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The Relationship Between Formative Assessment and Student Engagement
at Walters State Community College

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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May 2010

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Keywords: Assessment, Formative Assessment, Student Engagement, Summative Assessment

ABSTRACT

The Relationship Between Formative Assessment and Student Engagement at Walters State Community College

by

Cary E. Jenkins

The purpose of this study was to determine whether there was a relationship between formative assessment and student engagement at Walters State Community College. Additionally, a secondary purpose examined differences in the in the dimensions of student engagement dimensions (skills engagement, emotional engagement, participation or interaction, performance) based on gender, school classification (freshman, sophomore), and age.

Two hundred thirty-nine Walters State Community College students taught with face-to-face pedagogy comprised the population for the study. The survey instruments included a 15-item formative assessment survey selected from the Walters State Community College Student Opinion of Teaching and Course (WSCCSOTC) and the Student Course Engagement Questionnaire (SCEQ) developed by Handelsman, Briggs, Sullivan, and Towler (2005) to ascertain measures of student course engagement.

The primary finding of the study was that formative assessment had a positive relationship on student engagement at Walters State Community College. The study also offered some evidence that certain teaching strategies proposed in the literature could contribute to formative assessment and increase student engagement. In the context of student engagement dimensions, there were significant differences between female study skills engagement and male performance

engagements results. The results for freshman and sophomore students on the student engagement dimensions yielded no significant difference. Interestingly, 24 year old students consistently had higher or equally as high scores on all of the student engagement dimensions.

DEDICATION

This is in dedication to all of the people in my life who have served as mentors, have inspired me, and provided for me.

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CHAPTER 1

INTRODUCTION

In this age of accountability for student learning at all levels, increasing availability of tests to measure summative learning outcomes inspire some educators to emphasize term-end testing as a strategy to produce greater learning. Some theorists such as Scriven (1980) proposed that summative evaluation should examine learning that already occurred. Scriven (1980) suggested that to enhance learning formative evaluation for learning should increase. In addition Black and Wiliam (1998) contended that formative assessment was the key to increased achievement for all students including those who were typically low achievers. Such theories lead to the fundamental question of what types of classroom learning experiences enable increased student learning and their relationship to formative assessment.

In a longitudinal study Engstrom and Tinto (2008) investigated the concept of student engagement to ascertain the strategies for attaining benefits of increased student participation in a course. The researchers reported that strategies such as learning communities increased student understanding, increased learning, increased involvement, and increased educational citizenship. The purpose of the current study was to determine whether a relationship exists between formative assessment and student engagement. In addition, the researchers considered the diverse nature of community college students, investigated differences in student course engagement dimensions (study skills, emotional engagement, participation interaction, performance) based on gender, student classification (freshman versus sophomores), and age for each of several courses taught at Walters State Community College.

The premise of this study was to investigate literature on increased formative assessment and student engagement in community colleges. The emphasis determined whether a relationship existed between formative assessment and student engagement in a variety of subject areas that shed light on the need for these types of assessment strategies and engagement outcomes. Black and Wiliam (1998) stated, “Learning was driven by what teachers and pupils did in the classroom” (p. 139). The information from this study could increase students’, instructors’, and educational administrators’ awareness of the benefits of formative assessment in engaging students to increase their learning. It might also provide a starting point for developing formative assessment seminars and training sessions.

The American public considers education an avenue towards increased wealth and mobility and, thus, a contributor to a community’s well being (Cohen & Brawer, 2008). A primary goal of community colleges is to enable students to become contributors to their communities. Unfortunately, according to Farnsworth (2007, 2008) and Lipka (2007) few Americans had the educational skills their jobs required including the ability to write, solve problems, and think critically. Accordingly, O'Banion (2007) posed the primary questions: 1) what strategies could instructors use to increase student learning; 2) did these strategies increase student learning; and 3) what method determined to what degree it worked. Farnsworth contended fewer jobs in the United States would require only a high school education by 2017. The Association of American Colleges and Universities (as cited in Farnsworth, 2007, 2008) indicated:

[T]he world in which today’s students will make choices and compose lives is one of disruption rather than certainty, and of interdependence rather than insularity. To succeed in a chaotic environment, graduates will need to be intellectually resilient, cross-culturally and scientifically literate, technologically adept, ethically anchored, and fully prepared for a future of continuous and cross-disciplinary learning. (p.33)

O'Banion's questions regarding the practices of American education are disconcerting. The U. S. Department of Education (2006) reported that, academically, American students and young adults in the United States had "slipped from first to twelfth in the world in the percentage of those with college educations, and to sixteenth in the world with students with high school diplomas" (cited in Farnsworth, p. 33).

Researchers like Farnsworth (2007, 2008), and others (Spