offered by these community colleges has become a respected credential. The associate degree may be either in applied technology (A.A.S.) or

university transfer (A.A. or A.S.). Students who opt for the applied technology degree prepare for immediate employment. Students who elect the university parallel degree get ready for advanced study at the baccalaureate level. The two options have different requirements, and herein lies a basic challenge that has faced community colleges since their inception. The challenge can be best expressed as a question: “What is the minimum (basic) level of knowledge and skills that every associate degree graduate should possess?”

The term given to the common skills and knowledge that every associate degree graduate should possess is general education. Hutchins (as cited in McNeil, 1991) stated that the goal of general education was to train the intellect. Hutchins also wrote that there was an essential core of knowledge that should be taught (as cited in Gaff, 1983). The expectation is that every graduate should be competent in reading, writing, oral communication, fundamental mathematical skills, and the basic use of computers (Southern Association of Colleges and Schools, 1996). Accordingly, each degree program includes a general education component described by the American Association of Community Colleges (1994) as a common group of courses designed to “strengthen both the general skills and broad conceptual abilities that students need to function competently in day-to-day life.” (p. 12) A general education program typically includes a minimum of fifteen credit hours including at least one course in the following areas: humanities/fine arts, social/behavioral sciences, natural sciences, and mathematics (Southern Association of Colleges and Schools). The actual courses selected to satisfy this requirement are established by each institution.

The range of institutional choices and the lack of specificity regarding what courses constitute a quality program of general education make comparisons among institutions difficult. Nevertheless, institutions must prove and document that their individual programs maintain the value of the associate degree (Witt et al., 1994). In this way, community colleges are accountable to many external stakeholders—the citizenry, legislature, accrediting agencies, governing bodies, and employers—in addition to the students themselves. One way of

demonstrating and documenting institutional accountability is through assessment and improvement. There are a variety of assessment options available to institutions. Among them are national standardized tests that propose to measure general education and include national norms for comparison. Currently, some of the most widely used tests to measure general education competency include the American College Testing Collegiate Assessment of Academic Proficiency (ACT CAAP), the Educational Testing Service Academic Profile, California Critical Thinking Skills, and the College Basic Academic Subjects Examination (CBASE) published by the Assessment Resource Center of the University of Missouri.

The ACT CAAP instrument has individual modules in writing, reading, math, science reasoning, and critical thinking. The CAAP allows institutions to design their own assessment test battery and measures the ability to clarify, analyze, evaluate, and extend arguments (*National Center for Educational Statistics National Postsecondary Education Cooperative Sourcebook on Assessment, Vol. 1, 2000*). The CBASE tests subject areas of English, mathematics, science and social science, and competencies usually achieved through a general education curriculum (*National Center for Educational Statistics National Postsecondary Education Cooperative Sourcebook on Assessment, Vol. 1*). The Academic Profile test, published by the Educational Testing Service, has subject areas of humanities, social sciences, and natural sciences with mathematics included in natural sciences. The Academic Profile tests critical thinking, reading, writing, and math (*National Center for Educational Statistics National Postsecondary Education Cooperative Sourcebook on Assessment, Vol. 1*). The California Critical Thinking Test, as the name indicates, is designed to test students' critical thinking abilities. This test does not include specific subject areas; it is a multiple-choice instrument designed to test students' ability to follow an argument's conclusion from truth of its premises, query evidence, examine ideas, detect and analyze arguments, and draw conclusions (*National Center for Educational Statistics National Postsecondary Education Cooperative Sourcebook on Assessment, Vol. 1*).

Background of the Problem

Community colleges are under pressure to prove that their degree programs produce high quality, employable graduates. Assessment results can provide that evidence and assessment has been a major focus of community colleges for a number of years (Seybert, 2002). According to Morante (2003), assessment focuses on student learning outcomes but also includes a process that seeks ongoing improvement, demonstrates and improves student learning and student success, and facilitates accreditation, accountability, and institutional effectiveness. Assessment is the systematic collection of data and information across courses, programs, and institutions (Morante). The assessment of student outcomes provides a means of demonstrating accountability that is acceptable and understandable by external groups. One key indicator of community college effectiveness is general education (Alfred, 1999). Colleges measure general education achievement in a variety of ways, including nationally normed, standardized tests. But general education curriculum is institution-specific and taught across the curriculum so it is difficult to pinpoint what academic preparation supports general education achievement (Seybert). Moreover, students have unique characteristics and backgrounds that may also influence their performance. Faculty and staff at colleges want students to do well on general education achievement tests, and they need to know what factors affect student performance. Student performance is extremely critical for public community colleges that strive to demonstrate they are good stewards of public funds in today's environment of lean budgets and emphasis on fiscal responsibility.

Statement of the Problem

The problem to be investigated is the association between student demographic characteristics, prior academic experience, college academic performance, and college status with the general education achievement of associate-degree-seeking students at a rural community college.

Research Questions

The following research questions will guide this study:

1. Is there a relationship between students' demographic characteristics and their performance on a general education assessment examination?
2. Is there a relationship between students' academic history and their performance on a general education assessment examination?
3. Is there a relationship between students' academic performance and their performance on a general education assessment examination?
4. Do any of the variables examined in this study serve as predictors of performance on a general education assessment examination?

The null hypotheses in this study include the following:

1. There is no difference between the mean scores on the general education assessment for white students and students of other ethnicity.
2. There is no relationship between student age and student performance on the general education assessment.
3. There is no difference between the mean scores on the general education assessment for male students and female students.
4. There is no difference between the mean scores on the general education exit assessment for students who have financial need and students who do not have financial need.
5. There is no difference among the mean scores on the general education exit assessment for students who reside in different counties.
6. There is no difference among the means scores on the general education exit assessment for type of degree earned.

7. There is no relationship between student ACT composite score and student performance on the general education assessment.
8. There is no difference between the mean scores on the general education assessment between students who were required to take the placement test and students who were not required to take the placement test.
9. There is no relationship between student undergraduate GPA and student performance on the general education assessment.
10. There is no relationship between student general education credit hours and student performance on the general education assessment.
11. There is no relationship between student general education GPA and student performance on the general education assessment.
12. There is no difference between the mean scores on the general education assessment for students who participated in college preparatory courses and students who did not participate in college preparatory courses.
13. There is no difference among the mean scores on the general education assessment based on transfer status.
14. There is no relationship between length of time between students' first and last semesters and student performance on the general education assessment.
15. There is no relationship among student demographic variables, academic achievement variables, academic experience variables, and student performance on the general education examination.

Purpose of the Study

The purpose of this study is to examine the associations between performance on a national general education assessment (Academic Profile) and student demographics, prior academic history, collegiate academic achievement, and college status for a recent cohort of

degree-seeking students in a rural East Tennessee community college (Walters State Community College).

Significance

Though colleges are held accountable for the quality of their general education programs and the ability of their graduates to perform general education skills, there is little research to assist colleges in identifying characteristics of successful students. Community colleges nationwide and Tennessee community colleges in particular are under increasing pressure to improve the quality of their general education programs as measured by performance on a national general education assessment. This study will provide insight into the relationship between student characteristics and performance on the Academic Profile, a general education exit examination.

The study will contribute to the literature in the field by examining whether predictor variables can be identified to help colleges improve student learning and performance on the examination.

Definitions

For the purposes of this study, I used Boyer and Ewell's (1988) glossary of assessment terms developed for the Education Commission of the States. Their glossary provides a common set of definitions for talking about undergraduate assessment.

Accountability: Use of assessment results to assure funding authorities and the general public that tax dollars invested in higher education are being well spent.

Generally requires public disclosure of assessment results in summary form.

Assessment: Any process of gathering concrete evidence about the impact and functioning of undergraduate education.

Assessment plan: A formal document indicating the manner in which an institution or subunit within an institution intends to organize, fund, implement, and use the results of assessment over a designated time period.

Basic skills: Those skills required for students to successfully engage in college-level work, including reading, writing, and mathematics.

College outcomes assessment: Assessment of the results of undergraduate education. Can include cognitive, skill, or attitudinal outcomes, postgraduate behavior such as job or graduate school placement or performance, or more general impacts on a community, region, or society.

Exit examination: An assessment given at the end of a particular program of study.

Forced-choice: An examination format that requires students to choose answers to each question or item from among a limited range of provided alternatives.

Free-response: An examination format that allows students to produce answers to posed questions or items in a short-answer or essay format.

Performance funding: Allocation by a funding authority of additional non-base funding to institutions or subunits within institutions on the basis of specified performance as indicated by assessment results.

Program completion: The number or proportion of students seeking an undergraduate degree who are, in fact, awarded a degree.

Retention: The number or proportion of students who enter an institution at the same time and who continue to enroll in that institution from term to term, over a designated number of years.

Student tracking: Use of information from institutional records to determine patterns of student retention and program completion and to evaluate the success of remedial programs.

Standardized testing: Testing that yields a set of standard scores that meet accepted levels of reliability.

Testing: Administration of an instrument to determine student ability and skill levels across an identified range of knowledge and skills. Can include standardized and non-standardized instruments as well as “forced-choice” and “free-response” examination formats. Results can generally be reported in terms of summary judgments of performance and within statistical limits, can be compared across individuals and student populations.

Validity: The extent to which the results produced by an assessment instrument actually reflect the underlying concepts or abilities that the instrument purports to measure. (pp. 3-4)

CHAPTER 2

LITERATURE REVIEW

The purpose of this literature review is to provide a context for this study at Walters State Community College. Several elements of the literature have particular relevance for this study. The relevant factors to be considered from the literature address: (a) the role and function of general education within the community college, (b) the typical components that make up general education curricula of degree programs in two-year postsecondary institutions, (c) governing board requirements and expectations of general education programs for public colleges in Tennessee, (d) previous studies on the assessment of general education, (e) previous studies on general education performance and associated correlates, and (f) the Walters State Community College general education program. Appropriate literature and studies on these topics, as well as theoretical frameworks, provide a context underlying the scope and methods of study.

Review of Literature

Institutional Accountability in Higher Education

The growing national focus on accountability of higher education institutions is indicative of a trend that has had a long history in Tennessee. The Tennessee Performance Funding Program was created in 1972 when the Tennessee Higher Education Commission voluntarily initiated their Performance Funding Project (Levy, 1986) “. . . to explore the feasibility of allocating some portion of state funds on performance criterion (how effective), as compared to the allocation on activity criteria (how much)” (Bogue, 1976, p. 12). Created as a mechanism to promote and monitor the effectiveness of public higher education institutions, the program offers opportunities for financial incentives based on exemplary performance (Noland, Dandridge-Johnson, & Skolits, 2004). Current performance funding standards provide

Tennessee public colleges and universities the opportunity to earn up to 5.45% of their total budget based on their performance on an established set of standards (Tennessee Higher Education Commission, 2000). The program is now the longest running accountability program in the nation. Since its inception the program has emphasized measurement of student academic performance. A cornerstone of the program is a standard for assessing student performance related to general education. Standard One of the current Tennessee Performance Funding Standards “is designed to provide incentives to an institution for improvement in the quality of its undergraduate general education program as measured by the performance of graduates on an approved standardized test of general education” (Tennessee Higher Education Commission, p. 4).

Unlike kindergarten through 12th grade (K-12) public schools, higher education does not have a tradition of national or even state standards shaping curriculum requirements and expectations. In contrast to elementary and secondary education, higher education maintains a tradition of supporting the concept of academic freedom and autonomy related to instructional content and emphasis. In Tennessee, for example, the legislature authorized the community colleges to offer the transfer degree as well as career degree and certificate programs. However, the determination of which specific programs to offer at a particular college was and is left to the discretion of the individual institution and the governing board (Consacro & Rhoda, 1996). Faculty members are responsible for establishing institutional curricula requirements and course content although guidance and expectations are communicated through governing boards and mandated, in part, through governing boards and accrediting agencies. These limited external mandates and expectations include consideration of general education. While each Tennessee institution retains autonomy over the curriculum within an approved program, faculties generally develop courses in conjunction with the four-year institutions to facilitate transfer (Consacro & Rhoda).

Accreditation Mandates – General Education

No one central accrediting organization with national jurisdiction has been established in the United States, but institutions must be accredited through one of the recognized regional accreditation bodies to be eligible for federal financial aid programs. In effect, this condition makes accreditation a practical necessity for all but a few independent colleges. According to Bloland (2001), the fundamental aim of accreditation is to preserve and enhance quality in education. Accreditation of an institution signifies that the institution has (a) met established regional standards, (b) has a purpose appropriate to higher education, and (c) has resources, programs, and services sufficient to accomplish its purpose on a continuing basis (Southern Association of Colleges and Schools Criteria for Accreditation, 1996). Accrediting agencies are voluntary associations of colleges and schools that join together to establish minimum standards and criteria that member institutions must achieve and maintain in order to retain membership in the organization. Regional institutional accreditation came into being as recognition and monitoring needs arose (Bloland). Regional (multi-state) accrediting bodies are responsible for accrediting postsecondary educational institutions including two-year and four-year colleges and universities. Six regional accrediting agencies presently accredit institutions throughout the country with the Southern Association of Colleges and Schools serving the southeastern region.

In granting accreditation, agencies consider the general education program of the institutional candidate. Current SACS Principles of Accreditation state that the institution must define and publish general education and major program requirements for all its programs (Southern Association of Colleges and Schools The Principles of Accreditation, 2003). The 1996 Criteria for Accreditation promulgated by SACS were more prescriptive. Section 4.3.2 of the earlier accreditation standards stated:

Undergraduate degree programs must contain a basic core of general education courses.

A minimum of fifteen semester hours for associate programs and a minimum of thirty hours for baccalaureate programs are required for degree completion. The core must

include at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. The institution must demonstrate that its graduates of degree programs are competent in reading, writing, oral communication, fundamental mathematical skills, and the basic use of computers. (p. 45)

General Education: Concepts and Constructs

Degree programs at postsecondary institutions include two components of formalized study. The first and larger curriculum within a degree program is made up of subject area courses mandated for completing a “major” in any particular field of study. At the community college level, courses in the major field of study are designed to provide students with central knowledge, skills, and educational experiences considered essential in the academic discipline. Exclusively, the faculty members teaching in the major determine courses that are to be included within a major.

General education is the second curriculum component embedded in each college degree program. In contrast to the major, general education is designed to provide students with a more common set of skills and knowledge broadly applicable to daily life. In a sense these general education skills are expected of every individual who has an associate degree regardless of their actual major (American Association of Community Colleges, 1994). Primary skills taught in a general education program include the ability to write, speak, manipulate numbers, and use technology at a proficient level. Faculty members across the disciplines define the general education components of a degree program, but faculty members representing general education subjects of English, mathematics, communication, and natural and social sciences have a great deal of input with regard to general education curriculum development.

While external stakeholders such as governing boards and accrediting agencies mandate the existence of a general education program, the responsibilities of curriculum content lie with the college faculty as a group. The faculty members will consider both internal and external

viewpoints when making curriculum decisions. Within an institution, ideas and expectations of faculty are obvious considerations; however, curriculum designers also tend to reflect and address larger philosophical positions. Ornstein and Hunkins (2004) noted that: “In short, our philosophy of education influences and, to a large extent, determines our education decisions, choices, and alternatives” (p.31).

Traditionally, to fulfill general education requirements of their degree programs, students have had the option of choosing from a number of courses designated as general education courses for specific disciplines. The designated general education courses were referred to as *distribution* requirements. This approach was consistent with the guidelines of accrediting bodies such as the Southern Association of Colleges and Schools that required all degree programs to have general education courses in certain subjects. While general education subjects were specified, actual competencies to be achieved were left to the institutions. Historically, colleges have made few attempts to identify specific course content and learning skills to be addressed. Colleges have allowed a large number of general education course options and student flexibility in choosing from such options. The result has been that student experiences are often quite different even within the same degree program. In the last decade, there have been challenges to the distribution requirements method (Banta, 1999). In 1997, the Association of American Colleges issued a call for the reform of general education and cited the need for general education curricula based upon a specific set of competencies. In this approach, each student is exposed to expected knowledge and skills regardless of the choice of courses within the general education program.

Importance of General Education

The importance of general education should not be underestimated. In 1977, the Tennessee Higher Education Commission published an essay entitled *The Competent College Student* that identified *indispensable skills* – a list of skills that every college graduate ought to

have mastered. The list included general skills of writing, speaking, and calculating. Although the authors acknowledged that these skills were primarily the function of elementary and secondary education, they declared that the mastery of these skills was essential for functioning in adult life as well as indispensable prerequisites for gaining a college education (Branscomb, Milton, Richardson, & Spivey, 1977). Unfortunately, some research of the time suggested that K-12 schools had not been successful in producing students with the requisite indispensable skills. *A Nation at Risk* (National Commission on Excellence in Education, 1983) was a report that emphasized this theme—American students lagged behind their peers in other countries in basic skills, and the gap critically threatened the future of the nation. Although *A Nation at Risk* was discredited by many critics, the report’s assertions that the future of the nation was in peril provided the impetus to thrust the lack of basic skills and the need for educational reform into the mainstream of educational policy. Regardless of the validity of the claims in the report, the results fueled the call for assessment and accountability for education in the United States. Not only did K-12 schools undergo scrutiny, higher education also came under fire. Some reports claimed that higher education failed to make the grade. In discussing the 50-state report card, *Measuring Up 2000*, issued by the National Center for Public Policy, Ewell (2003) wrote that all states received an *incomplete* in student learning. Nationally, the call for educational reform once again gained momentum. In debate regarding the Reauthorization of Higher Education Act, Congress has considered removing the accreditation agencies from their role as monitors of quality amid charges that the agencies do not do enough to monitor education programs.

Community Colleges and General Education

Because students typically take general education courses during the first two years of college, community colleges provide a large portion of general education instruction (Gaff, 1983). Community colleges are often the portal through which poorly prepared students enter higher education. Cohen and Brawer (2003) found that community colleges serve a different

clientele than do traditional four-year colleges and universities. For example, almost two-thirds of community college students attend college on a part-time basis (Bryant, 2001). In terms of academic rank, most community college students come from the lower half of their high school class (Cohen & Brawer). Additionally, a majority of students at community colleges are female, employed part time, and in their mid-30s. They are more likely to be ethnic and racial minorities than students at four-year institutions (Bryant). Bailey (2004) identified other community college student characteristics: They are more likely to be from lower income households, to be first-generation college students, to be older than the average student, to delay enrollment after high school, and to have had a less rigorous high school curriculum. These students are often under prepared, both academically and socially, for entering college. Adapting education to address the academic needs of these students has thus been a particularly challenging issue for the nation's two-year colleges. Many institutions have responded to the problem by creating remedial and developmental educational programs to bring students up to the level of college course work. Remedial and developmental programs consist of general education subject areas such as English, communications, reading, writing, and mathematics. Gaff (1983) argued that remedial and development programs, while valuable, fell short of the mark in helping students achieve literacy in its most basic and more sophisticated forms. He stated that one expectation of general education was to ensure that students were literate by the time they graduate (p. 32).

Kuh and Cracraft (1986) contributed largely to the literature relating to adult learners. These two authors have identified the variables related to student success for the adult learner. The authors' discussion has particular relevance within the community college, a setting where a majority of students are beyond the traditional college student ages of 18-22. Kuh and Cracraft defined four clusters related to the academic success of adult learners: (a) academic skill, (b) clarity of educational goals, (c) pragmatic concerns, and (d) psycho-social variables. Few researchers have clearly identified and defined the pragmatic concerns of students: (a) availability of courses, (b) transferability of courses, (c) credit for previous life or work

experience, and (d) availability of financial resources. Likewise, few researchers have defined psycho-social variables: (a) family support, (b) vocational purpose, (c) personal identity, and (d) employer support. While the authors do not empirically test these variables, they do make a solid case for additional research by focusing on individual persistence as a key component of academic success. The authors view persistence, driven by personal motivation, as an essential element of any comprehensive attempt to understand the academic success of adult learners.

The importance of general education in the community college curriculum is emphasized by the widespread usage of general education as one of the core measures of community college effectiveness (Alfred, 1999). In establishing general education as a core measure, AACC stated:

The goal of general education is to strengthen both the general skills and broad conceptual abilities that students need to function competently in day-to-day life. This particular mission thrust has grown in importance and complexity in recent years. Today's students are expected not only to possess information age skills such as writing and problem-solving, but also to be able to apply their skills and knowledge in an interdependent culturally diverse world. (p. 12)

Under the core measure of general education, the AACC includes 2 of 13 measures of community college effectiveness:

Core Indicator 8: Demonstration of Critical Literacy Skills

Core Indicator 9: Demonstration of Citizenship Skills

Other indicators though not identified specifically as general education measures are nevertheless related to the general education curriculum. These indicators include persistence and degree completion rates, transfer preparation, workforce development, and success in subsequent related coursework.

Community College General Education Curricula in Tennessee Community Colleges

The Tennessee Board of Regents governs all public community colleges in Tennessee. Historically, the TBR has established standards for the two-year college general education core. Prior to 2002, the TBR required 32 hours of general education for the associate of science

degree. For associate of applied science (A.A.S.) degrees, the TBR required that 25% of all program hours be in courses specified as general education. The TBR also stipulated that general education must include six semester hours of composition, nine hours of humanities, six hours of American history (three hours of Tennessee history may be substituted if available), nine semester hours of natural/physical science and mathematics, (which must include at least one year in science and at least one semester of mathematics), and two semesters of physical education activity courses (Tennessee Board of Regents, 1987). In 2002, the TBR presented a new plan of action entitled *Defining Our Future*. This new plan called for each institution to have 41 hours of general education. Public community colleges must align themselves with this new curriculum by the fall of 2004.

General Education Assessment in Tennessee

As previously stated, Tennessee was one of the first states to link higher education funding to improvement. The Tennessee Higher Education Commission's Performance Funding Program places heavy emphasis on improvement of academic programs. The standards have been revised many times since the original project (1980, 1982, 1986, 1991, 1996, and 2000), and they have always included general education assessment. Although the performance funding program has had some success in improving institutional performance and educational outcomes, there are still concerns that institutions have not done enough. In a survey conducted by the State Higher Education Executive Officers (SHEEO), higher education officials listed "effectiveness and accountability" as one of their top five issue priorities in 1999. A legislative mandate (Public Chapter 994 Tennessee House Bill No. 2790, 2000) called for the Budget Division of the Department of Finance, the office of Legislative Budget Analysis, and State Comptroller's Office of Research to study Tennessee's higher education performance and accountability system. The study, *Measuring Performance in Higher Education*, was released in February 2001 and contained the alarming conclusion that Tennessee's higher education

accountability system has had limited consequences related to performance (Detch et al., 2001). The report emphasized that an effective accountability system should establish agreed upon performance indicators that are measurable and that can be used to demonstrate progress toward a goal. The authors identified student scores on the general education exit examination as one such results-oriented measure.

Measuring General Education Performance

Given the lack of structure and commonality among general education requirements of various degree programs, it is not too surprising that the assessment of general education has been problematic. In essence, the problem may be posed in one simple question: “Can we create a test of general education when students do not have a common curriculum that provides for students to have the same courses or course content?” Seybert (2002), in a review of the assessment of student learning outcomes, identified the central role of general education in community college curricula and the associated assessment as a major component in the assessment of all student learning outcomes. Seybert continued by making the case that students at community colleges are more diverse in comparison to students at a university. For example, students at community colleges may range from under-prepared first-time college students to reverse transfers that already have a college degree. Seybert introduced the range of assessment instruments available for general education; e.g., American College Testing Collegiate Assessment of Academic Proficiency (ACT-CAAP), American College Testing College Outcomes Measurement Program (ACT-COMP), College BASE, and the Educational Testing Service Academic Profile in addition to more recent forms of assessment such as individual portfolios, local tests, critical thinking tests, and capstone courses.

Under the current *THEC Performance Funding Standards*, colleges and universities have several options for tests of general education. They may use the Academic Profile, the College BASE, ACT CAAP, or the California Critical Thinking Skills Test (CCTST).

General Education at Walters State Community College

Walters State Community College, a public two-year institution, was established in 1969. The college is accredited by the Southern Association of Colleges and Schools and governed by the Tennessee Board of Regents. Walters State Community College is located in upper East Tennessee with a primary service area of 10 counties located between two metropolitan regions – Knoxville and the Tri Cities (Johnson City, Kingsport, and Bristol). Claiborne, Cocke, Grainger, Greene, Hamblen, Hancock, Hawkins, Jefferson, Sevier, and Union make up the WSCC service area. The region is both geographically and economically diverse. Sevier County is one of the wealthiest, fastest growing urban counties in East Tennessee while Hancock County is geographically isolated and economically disadvantaged. Students entering the college have various levels of academic preparation in addition to their own unique personal histories. Table 1 provides information about Walters State’s students and enrollment by primary location–campuses in the service area.

Table 1
Headcount and Full-Time Equivalency by Primary Location

Location	Fall 2000		Fall 2001		Fall 2002		Fall 2003	
	HC	FTE	HC	FTE	HC	FTE	HC	FTE
Morristown	3,886	2,546	3,668	2,650	3,791	2,731	3,972	2,788
Greeneville	1,079	461	987	516	848	441	848	488
Sevierville	944	533	1,031	588	1,039	575	1,173	682
Tazewell	254	123	309	155	224	110	221	109
Total	6,163	3,663	5,995	3,909	5,902	3,867	6,214	4,067

Walters State Community College Institutional Factbook, July 2003, p. 16

Even prior to the TBR’s Defining Our Future initiative, Walters State had a 41-hour general education core for the associate of science general degree and 47 hours for the associate of arts general degree. Walters State’s General Education Statement provides a strong vision that guides general education course development. Table 2 illustrates the comparison of the WSCC core and the new TBR core.

Table 2

Comparison of Walters State and TBR General Education Core

WSCC A.S. General – General Education Core 2003-04 Catalog	TBR A.S. General Education Core 2004 Implementation	WSCC AA. General – General Education Core 2003-04 Catalog	TBR A.A. General Education Core 2004 Implementation
Computer Science 3 hrs.	--	Computer Science 3 hrs.	--
English Composition 6 hrs.	English Composition 6 hrs.	English Composition 6 hrs.	English Composition 6 hrs
Freshman Experience/ Learning Strategies 0-1 hr.	--	Freshman Experience/ Learning Strategies 0-1 hrs.	--
History 6 hrs.	History 6 hrs.	History 6 hrs.	History 6 hrs.
	Social Sciences 6 hrs.		Social Sciences 6 hrs.
Humanities 6 hrs.	Humanities 6 hrs.	Humanities 6 hrs.	Humanities 6 hrs.
Literature 3 hrs.	Literature 3 hrs.	Literature 3 hrs.	Literature 3 hrs.

Table 2 (continued)

Mathematics 3 hrs.	Mathematics 3 hrs.	Mathematics 3 hrs.	Mathematics 3 hrs.
Natural Science 8 hrs.	Natural Science 8 hrs.	Natural Science 8 hrs.	Natural Science 8 hrs.
Physical Education 2 hrs.	--	Physical Education 2 hrs.	--
Speech 3 hrs.	Speech 3 hrs.	Speech 3 hrs.	Speech 3 hrs.
		Fine Arts 3 hrs.	--
		Foreign Language (intermediate level) 6 hrs.	Foreign Language (intermediate level) 6 hrs.
40-41 hours	41 hours	46-47 hours	47 hours

Walters State Community College’s vision for general education meshes well with the TBR *Measurable Outcomes* that have recently been defined for each category of general education.

Theoretical Framework and Studies of General Education Assessment

Theorists and educational researchers have been challenged in their search for theories and models to explain and predict student outcomes at the collegiate level. The study of student success in college traditionally has focused on student attrition. For a student to be successful in college, that student must remain a college student. This reasoning naturally leads to a focus on student success or attrition and the factors that affect students’ decisions to remain enrolled in college. Following the attrition studies and methods is important because of their continued influence on researchers who are interested in factors influencing student outcomes. This

influence is especially evident in the case for models promoted by Tinto (1975) and Astin (1991).

Tinto's Model of Student Attrition

The Tinto model established a research focus and tradition on retention issues affecting students enrolled in higher education institutions. The decade of the 1970s marked the historical time period for this model. At that time, the focus of research was directed more toward enrollment and retention at traditional four-year institutions. In contrast, today's research efforts lean toward institutional accountability and student academic achievement. This shift in focus is also mirrored in SACS criteria. Efficiency and output; i.e., the number of graduates, dominated the criteria in earlier days (Southern Association of Colleges and Schools, 1987); now there is more interest in the academic preparation and performance of graduates.

While the Tinto research tradition was not directed toward student academic achievement, the model added significantly to the literature base by identifying some of the variables and issues affecting college students. Tinto (1975) theorized that student retention decisions were influenced by a sense of integration or the degree of involvement students achieved from: (a) their social experiences at college as the experiences related to social and peer group interactions in the college setting and (b) academic experiences including informal contacts with faculty and participation in educational events. Students, according to the Tinto model, develop varying levels of integration within the spheres of social and academic environments of their institutions. The more integrated the students are with these two environments, the greater is the likelihood they will remain in college. Bean and Metzner (1985) used elements from Tinto's attrition model (1975) to determine factors associated with student attrition. The identified factors included: poor academic performance, psychological variables, and academic variables. Tinto's (1987) seminal work, *Leaving College: Rethinking the Causes and Cures of Student Attrition*, tended to confirm the importance of student integration as posited

by the model. While the Tinto model was somewhat successfully applied in the university setting (Boughan, 2000), application of the model in community colleges proved less successful (Halpin, 1990; Pascarella & Chapman, 1983).

Astin's Model of Student Outcomes

Astin (1970, 1971, 1991) proposed a model that has had a major influence on studies addressing retention and student outcomes. The model known as Input-Environment-Output (IEO) expanded Tinto's model by addressing academic effort and academic progress including grade point average (GPA) (Astin, 1971, 1993). The IEO model states that students are influenced by numerous factors including personal background and previous education, academic effort, and academic progress. In the model, inputs refer to those characteristics that students bring with them to the educational setting—factors such as prior academic achievement and readiness. Environment refers to the academic and social aspects of the college setting. Outputs are the results of the collegiate experience and can include retention, program completion, and other academic performance results measured at the time of graduation. Astin stated that the identified “inputs” and “experiences” are determinants of academic success. Astin (1977) offered support for the model in a major study *Four Critical Years*. Subsequent study by Knight (1993) also tended to confirm the importance of input and experience variables on college outcomes including the decision to remain in college. Astin's later research (1991) used this model as a conceptual guide or theoretical framework to promote the study of student performance in higher education. Research efforts under Astin's leadership at the Intercollegiate Research Project (CIRP) led to the highly respected annual surveys of college students. Research has validated the Astin Model (Boughan, 2000); other numerous well-known studies have confirmed aspects of the model (Whitaker, 1987; Knight; Kelly, 1996).

Zhao (1991) conducted a study of the factors associated with academic outcomes as Prince George Community College in Maryland. This study used Astin's IEO model as a basis

for determining the potential factors that could be defined as inputs (characteristics students bring to college) and environment (the educational and non-educational experiences while at college) that ultimately affect student academic outcomes. This study primarily focused on under-prepared college students.

Zhao (1991) advanced the argument that research focused on student academic growth (outcomes) is incomplete without considering factors influencing student retention. Through consideration of retention factors and variables suggested by the IEO model, Zhao developed a logistic regression model with 31 variables to determine factors associated with academic success and failure.

Six factors were associated with academic progress:

1. Cumulative student credit hours
2. “Good” academic standing
3. Cumulative grade point average (GPA)
4. Course load
5. Number of remedial or developmental courses required
6. Race/ethnicity

The resultant logistic regression model provided a 95% prediction rate. Long and Amey (1993) applied Astin’s IEO model at Johnson County Community College in Kansas. These researchers found that two input variables (reading score placement and high school GPA) and one environmental variable (number of first-term credits) could be used to predict student academic success as measured by academic outputs including non-remedial and developmental courses, grade point average, and the highest English course completed.

Campbell and Blakey (1996) also applied Astin’s IEO model at a community college. The purpose of their study was to determine the factors influencing student persistence (retention). The study suggested several factors associated with academic success including

cumulative GPA, summer session attendance, curriculum change, good academic standing, average credit hour load, immediate entry in college after high school, major, and age.

Recent Models of Student Success

Other approaches have also appeared in the literature, but none have sustained the same continued interest as the models of Tinto and Astin. Research conducted at the community college level has challenged these early models either by proposing new variables for addition to existing models or by establishing new theoretical models. Bean (1980) addressed student decisions to continue in college based on motivation and the degree to which the college environment met their needs and expectations. Pike, Kuh, and Gonyea (2003) identified new variables for consideration as add-ins to the existing models. Boughan (2000) studied academic process of students as a predictor of success. He proposed the expansion of existing models to include academic process variables such as scheduling, registration, student support (e.g., counseling and financial aid), and other process variables along the continuum from initial enrollment to successful completion.

This newer research is rooted in the efforts of institutional researchers trying to collect data in support of academic decision making. The elements of the academic process model include:

1. Instructional core (subsystem) – instructional program elements, including general education, from the perspective of curriculum content and pedagogy.
2. Process state effects – the influence of different stages of students' academic careers on their retention and performance. For example, first-time freshmen experience special challenges.
3. Process Intake (subsystem) – the influence of institutional intake process (e.g., course scheduling, registration, and advising) on student progression and retention.

4. Remediation (subsystem) – the influence of developmental and remedial studies for under-prepared students on overall student retention.
5. Student Support – the influence of specialized student services and associated referrals such as tutoring, peer counseling, etc. in student retention and performance.
6. Special Retention Efforts – the influence of special institutional programs on identifying and assisting at-risk students and student retention.
7. Process Global Characteristics – the influence of institutional characteristics (e.g., size, governance, administrative culture) on student retention and performance.
8. Student Academic Process Options – the influence of student selection of courses, academic load, major, etc. on student retention and academic performance.
9. Student Academic Process Behavior – the influence of patterns of attendance, sequencing of major and general education courses, and grade point average on student retention and performance.

Testing of this model at Prince George Community College suggested that the model or theoretical framework had some potential to address factors not considered by the traditional models of Tinto and Astin.

Further refinement and expansion of the traditional models appear to offer the most promising direction for further research into college success. The study by Pike, Kuh, and Gonyea (2003) seemed especially promising. These three researchers created a model combining elements of Astin (1991), Pascarella (1985), and Chickering (1974) with sample data from the College Student Experience Questionnaire. The new model suggested that student characteristics, perceptions of college environment, academic involvement, and social involvement all influence student success. Student learning outcomes are affected by the student's degree of participation in academic and social experience and the integration of these experiences as part of their view of college. The study confirmed the importance of

“integration” over “involvement.” More significantly, this model addressed perceived learning gains and included general education among identified student academic outcomes.

Other Studies of General Education Performance and Associated Correlates

Colleges and universities face many challenges in their attempts to restructure and revise general education programs and evaluation systems. Kramer and LaMar (2000) presented a case study of a specialized process developed at an unnamed university. At this institution, academic administrators developed a comprehensive process for assessing the status of the general education program. The process included the following: surveys of faculty and staff, analysis of student transcripts, analysis of course syllabi, course content audits, and analysis of student general education outcomes from a nationally normed, standardized test, the Academic Profile. Whereas this case study identified the needs and challenges of a particular institution, the issues encountered while conducting the assessment and using the results are applicable to other institutions. The authors suggest that the elimination of fear and mistrust by faculty members is a key factor to addressing the barriers for reform of general education.

Ronco (1996) presented the results of a study that attempted to determine correlates for student termination in which termination meant transfer, graduation, or dropping out. Ronco found several statistically significant results relating to student terminations. Consistent with the findings of Bean and Metzner (1985), Ronco found that college GPA was the single best indicator of dropout behavior. Variables of entering standardized test scores, high school rank, college major, gender, college GPA, and full-time status were associated with positive terminations (transfer, graduation).

Underwood and Nowaczyk (1994) reported a case study of Clemson University’s attempt to involve faculty members in the assessment of the general education program. The authors identified the crucial role of faculty found in the literature (Banta, 1985; Palomb & Banta, 1999). They also identified the significance of using commercial examinations in the assessment

especially for efficiency purposes (Ewell, 1987; Ewell & Lisenski, 1988). The findings from this case study suggested that faculty members must have a role in determining what elements of the academic program should be assessed as well as the method of assessment. They also found that faculty members must be involved in developing the process for the use of assessment results. More important, this study identified student motivation as a significant problem especially where the assessment results were not considered for course credit or graduation; i.e., where no minimum score is required to meet academic or graduation requirements.

Bers (2000) conducted a study of general education at a single mid western community college using a locally developed general education assessment instrument. This study found that several factors related to general education performance including gender, age, cumulative GPA, and English and mathematical skill levels. Bers defined English and math skill levels operationally based on a scale that places students in mutually exclusive categories based on their performance in college level courses in the subject area and/or remediation level of placement/performance. The test assessed general education through (a) differentiation between fact and opinion, (b) gathering, analyzing, and interpreting data, (c) applying ethical principles to standards, and (d) effectively communicating in writing.

Other studies have been conducted on individual factors that influence college success. However, these studies lack the broader conceptual framework and the ability to found the study findings into the larger tapestry of many variables influencing student academic outcomes. Szafran (2001) found that academic load—the number of courses taken in a given semester—and course difficulty impacted academic performance and academic persistence to graduation. The most interesting finding in this study was that students with a heavier, more demanding load were more likely to be successful; i.e., perform well academically and graduate. This study did not address important variables such as integration and other aspects of traditional models that could have helped explain and clarify the relationship identified between academic load and performance.

An earlier study (Okun, Weir, Richards, & Benin, 1990) found a relationship between the numbers of hours students worked and the relationships among academic load, high GPA, and retention. This study has particular importance for the Walters State Community College research due to the large number and types of variables addressed. This study examined student demographic characteristics (sex, race, etc.), prior academic achievement including high school rank, entrance examination scores, and employment status in addition to college GPA, academic load, and course difficulty. The researchers found that GPA was the most important factor for retention and that students with heavier, more challenging academic loads tended to have stronger GPAs.

Most Appropriate Model for this Study

The Astin model enables researchers to provide a more realistic conceptual view of higher education institutions from the perspective of students. The linkage of outputs including academic performance with environment (experiences that occur during college) and inputs (experiences prior to college) still appears to be the best theoretical framework for predicting student success. The chronological progression of this model is both intuitive and logical. While the later models may eventually prove fruitful, there are issues dealing with measurement that are especially challenging. Measurement is particularly challenging for models that attempt to measure affective influences of student life that are difficult to define within a workable construct. Models that provide predictive power may not benefit higher education administrators and policy makers if such models are too complex to explain and use.

Similarly, the issue of causation is problematic with these studies and is not always addressed in a forthright manner. Correlation does not explain causation; it simply means that two or more constructs are statistically related. In that respect, one variable does not “cause” the other; in fact, the correlation design used in the models described has no power to offer “if...then” statements.

Conclusion

This review of the literature provides an overview of the theoretical models guiding this study with particular emphasis on the foundational thought of Astin's IEO model. This chapter also introduces the literature related to important contextual elements that round this study in the traditions, methods, and findings of previous studies. The significant findings of this literature review include the following:

1. Student academic success may be related to previous academic experience, college social and academic experience, and/or student characteristics.
2. No one theoretical model has been identified that fully explains student academic performance and success.
3. General education achievement and assessment are important to higher education institutions as a way of documenting the quality of their educational programs to ensure continued support and viability perceived by their various constituencies.

These literature review findings will be revisited at the conclusion of the study as part of the discussion of implications of this research for community college administrators and future researchers.

CHAPTER 3

RESEARCH METHODOLOGY

Introduction

Chapter 3 introduces the research design and methodology providing the basic framework for the study. The specific elements of the research methodology include: (a) research design, (b) study population, (c) variables addressed in the study, (d) operational definitions and measurement of study variables, (e) research hypotheses, (f) data sources and collection procedures, (g) research methods, and (h) the statistical analysis plan for the data. All of these elements are integral components of the research methodology.

Research Design

This study was based on a correlational design that is recognized as one of the major traditions in quantitative research (Gay & Airasion, 2003). A correlational design is appropriate for the particular research questions underlying this study (i.e., study questions seeking to determine the existence of relationships between one or more predictor variables and a criterion variable). For this study, the application of the correlational design examined the possibility of the existence of relationships between student demographics, academic achievement, academic experiences, and the dependent variable of student performance on a nationally recognized, standardized general education examination.

Gay and Airasion (2003) noted that correlational research techniques are appropriate for determining the existence of relationships between variables as well as for the formal testing of hypotheses regarding predicted relationships. The authors further stated that a key element of correlational research is an underlying theoretical framework that provides a logical and reasonable research rationale for the relationship(s) under investigation:

Variables to be correlated should be selected on the basis of some rationale. That is, the relationship to be investigated should be a logical one, suggested by theory, or derived

from experience. Having a theoretical or experiential basis for selecting variables to be correlated makes interpretations of results more meaningful. (p. 12)

The application of correlational techniques used in this research study was based on a rationale establishing theoretical expectations consistent with the literature as well as the professional experience of the author as an institutional research practitioner.

I acknowledge several inherent limitations within this particular research design. While correlational research enables the discovery of relationships between variables, the existence of a relationship does not enable the researcher to substantiate “cause and effect” interaction between variables. Follow-up research using a causal-comparative or experimental design would be necessary to determine the existence of causal relationships among the study variables. Additional limitations of this study result from the use of data from one institution during a single period of time. Fortunately, institutional data collection methods used by Walters State Community College conform to the standard and practices of institutional research mandated by the Tennessee Board of Regents, as well as those of the accreditation principles and standards of the Southern Association of Colleges and Schools. Data were collected for institutional purposes and, as such, were beyond the control of the researcher. Periodic audits of institutional data, data collection methods, and information systems software enabled the researcher to establish the reliability and validity of the data. Finally, because this study addressed only one institution during a specific period of time, additional research would be required in other settings and time periods in any attempt to replicate the findings. Permission to study the data was obtained from the East Tennessee State University Institutional Review Board and the president of Walters State Community College. No identifying information for any student was included in the data set for the statistical analysis.

Population

The population for this study included Walters State Community College students who had completed or were nearing completion of a minimum of 60 semester hours required for an

associate degree and applied for graduation during the academic year 2003. This group represented the most recent year for which complete data were available. All students in this study sat for the Educational Testing Service (ETS) Academic Profile examination as a final requirement for graduation. Their Academic Profile test scores were posted into the college's student information system (SIS). The class of 2003 included 583 students seeking an associate degree in either a university parallel (Associate of Arts or Associate of Science) or technical (Associate of Applied Science) program. All of these students were included as the study population; their student data were used for the statistical analysis of the relationships among variables: student demographics, academic achievement, academic experiences, and general education assessment test performance. Table 3 provides a summary of the key demographic characteristics of the population.

Table 3

Key Demographic Characteristics of Population

Group	Female		Male		Total	
	White	Other	White	Other	White	Other
Less than 20	51	3	20	1	71	4
21-24	119	8	85	5	204	13
25-34	115	4	52	2	167	6
Over 35	91	5	20	2	111	7
Total	376	20	177	10	553	30

Study Variables and Operational Definitions

Predictor study variables characterized attributes of students within four categories: student demographics, student academic achievement, student academic experiences, and student performance on the general education examination. Student demographic variables were represented by selected socioeconomic characteristics and include race, age, gender, financial need, and county of residence. Academic achievement variables included the type of degree received, undergraduate grade point average (GPA), general education coursework grade point average, the number of general education hours earned, and either the American College Testing Program (ACT) composite score or evidence that the student had completed necessary placement test requirement. Student academic experience variables addressed participation in college preparatory courses, transfer status, and length of time between first semester and last semester graded.

For purposes of clarification, in this study, financial aid awarded in 2003 was used as evidence of financial need. The length of time between first semester and last semester graded was used as an indicator of the student's primary enrollment status as either a full-time or a part-time student. The length of time between first semester and last semester graded also served as a measure of the length of time between taking general education courses and taking the general education assessment, the Academic Profile test, because students often take general education courses early in their college careers.

The placement test is a group of standardized tests used by all TBR institutions to assess a student's readiness for college level courses and to determine whether to place the student in appropriate college level or college preparatory courses. There is a relationship between the requirement for the placement test and actual participation in college preparatory courses. The placement test is required if a student is over 21 or lacks an ACT score less than three years old. A student may be required to take the placement test and test out of college preparatory courses. Also, students who are not required to participate in college preparatory courses sometimes

choose to take them before beginning college level work. College preparatory courses include basic academic competencies of reading, writing, and mathematics.

The dependent variable was performance on general education assessment, the composite score earned on the ETS Academic Profile examination. The ETS Academic Profile examination is a standardized test designed to measure student performance in critical thinking, reading, writing, and mathematics in the subject areas of humanities, social sciences, and natural sciences. The assessment is published in two forms. The short form takes 40 minutes and the long form takes 120 minutes. Students at Walters State Community College are required to take the short form of the Academic Profile test as a graduation requirement. Student examinations are scored by ETS and returned to the college on a computer diskette. The scores are entered into the SIS system by programmers in the department of Instructional and Educational Technologies.

Study variables are operationally defined, consistent with data definitions found in the college's SIS database. The variables of race, gender, placement test requirement, college preparatory course participation, financial need, county of residence, transfer status, and degree received are measured at the nominal level. The variables of Academic Profile score, ACT composite score, undergraduate GPA, general education GPA, general education credit hours, age, and time between first and last semester graded are measured at the interval level.

Null Hypotheses

The following research hypotheses written in null form directed the study:

Hypothesis 1: There is no difference between the mean scores on the general education assessment for white students and students of other ethnicity.

Hypothesis 2: There is no relationship between student age and student performance on the general education assessment.

Hypothesis 3: There is no difference between the mean scores on the general education assessment for male students and female students.

Hypothesis 4: There is no difference between the mean scores on the general education exit assessment for students who have financial need and students who do not have financial need.

Hypothesis 5: There is no difference among the mean scores on the general education exit assessment for students who reside in different counties.

Hypothesis 6: There is no difference among the means scores on the general education exit assessment for type of degree earned.

Hypothesis 7: There is no relationship between student ACT composite score and student performance on the general education assessment.

Hypothesis 8: There is no difference between the mean scores on the general education assessment between students who were required to take the placement test and students who were not required to take the placement test.

Hypothesis 9: There is no relationship between student undergraduate GPA and student performance on the general education assessment.

Hypothesis 10: There is no relationship between student general education credit hours and student performance on the general education assessment.

Hypothesis 11: There is no relationship between student general education GPA and student performance on the general education assessment.

Hypothesis 12: There is no difference between the mean scores on the general education assessment for students who participated in college preparatory courses and students who did not participate in college preparatory courses.

Hypothesis 13: There is no difference among the mean scores on the general education assessment based on transfer status.

Hypothesis 14: There is no relationship between length of time between students' first and last semesters and student performance on the general education assessment.

Hypothesis 15: There is no relationship among student demographic variables, academic achievement variables, academic experience variables, and student performance on the general education examination.

Data Sources and Collection Procedures

The source of data for this study was the SIS database at Walters State Community College. The system houses the official records of students and graduates of the college. The SIS system and associated data security require the collection of a uniform set of variables for each student based on transactional processes. These processes correspond to the flow of students through the college's educational system toward matriculation. All of the independent and dependent variables in this study were contained in the information system. A special computer program to retrieve the data was written by one of the college's SIS computer programmers from the Information and Educational Technologies department.

As previously stated, the population for this study was sophomore students who took the Academic Profile examination in academic year 2003 which included summer 2002, fall 2002, and spring 2003 semesters. Students sit for the Academic Profile examination as one of the final degree requirements. Students are notified of the examination requirement when they file an application for graduation with the office of Student Records. Students must take the examination before they receive a degree unless a waiver is approved by the vice president for Academic Affairs. Information extracted from the SIS for use in this study includes race, gender, birth date, zip code (for county of residence), first and last terms graded, financial aid received, transfer status, degree and program, ACT composite score, placement test requirement, undergraduate GPA, undergraduate GPA including college preparatory course grades, college preparatory courses, general education courses, and general education course grades for all

students that took the general education assessment in academic year 2003. These data elements were used to develop the study variables. Financial aid received in 2003 was used as an approximation of financial need. Length of time between first and last semesters graded was converted to an interval scale by calculating the number of months between first term graded and last term graded and dividing by 12, the number of hours for a full-time load.

Walters State Community College's 2002-2003 catalog was used to verify general education courses and the grading scheme. General education courses are the courses that could have been used to satisfy the general education course requirements for each degree program. These courses are listed in the 2002-2003 college catalog; Appendix A is the list of general education courses. The college uses the ABCDF letter grading system based on a 4.0 quality-point scale to establish grades for both college level and college preparatory courses.

Research Methods

The first step in the study was to develop a computer program to extract the required data from the college's SIS database.

The second step in the study was to verify the accuracy of the data retrieved through the computer program, check for missing or unusual data, and clean the data.

The third step was to calculate the mean for general education assessment test scores to be used to test all the hypotheses.

The fourth step was to recode SIS information or compute selected variables as appropriate to conduct the study hypotheses. Data elements from the SIS that were recoded to a nominal scale include race, gender, zip code, degree earned, placement test requirement, college preparatory course participants, and student financial aid. Other variables were computed from the SIS information and converted to an interval scale. These variables include age, computed from date of birth, and time from first to last semester, computed from semester dates. The

number of general education hours was summed and the general education GPA was computed. Other data, ACT composite score and undergraduate GPA, were used as extracted from the SIS.

The fifth step was testing Hypotheses 1 through 14 using the appropriate variable. Finally, the results of the previous hypotheses testing were used to determine which variables measured at the interval level should be included in the multiple regression test statistic. The results were then used to test for Hypothesis 15.

Data Analysis

Data for this study were subject to statistical analysis in accordance with the requirements of the study questions. All variables were analyzed using descriptive techniques appropriate to the level of measurement for each variable. SPSS, version 12, was used to analyze the hypotheses. The t-test for two independent means was conducted for Hypotheses 1, 3, 4, 8, and 12. An analysis of variance (ANOVA) was conducted for Hypotheses 5, 6, and 13. A Pearson's *r* correlation coefficient was calculated for interval data, Hypotheses 2, 7, 9, 10, 11, and 14. For Hypothesis 15, a multiple regression was performed including all interval level variables shown to have statistical significance relative to student performance on the general education assessment. All findings were based on a .05 level of significance (alpha). Transfer credit is not included in the calculations of general education hours or GPA because of the variation in coursework and number of transfer institutions from which the coursework was accepted. The undergraduate GPA does not include transfer coursework accepted to fulfill degree requirements. General education hours and general education GPA were computed based on courses taken only at Walters State Community College. Also, in accordance with college policy, withdrawals were not included in the calculation of general education GPA. Repeat hours were counted only once, and the last grade in the course was used for calculating all GPAs. The statistical procedures and results of the data analysis are described in Chapter 4.

CHAPTER 4

ANALYSIS OF DATA

This study investigated the relationships among student demographics, student academic achievement, student academic experiences, and student performance on the general education exit examination for one community college in the TBR system. An indication of student academic achievement is performance on a national, standardized, general education examination, the Academic Profile test. Student performance varies among test takers; therefore, attributes of students were examined to see if there is a significant relationship among student attributes and student performance on the Academic Profile test for the class of 2003. This class included students that took the Academic Profile test during the following semesters: summer 2002, fall 2002, and spring 2003.

Student Ethnicity

Null Hypothesis 1: There is no difference between the mean scores on the general education assessment for white students and students of other ethnicity.

This analysis was designed to show whether or not there was a difference in mean scores on the Academic Profile test for students of differing ethnic backgrounds. Walters State Community College is predominately white; of the 583 students in the 2003 class, only 30 were identified in the student information system (SIS) as members of other ethnic groups. For the purposes of this analysis, student ethnicity was coded into two groups: white and other. A t-test for independent samples was conducted. White students ($M = 443.54$, $SD = 15.76$) had a cumulative mean test score that is significantly higher, $t(581) = 3.762$, $p = .001$ (two-tailed), than the cumulative mean test score for other students ($M = 433.07$, $SD = 14.82$). The null hypothesis is rejected.

Caution must be used when interpreting the results for student ethnicity. While the t-test revealed a difference between mean scores for white students and other students, the size of the other group ($N = 30$) is not large enough to reach a firm conclusion.

Student Age

Null Hypothesis 2: There is no relationship between student age and student performance on the general education assessment.

This analysis was designed to show whether or not there was a relationship between student age and student performance on the Academic Profile test. A correlation coefficient test, Pearson r , was calculated on age for students taking the examination during 2003. The results of this analysis are reported in Figure 1. As shown in Figure 1, there is a slight negative relationship ($r = -.165$) that is statistically significant ($p = .000$). The relationship shows that student performance declines as student age increases. The null hypothesis is rejected. While statistically significant, the relationship is very weak and of very little practical significance.

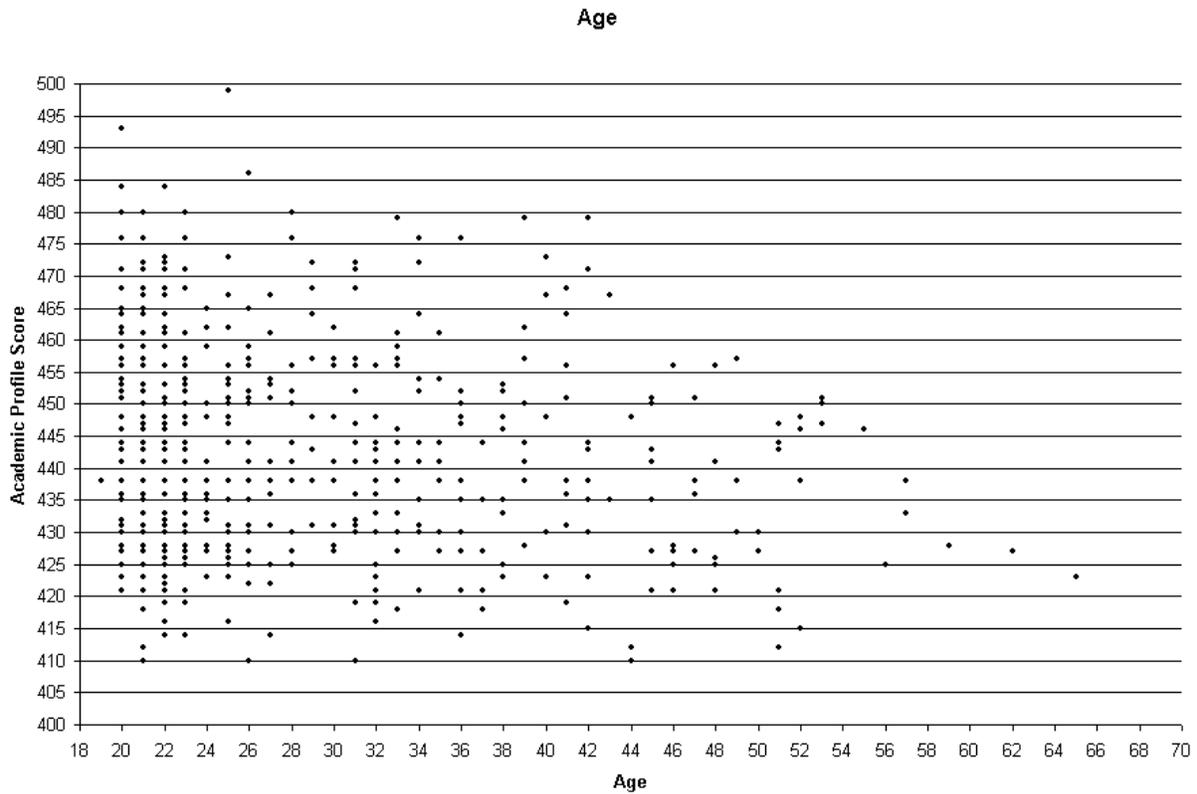


Figure 1. Correlation Coefficient Test, Pearson r , on Age.

Student Gender

Null Hypothesis 3: There is no difference between the mean scores on the general education assessment for male students and female students.

This analysis was designed to show whether or not the mean test scores on the Academic Profile test were statistically different for male and female students. A t-test for independent samples was conducted for male and female students in the class of 2003. The cumulative mean test score for female students ($M = 442.29$, $SD = 15.47$) is not significantly different, $t(581) = 1.590$, $p = .113$ (two-tailed), from the cumulative mean test score for male students ($M = 444.53$, $SD = 16.11$). The null hypothesis is retained.

Student Financial Need

Null Hypothesis 4: There is no difference between the mean scores on the general education exit assessment for students who have financial need and students who do not have financial need.

This analysis was designed to show whether or not the mean test scores on the Academic Profile test were statistically different for students who had financial need and students who did not have financial need. For this analysis, student financial aid received in 2003 was used as an approximation of student financial need. A t-test for independent samples was conducted. The cumulative mean test score for students who received financial aid ($M = 445.19$, $SD = 14.78$) is not significantly different, $t(581) = .844$, $p = .404$ (two-tailed), from students who did not receive financial aid ($M = 442.88$, $SD = 15.75$). The null hypothesis is retained.

Student County of Residence

Null Hypothesis 5: There is no difference among the mean scores on the general education exit assessment for students who reside in different counties.

This analysis was designed to show whether or not the mean test scores on the Academic Profile test were statistically different for students residing in different counties. Student scores were grouped into 12 categories: each of the 10 counties in the college's service area, outside the service area, but within the State of Tennessee, and all other (out of state and foreign students). An analysis of variance (ANOVA) was calculated for county of residence for students taking the examination during 2003. The results of this analysis are reported in Table 4. As shown in Table 4, there is no statistically significant relationship ($p = .128$) between county of residence and the cumulative mean test score for students that took the examination during 2003. The null hypothesis is retained.

Table 4

Analysis of Variance on Mean General Education Test Score by County of Residence

Group	<u>N</u>	<u>M</u>	<u>F</u>	<u>p</u>
1	40	439.48	1.498	.128
2	38	442.61		
3	38	438.37		
4	671	442.69		
5	124	445.40		
6	11	445.09		
7	52	443.04		
8	45	443.07		
9	57	445.77		
10	7	435.14		
11	92	443.22		
12	8	431.50		

Student Degree Type

Null Hypothesis 6: There is no relationship between degree earned and student performance on the general education assessment.

This analysis was designed to show whether or not the mean test scores on the Academic Profile test were statistically different for students attaining different types of associate degrees. An analysis of variance (ANOVA) was calculated by degree type (AA, AS, AAS, or no degree)

for students taking the examination during 2003. The results of this analysis are reported in Table 5. As shown in Table 5, there is no statistically significant relationship ($p = .670$) between degree type and the cumulative mean test score for students that took the examination during 2003. The null hypothesis is retained.

Table 5

Analysis of Variance on Mean General Education Test Score by Degree Type

Group	<u>N</u>	<u>M</u>	<u>F</u>	<u>p</u>
Associate of Arts	14	446.07	.518	.670
Associate of Science	267	443.49		
Associate of Applied Science	275	442.61		
Did not graduate	27	440.67		

Student ACT Composite Score

Null Hypothesis 7: There is no relationship between student ACT composite score and student performance on the general education assessment.

This analysis was designed to show whether or not there was a relationship between student ACT composite score and performance on the Academic Profile test. A correlation coefficient test, Pearson r , was conducted on ACT composite scores for students taking the examination during 2003. The results of this analysis are reported in Figure 2. As shown in Figure 2, there is a strong positive relationship ($r = .667$) that is statistically significant ($p = .000$). The null hypothesis is rejected.

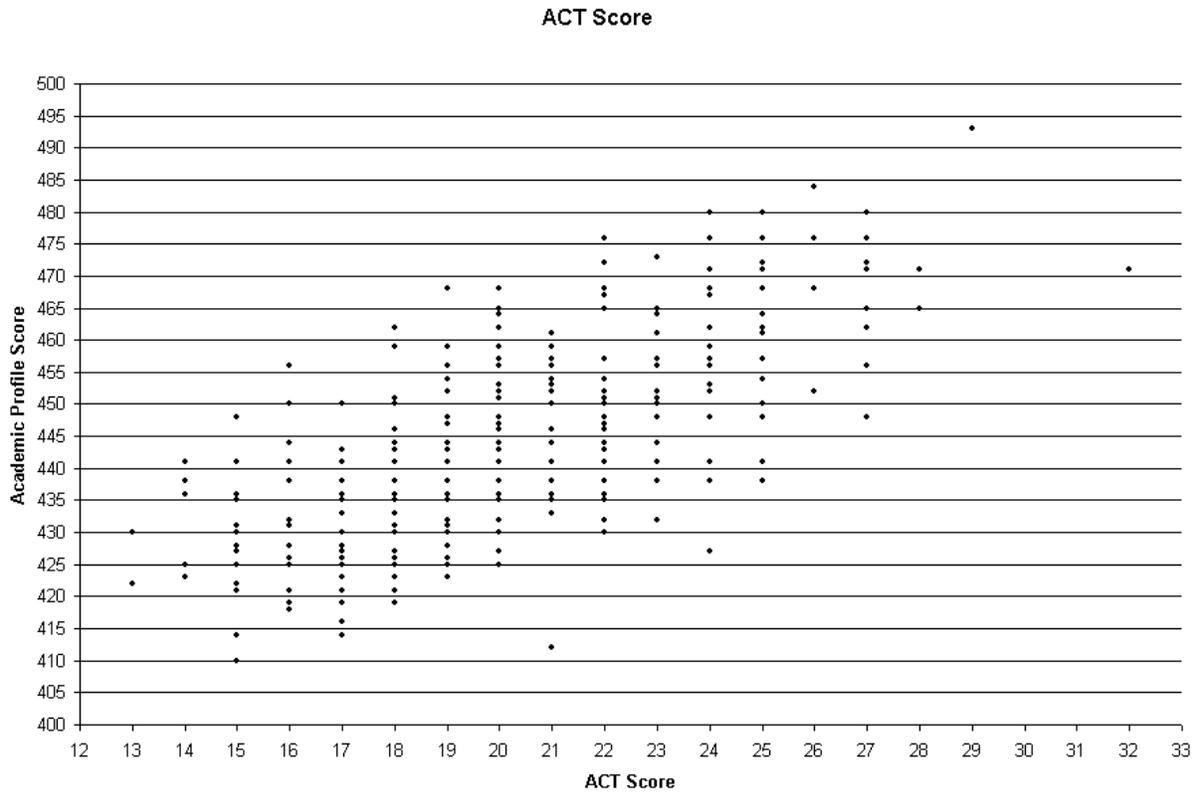


Figure 2. Correlation Coefficient Test, Pearson r , on ACT Composite Score.

The strong relationship between ACT composite score and Academic Profile score is to be expected because the ACT is designed to be a predictor of college success. The average ACT composite score ($M = 20.19$) for students taking the Academic Profile test in 2003 is higher than the college's average ACT composite score ($M = 18.8$) for students who first enrolled during 2000-2001. Walters State Community College has an open admissions policy and will enroll students regardless of their ACT composite score. Colleges that are able to set higher admission standards and select students with higher ACT composite scores would have an advantage over Walters State Community College in terms of performance on the general education assessment.

Student Placement Test Requirement

Null Hypothesis 8: There is no difference between the mean scores on the general education assessment between students who were required to take the placement test and students who were not required to take the placement test.

This analysis was designed to show whether or not the mean test scores on the Academic Profile test were statistically different for students who were required to take the placement test and students who were not required to take the placement test. Students who do not enter Walters State Community College with an ACT score or who score lower than 18 on the ACT are required to take a placement examination to determine whether they must take college preparatory courses or be permitted to enroll in college level courses. The placement test is a battery of tests, and no overall placement test score is recorded in the SIS system. There are three possible outcomes based on placement test examination scores: (a) students score high enough that no remediation is required, (b) students require some remediation in select areas, or (c) students require remediation in all tested areas. The number of students requiring the various levels of remediation could not be proportioned; therefore, this analysis only considered the number of students that took the placement test.

A t-test for independent samples was conducted. The cumulative mean score for students who were not required to take the placement test ($M = 448.33$, $SD = 16.67$) is significantly higher, $t(580) = 7.383$, $p = .001$ (two-tailed), than students who were required to take the placement test ($M = 438.84$, $SD = 13.47$). The null hypothesis is rejected.

Student Undergraduate Grade Point Average

Null Hypothesis 9: There is no relationship between student undergraduate GPA and student performance on the general education assessment.

This analysis was designed to show whether or not there was a relationship between student undergraduate GPA and performance on the Academic Profile test. A correlation coefficient test, Pearson r , was conducted on student undergraduate GPA for students taking the

examination during 2003. The results of this analysis are reported in Figure 3. As shown in Figure 3, there is a moderate positive relationship ($r = .326$) that is statistically significant ($p = .000$). The null hypothesis is rejected.

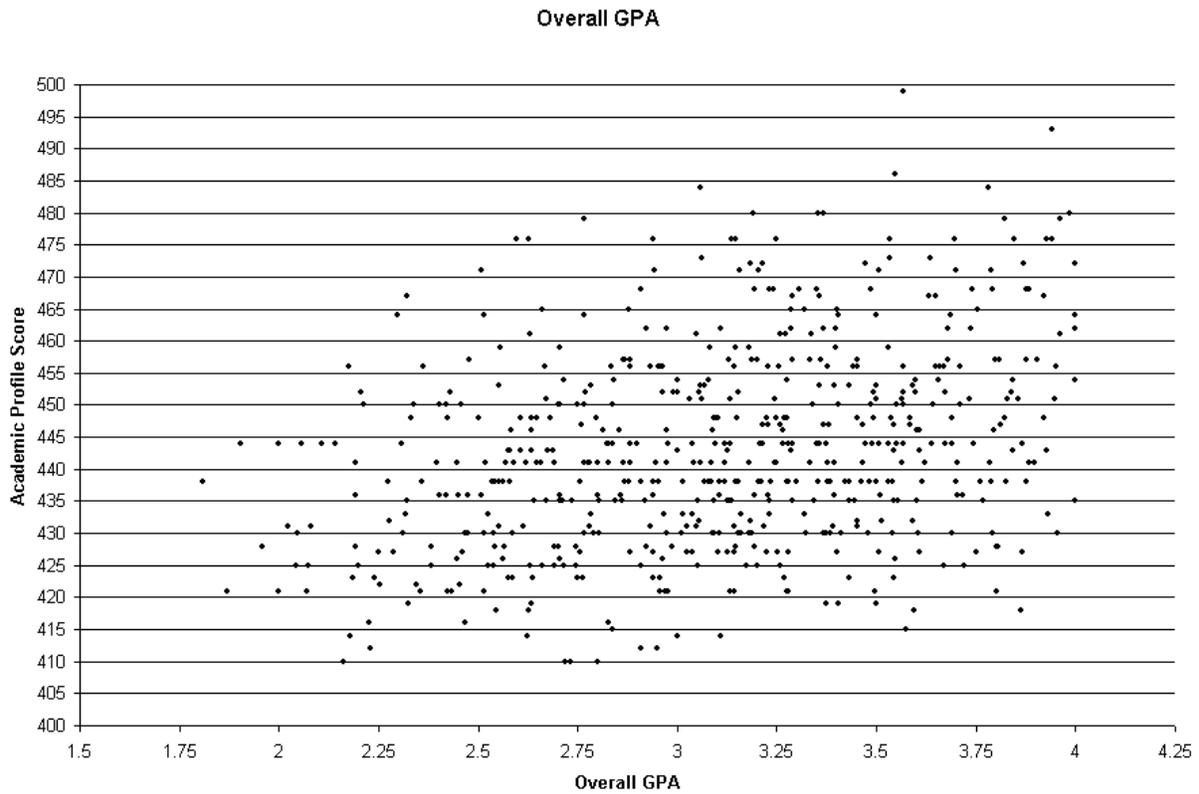


Figure 3. Correlation Coefficient Test, Pearson r , on Student Undergraduate GPA.

Student General Education Credit Hours

Null Hypothesis 10: There is no relationship between student general education credit hours and student performance on the general education assessment.

This analysis was designed to show whether or not there was a relationship between the number of student general education credit hours and performance on the Academic Profile test. A correlation coefficient test, Pearson r , was conducted on general education credit hours for students taking the examination during 2003. The results of this analysis are reported in Figure 4. As shown in Figure 4, the relationship ($r = .054$) is very weak but statistically significant ($p = .000$). The null hypothesis is rejected.

This analysis only considered general education hours taken at Walters State Community College; general education hours for transfer institutions could not be identified in the SIS. The Tennessee Board of Regents mandated a change in general education policy after the year that is examined in this study. Effective fall 2004, the general education core for university parallel, two-year degrees is changed to 41 hours and the general education core for the associate of applied science degree is changed to 15-17. Also, courses that are approved to fulfill the general education core are now subject to review and approval by an ad hoc committee established by the TBR. As a result, the number of courses that count toward fulfilling the general education core at Walters State is reduced. Walters State Community College adopted the new degree requirements in fall 2004; this change could impact student performance on the general education assessment.

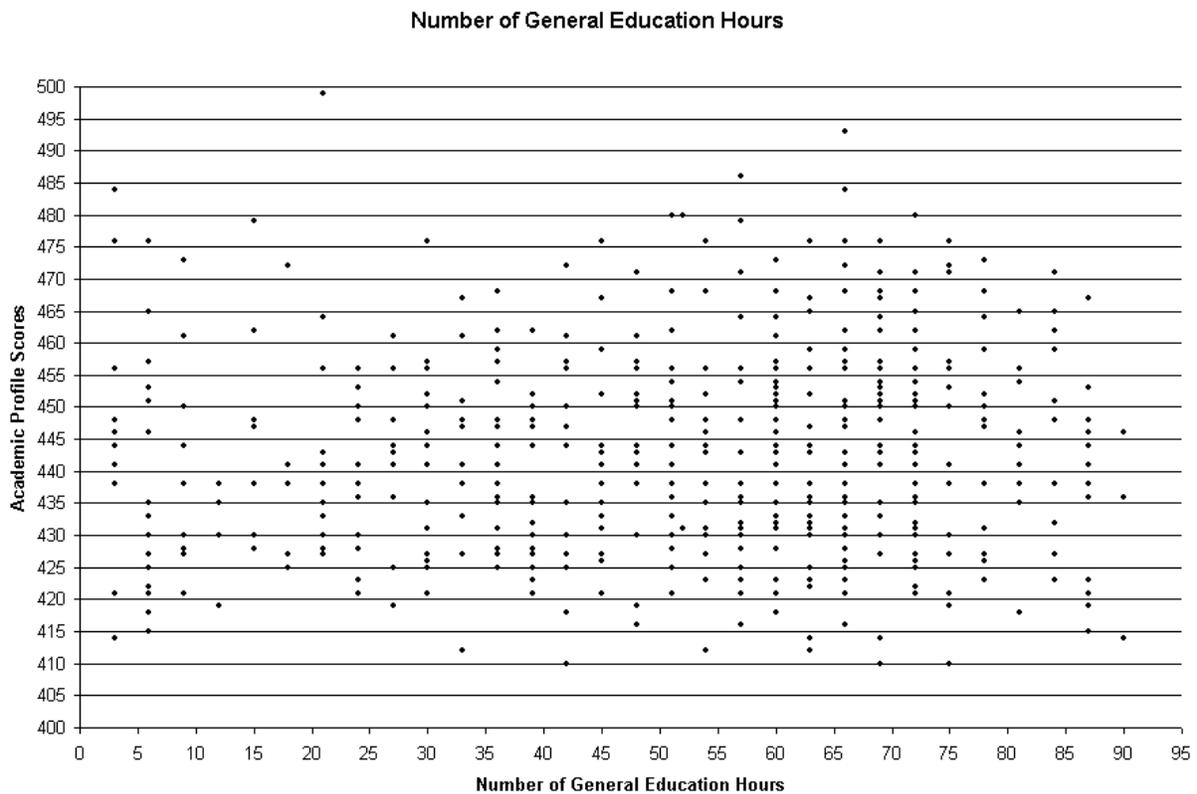


Figure 4. Correlation Coefficient Test, Pearson r , on General Education Credit Hours.

Student General Education Grade Point Average

Null Hypothesis 11: There is no relationship between student general education GPA and student performance on the general education assessment.

This analysis was designed to show whether or not there was a relationship between student general education grade point average and performance on the Academic Profile test. A correlation coefficient test, Pearson r , was calculated on general education GPA for students taking the examination during 2003. The results of this analysis are reported in Figure 5. As shown in Figure 5, the relationship ($r = .311$) is weak but statistically significant ($p = .000$). The null hypothesis is rejected.

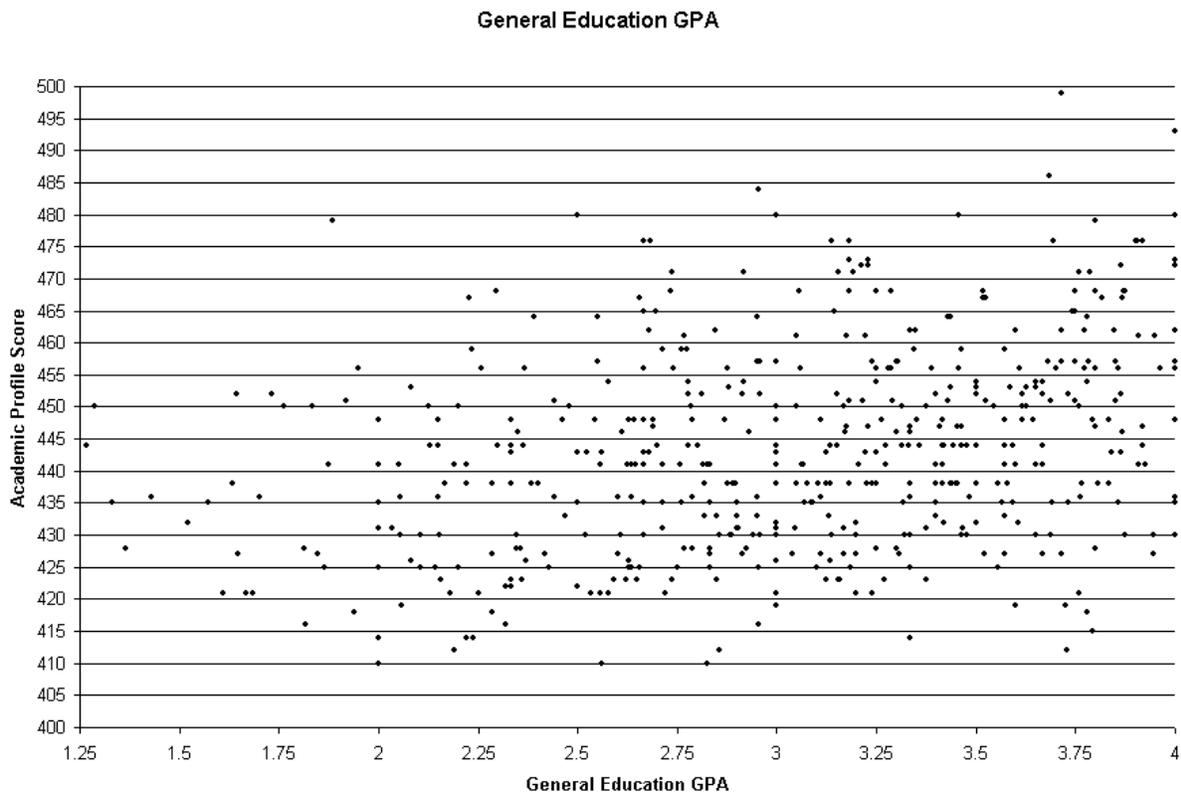


Figure 5. Correlation Coefficient Test, Pearson r , on General Education GPA.

College Preparatory Course Participation

Null Hypothesis 12: There is no difference between the mean scores on the general education assessment for students who participated in college preparatory courses and students who did not participate in college preparatory courses.

This analysis was designed to show whether or not the mean scores on the Academic Profile test were significantly different for students who participated in college preparatory courses and students who did not participate in college preparatory courses. A t-test for independent samples was conducted. The cumulative mean test score for students who did not take college preparatory courses ($M = 449.49$, $SD = 16.88$) is significantly higher, $t(581) = 7.902$, $p = .000$ (two-tailed), than students who did take college preparatory courses ($M = 438.96$, $SD = 13.43$). The null hypothesis is rejected.

Student Transfer Status

Null Hypothesis 13: There is no difference among the mean scores on the general education assessment based on transfer status.

This analysis was designed to show whether or not there was a relationship between student transfer status and performance on the Academic Profile test. Three possible classifications for transfer status are considered—native students, transfer students, and other. A fourth classification, transient students, is eliminated because only two of the 583 cases are thus coded. An analysis of variance (ANOVA) was conducted on enrollment status for students taking the examination during 2003. The results of this analysis are reported in Table 6. As shown in Table 6, there is no statistically significant relationship ($p = .277$) between transfer status and Academic Profile score for students who took the examination during 2003. The null hypothesis is retained.

Table 6

Analysis of Variance on Mean General Education Test Score by Transfer Status

Group	<u>N</u>	<u>M</u>	<u>F</u>	<u>p</u>
Native students	192	442.48		
Transfer students	74	445.74	1.285	.277
Other	314	442.70		

Length of Time between First and Last Semester

Hypothesis 14: There is no relationship between length of time between students' first and last semesters and student performance on the general education assessment.

This analysis was designed to show whether or not there was a relationship between length of time between students' first and last semesters and performance on the Academic Profile test. Length of time between first and last semesters used is an approximation of student's primary enrollment status (full-time or part-time) for students attending Walters State Community College. A correlation coefficient test, Pearson r , was conducted on the relationship between students' first and last semesters for students taking the examination during 2003. The results of this analysis are reported in Figure 6. As shown in Figure 6, the relationship ($r = .311$) is weak but statistically significant ($p = .000$). The null hypothesis is rejected.

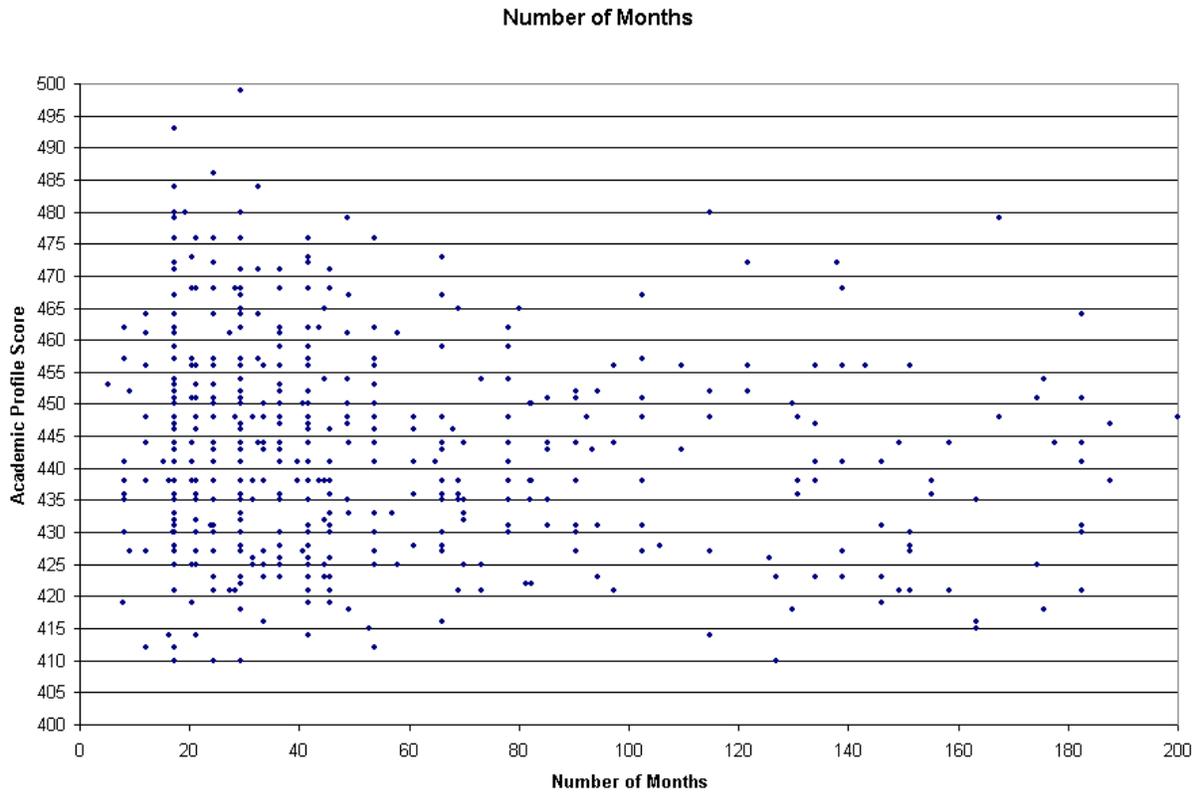


Figure 6. Correlation Coefficient Test, Pearson r , on Time between First and Last Semesters

Multiple Regression

Null Hypothesis 15: There is no relationship among student demographic variables, academic achievement variables, academic experience variables, and student performance on the general education assessment.

This final hypothesis was the development of a stepwise multiple regression analysis using the variables measured at least at the ordinal scale that previously were shown to have a relationship to the general education assessment. A multiple regression was run using the following variables: ACT scores, undergraduate GPA, general education hours, general education GPA, age, and number of months between first and last term graded. Of the six variables included in the analysis, only ACT scores and overall GPA resulted in a statistically significant relationship with Academic Profile scores. As shown in Figure 7, $R^2 = .435$ for these

two variables. ACT scores are the strongest predictor of Academic Profile scores. When the model is run with ACT scores alone, the R^2 value is .435. The results of this analysis are reported in Table 7. The null hypothesis is rejected.

Table 7

Multiple Regression—Stepwise

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.659 ^a	.435	.433	11.244
2	.666 ^b	.443	.439	11.181

a. Predictors: (Constant), ACT Score
 b. Predictors: (Constant), ACT Score, Overall GPA
 c. Dependent Variable: AcadProfScore

ANOVA				
Model	Sum of Squares	df	F	Sig.
0 Regression	28881.955	1	228.449	.000 ^a
Residual	37548.580	297		
Total	66430.535	298		
1 Regression	29428.508	2	117.708	
Residual	37002.027	296		.000 ^b
Total	66430.535	298		

a. Predictors: (Constant), ACT Score
 b. Predictors: (Constant), ACT Score, Overall GPA
 c. Dependent Variable: AcadProfScore

Table 7 (continued)

		Coefficients				
		Unstandardized	Standardized			
		Coefficients	Coefficients			
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	382.211	4.154		92.004	.000
	ACT Score	3.062	.203	.659	15.115	.000
0	(Constant)	375.935	5.106		73.621	.000
	ACT Score	2.898	.216	.624	13.412	.000
	Overall GPA	3.096	1.480	.097	2.091	.037

a. Dependent Variable: AcadProfScore

Appendix B is a summary of the finding concerning the variables examined in this study as a predictor of performance on the general education assessment. The findings of the analyses are summarized in Chapter 5. The conclusions and recommendations to improve practice and for future research are also included in Chapter 5.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Community colleges have a responsibility to educate their students. Students who complete a program at a community college can expect to enhance their employability and improve their quality of life. Those who pay for the educational experience—students, citizens, state governing boards, and legislators—have a right to know whether community colleges are successful. For public community colleges, the visible documentation of their success is critical because their primary source of revenue derives from public funds. As a return on this investment, stakeholders expect that graduates will have gained certain knowledge and skills. The question then becomes how community colleges prove that they add value to the students' lives. One of the traditional ways of providing proof is to report student scores on various standardized assessments that are then ranked against other similar higher education institutions. Correspondingly, community colleges need to know what factors may contribute to a given student's success on such an assessment instrument.

Few studies have been conducted that focus on the general education component of the associate degree. Likewise, even fewer studies exist regarding what factors may contribute to students' achievement of general education competencies. Some research has been done regarding factors that define the pragmatic concerns of students, such as life experiences and financial resources. However, the literature is lacking with regard to consistent predictors of student success, especially in the area of general education.

This study focuses on students nearing completion of the associate degree at one community college in 2003. The study uses the mean score from a standardized, nationally known general education assessment, the Academic Profile, as a measure of general education competencies. Information about these students was gathered from the college's student

information system. Because no previous studies were located that analyzed the predictive values of student attributes regarding student success on a general education assessment instrument, the purpose of this study was to assess whether student demographic characteristics, student academic achievement, or student academic experience could be associated with student performance on a general education assessment instrument. This information could help colleges because they use student performance on standardized general education assessment instruments as a measure of instructional quality. Improvement in general education assessment scores serves as documentation of institutional efforts to continually improve the quality of the curriculum and instruction. Good or improving scores document these efforts for stakeholders. Knowing what factors may influence student performance will aid colleges in focusing their improvement efforts in the right areas. This focus would enable timely and meaningful improvements that could reduce costs and increase efficiency in addition to reducing cycle time for measurable curriculum and instructional enhancements.

This study was conducted at one community college and focuses on the class of 2003 students who had completed or nearly completed their coursework for graduation and had applied for graduation. Collective student information was studied to note relationships in the mean for the Academic Profile – short form, a standardized general education assessment instrument. The variables studied included student demographic factors, student academic achievement, and student academic experience. Student demographic characteristics include race, age, gender, financial need, and county of residence (Hypotheses 1, 2, 3, 4, 5). Student academic achievement factors include the type of degree, ACT composite score or placement test requirement, student undergraduate GPA, student general education hours, and student general education GPA (Hypotheses 6, 7, 8, 9, 10, 11). Student academic experience variables include participation in college preparatory courses, transfer status, and length of time between first and last semester graded (Hypotheses 12, 13, 14). Hypothesis 15 is a multiple regression combining all interval level variables to determine the relative effects of the variables on student general

education assessment scores. The following summary describes the results of the test of each hypothesis followed by the conclusions.

Findings and Conclusions

Student Ethnicity

Student ethnicity indicates a statistically significant correlation with general education assessment scores for students in the class of 2003. The mean general education assessment score for students of other ethnic groups is statistically significantly different than the mean score for white students. The Walters State Community College student body is predominately white. In fall 2003, 94% of the total student population was white and 6% of the total student population was classified as other ethnicity. Of the 583 students that took the Academic Profile examination in 2003, 95% (553 students) were white and 5% (30 students) were other ethnicity. This finding indicates that non-white students are graduating in nearly the same proportion as they enroll. The results for Hypothesis 1 indicate that white students score higher than other students; however, the number of other students taking the Academic Profile examination in 2003 was only 30. This number is too small to draw definite conclusions about the influence of race on student performance. This finding does bear out findings in the literature that minority students at community colleges may be under prepared for college.

Student Age

Student age is statistically correlated with general education assessment scores for students in the class of 2003. Older students' scores are lower than younger students' scores; that is, older students do not do as well as younger students. The literature shows that older students quite often have families and hold down full-time jobs. They attend college part time and may not have as much time to devote to study.

Student Gender

General education assessment scores for male and female students in the class of 2003 are not statistically different. Walters State Community College is predominately female. In fall 2003, 63% of the total student population were female and 37% were male. Of the 583 students who took the Academic Profile examination, 68% (396 students) were female and 32% (187 students) were male. This finding indicates that more female students are completing their programs of study and graduating than are male students.

Student Financial Need

General education assessment scores for students with financial need are not statistically different than the scores of students with no financial need for students in the class of 2003. For this hypothesis, financial aid received in 2003 was used to represent the financial need of students. Of the 583 students who took the Academic Profile examination, only 5%, or 31 students, received financial aid although 40% of the total student enrollment (headcount) received financial aid during 2003. This finding indicates that many students receiving financial aid do not reach graduation. While not pertinent to this study, additional research should be undertaken to determine what happens to students receiving financial aid before they graduate.

Student County of Residence

General education assessment scores for students who live in different counties are not statistically different for students in the class of 2003. For this hypothesis, students were grouped into 12 categories—each of the 10 counties comprising the college's service delivery area, other Tennessee counties, and outside Tennessee including other states and foreign countries. The counties represented in the population are diverse and include some of the poorest and the most affluent school systems in Tennessee. No differences were noted among the groups represented in the population although some of the counties had very few graduates.

Student Degree Type

General education assessment scores for students who attain different associate degrees are not statistically different for students in the class of 2003. The mean general education assessment score was not statistically different for any of the degree types examined. Of the 583 students in the population, 14 obtained an associate of arts degree, 275 obtained an associate of science degree, 275 obtained an associate of applied science degree, and 27 did not graduate. This finding is interesting because the associate of applied science degrees do not typically require as many general education courses as the university parallel degrees.

Student ACT Composite Score

Student ACT composite score is statistically correlated with general education assessment scores for students in the class of 2003. Three hundred nineteen of the students in the population had ACT composite scores in the college's information system. Of all the variables examined in this study, ACT composite score proved to be the strongest indicator of student performance on the Academic Profile exam. This relationship is expected because the ACT examination is designed to be a predictor of student performance in college. Colleges that can be selective and choose students with higher ACT scores have an advantage over colleges like Walters State Community College, a public institution with an open admissions policy. This finding opens the door for additional research regarding factors that influence ACT scores. The same factors may be helpful in improving student achievement on the Academic Profile examination.

Student Placement Test Requirement

General education assessment scores for students who were required to take the placement test are statistically different from the scores of students who were not required to take

the placement test for students in the class of 2003. Of the 583 students who took the Academic Profile examination, 330 students were required to take the placement examination to determine whether they enrolled in college preparatory courses or regular college courses. This finding is expected because the placement test is required when student ACT scores are low or students have been out of high school for a specified period of time. Participation in college preparatory course does not necessarily mean that students required remediation because some students elect to start in college preparatory courses even though such courses may not be required. Actual placement test scores are not available so the number of students actually required to take college preparatory courses based on the placement test score is not known.

Student Undergraduate Grade Point Average

Student undergraduate GPA is statistically correlated with general education assessment scores for students in the class of 2003. The results of the test indicate that there is a moderately positive relationship between undergraduate GPA and Academic Profile scores. As undergraduate GPA increases, Academic Profile scores also tend to increase. This finding is expected because the students with high undergraduate GPAs presumably perform better on assessments; however, the strength of the relationship is weaker than expected.

Student General Education Credit Hours

Student general education hours are statistically correlated with general education assessment scores for students in the class of 2003. The results of the test indicate that there is a very weak positive relationship between the number of general education courses students take and their scores on the Academic Profile exam. The relationship is so small as to be of little practical value in terms of improving general education exam scores. This analysis only considers general education courses taken at Walters State. General education courses for transfer institutions were not available to the researcher.

Student General Education Grade Point Average

Student general education GPA is correlated with general education assessment scores for students in the class of 2003. The results of the test indicate that there is a weak positive relationship between general education GPA and Academic Profile scores. As general education GPA increases, Academic Profile scores also increase. The student undergraduate GPA indicates a stronger relationship with general education assessment scores than the general education GPA. The fact that student undergraduate GPA is not a stronger predictor is unexpected since the Academic Profile exam purports to test general education skills and subject areas.

Student College Preparatory Course Participation

General education assessment scores for students who participated in college preparatory courses are statistically different from the scores of students who did not participate in college preparatory courses. The students who took college preparatory courses have lower scores on the Academic Profile exam. Of the 583 students in the population, 224 did not take college participatory courses while 359 did take them. College preparatory courses include a study skills course as well as remedial and developmental courses in reading, writing, and mathematics. This finding could be expected because students are placed in these courses based on a low ACT score or the results of their placement tests. The result has policy implications because it may indicate that college preparatory courses are not preparing students for the type of college level work tested by the Academic Profile exam as they are intended.

Student Transfer Status

General education assessment scores based on transfer status are not statistically different for students in the class of 2003. There is no difference in the Academic Profile scores among

first-time college students, transfer students, and students categorized as other in the SIS. Of the 583 students in the population, 192 students are first-time college students, 74 are transfer students, and 314 are other students. Other students include students previously enrolled at Walters State Community College who were not enrolled for at least one semester since their first-time college enrollment.

Student Length of Time between First and Last Semester

The length of time between a student's first and last semester is statistically correlated with general education assessment scores for students in the class of 2003. Length of time between the student's first and last semester is used to approximate the student's primary enrollment status as either full time or part time. The analysis revealed a weak, negative relationship between length of time between the first and last semester of college. The college degree programs are designed so that general education courses are taken early in the program of study and most students follow this program sequence. Therefore, the length of time between first and last semester is indicative of a lapse between the time students take general education courses and the time they take the Academic Profile exam.

Multiple Regression

The final hypothesis in this analysis combines all the variables measured at the interval level that previously were shown to have a relationship to the general education score. Two factors, ACT composite score and undergraduate GPA, account for an R^2 of .443. The ACT composite score alone produced an R^2 of .435 and is the strongest predictor of student performance on the Academic Profile exam. Other factors show weaker relationships to the general education assessment scores and fall out of the final multiple regression model.

Recommendations

For Practice

Walters State Community College has focused improvement efforts on realigning the curriculum with competencies and subject matter tested by the Academic Profile exam and ensuring that these competencies and subject matter are addressed by all faculty members in all sections of the same course. These efforts have resulted in strengthening the curriculum that is also aligned with the TBR general education core. The faculty have also created an awareness of the importance of consistency and synergy within the faculty as faculty members work together to ensure that Academic Profile skills are addressed. Unfortunately, all of these efforts have resulted in very little improvement in Academic Profile scores, the benchmark by which external stakeholders measure quality. This research indicates that continuing similar efforts will have little effect on student achievement on the Academic Profile. Moreover, while several variables prove to have some significant correlation with regard to Academic Profile scores, only the ACT composite score is a strong indicator of student performance, and the ACT composite score is achieved before students enter the college.

The college may wish to refocus improvement efforts by studying factors that underlie student success on the ACT exam to determine if such factors could be applied at the collegiate level. Furthermore, a change in policy at the state level may be warranted. THEC is using an assessment instrument that may not be the match for community colleges with open admission policies. Some consideration could be given to the mission of the colleges because this research indicates that colleges may not be able to measure value added to their students' life experiences using the Academic Profile.

For Future Research

This research addresses only a fraction of the number of variables that may affect student achievement in general education. The college should continue to consider student data when analyzing the results of policy and curriculum changes. For example, this study did not address any of the qualitative aspects of student life. An extension of this research could also include focus groups with students who sit for the Academic Profile examination to receive their direct input regarding the exam itself as well as their college and life experiences that may influence their examination performance.

Finally, the results of the statistical tests conducted in this research identified interesting relationships that could be explored. Student race, age, and primary enrollment status indicate a statistically significant correlation in the Academic Profile score. A study of the minority experience at a predominately white college is warranted. The study results related to student age and primary enrollment status suggest that there are issues for the older, part-time student that may need to be addressed to improve the college experience for these two groups. The disparity between the total numbers of students receiving financial aid in relation to the total number of graduates receiving financial aid should be investigated. A new area for additional analysis will be the impact of the revised general education core that was adopted in fall 2004.

Community colleges want to be good public citizens and they care about the quality of their programs. Assessment is an important element in documenting the value that colleges contribute to society. Unfortunately, the methods currently used to evaluate programs and services do not always measure the value added in appropriate ways. This issue is significant because the results of the assessment are used to allocate revenues. Colleges whose general education assessment scores are better receive more funds. Moreover, the competition for funds is not only among colleges, but higher education must also compete for state funding against costly state programs such as prison reform and the state medical assistance plan (TennCare).

Fortunately, new assessment programs such as the SACS The Principles of Accreditation allow some flexibility so that institutions themselves can define excellence and associated benchmarks. Within this context, colleges may be able to establish new assessment methods that better illuminate the significant contributions to the lives of their students.

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APPENDICES

APPENDIX A

GENERAL EDUCATION COURSES

BEHAVIORAL/SOCIAL SCIENCE

ECON 2010	Principles of Economics I
GEOG 1012	Introduction to Cultural Geography
GEOG 1013	World Geography I
GEOG 1014	World Geography II
HIST 1110	Survey of World Civilization I
HIST 1120	Survey of World Civilization II
HIST 2011	American History I
HIST 2020	American History II
HIST 2030	Tennessee History
HIST 2100	Introduction to Women's Studies
HIST 2200	Women in Society
POLI 1120	Introduction to American Government
POLI 2010	Introduction to Political Science
PSYC 1310	Introduction to Psychology I
PSYC 1320	Introduction to Psychology II
PSYC 2310	Abnormal Psychology
PSYC 2410	Psychology of Childhood & Adolescence
PSYC 2420	Developmental Psychology
SOCI 1020	Gen Sociology, Institutions and Society
SOCI 1240	Introduction to Cultural Anthropology
SOCI 2020	Social Problems and Human Values
SOCI 2110	The Family, Society, and the Individual

HUMANITIES

Art

ART 1030	Art Appreciation
ART 1810	School Art
ART 2040, 2050	Art History Survey, I, II

Fine Arts and/or Humanities

ART 1110, 1120	Basic Design I, II
ART 2210, 2220	Photography I, II
ART 2410, 2420	Ceramics I, II
ART 2510, 2520	Printmaking I, II
ART 2610, 2620	Sculpture I, II
ART 2710, 2720	Printmaking I, II
ENGL 2810, 2820	Creative Writing I, II
MUS 1050	Concert Choir
MUS 1060	College Community Chorale
MUS 1090	Jazz Band
MUS 1510, 1520	Class Voice I, II
MUS 1610, 1620	Class Piano I, II
MUS 1730	Choral Studies
MUS 1810, 1820	Class Guitar I, II
MUS 1912	Indiv Music Instruction – Voice
MUS 1922	Indiv Music Instruction – Keyboard
MUS 1932	Indiv Music Instruction – Instrument
MUS 1933	Indiv Music Instruction – Guitar
MUS 1934	Indiv Music Instruction – Woodwinds
MUS 1935	Indiv Music Instruction – Brass
MUS 1936	Indiv Music Instruction – Percussion
MUS 1937	Indiv Music Instruction – Strings
MUS 2090	College Community Symphonic Band

English

ENGL 1010	Composition I
ENGL 1020	Composition II
ENGL 2110, 2120	American Literature I/II
ENGL 2410, 2420	Western World Literature I/II
ENGL 2510	Folklore

Music

MUS 1020	Fundamentals of Music
MUS 1030	Music Appreciation

Philosophy

PHIL 1030	Human Nature and Life
PHIL 1110	Elementary Logic
PHIL 2020	Self and Values
PHIL 2210	Religion and Culture

Speech

SPCH 2010	Introduction to Speech Communication
SPCH 2020	Advanced Speech Communication
SPCH 2030	Debate
SPCH 2040	Interpersonal Communication

Theatre

THEA 1030	Introduction to Theatre
THEA 2990	Theatre Problems

MATHEMATICS

MATH 1530	Probability and Statistics
MATH 1610	Finite Mathematics
MATH 1710	Mathematical Functions I
MATH 1720	Mathematical Functions II
MATH 1830	Calculus A
MATH 1910	Calculus I with Computer Projects
MATH 1920	Calculus II with Computer Projects

NATURAL SCIENCE

BIOL 1010	General Biology I w/lab
BIOL 1020	General Biology II w/lab
BIOL 1110	Cell Biology
BIOL 1120	Biodiversity
BIOL 2010	Human Anatomy & Physiology I
BIOL 2020	Human Anatomy & Physiology II
BIOL 2510	General Microbiology
CHEM 1010	Introductory Chemistry I w/lab
CHEM 1110	General Chemistry I w/ lab
CHEM 1120	General Chemistry II w/lab
CHEM 1320	Organic Chemistry w/lab
GEOL 1030	Geology w/lab
PSCI 1010	Physical Science I w/lab
PSCI 1020	Physical Science II w/lab
ASTR 1030	Astronomy w/lab

SPCH/THEA 1210 Voice and Physical Preparation
THEA 2410/2450 Acting I/II
THEA 2430 Stagecraft
SPCH/THEA 2440 Oral Interpretation
THEA 2500 Major Production

PHYS 1130 Conceptual Physics w/lab
PHYS 2010 General Physics I w/lab
PHYS 2020 General Physics II w/lab
PHYS 2110 Physics I w/lab
PHYS 2120 Physics II w/lab

Humanities

HUM 2010/2110 Human Adventure I/II
HUM 2020/2030 African-American Studies I/II
HUM 2100 Introduction to Women's Studies
HUM 2150 Women in Literature
HUM 2200 Women in Society
HUM 2900 Problems & Topics in Cultural Studies

COMPUTER SCIENCE

CPSC 1100 Using Information Technology or
higher numbered CPSC course
MGMT 1100 Business Computer Applications
MGMT 1110 Elec Spreadsheet & Database Operations
AGRM 2630 Agricultural Microcomputer Applications

APPENDIX B
VARIABLES EXAMINED IN THE STUDY

Walters State General Education Study: Hypotheses, Statistical Techniques, Results

Hypotheses	Independent Variable	Level of Measurement	Statistical Test	Significant?
H1	Race	Nominal	t-test	Yes—Significant
H2	Age	Interval	Correlation (<i>r</i>)	Yes—Significant (weak, negative relationship)
H3	Gender	Nominal	t-test	No
H4	Financial Need	Nominal	t-test	No
H5	County of Residence	Nominal	ANOVA	No
H6	Type of Degree	Nominal	ANOVA	No
H7	ACT Composite Score	Interval	Correlation (<i>r</i>)	Yes—Significant (strong, positive relationship)
H8	Placement Test Requirement	Nominal	t-test	Yes—Significant
H9	Undergraduate GPA	Interval	Correlation (<i>r</i>)	Yes—Significant (weak, positive relationship)
H10	General Education Credit Hours	Interval	Correlation (<i>r</i>)	No
H11	General Education GPA	Interval	Correlation (<i>r</i>)	Yes—Significant (weak, positive relationship)
H12	College Preparatory Course Participation	Nominal	t-test	Yes—Significant
H13	Transfer Status	Nominal	t-test	No
H14	Time between First & Last Semesters	Interval	Correlation (<i>r</i>)	Yes—Significant (weak, negative relationship)
H15		Interval	Multiple Regression	Yes—Significant for and ACT Composite Undergraduate GPA

t-test used independent sample option

VITA

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- Education: Public Schools, Morristown, Tennessee
Walters State Community College, Morristown, Tennessee;
Agriculture, A.S., 1975
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Educational Leadership, Ed.D., 2004
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Experience: Purchasing Agent, Walters State Community College;
Morristown, Tennessee, 1990-1991
Director of Internal Audit, Walters State Community College,
Morristown, Tennessee, 1991-1996
Director of Planning, Research, and Assessment, Walters State
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Dean of Planning, Research, and Assessment, Walters State
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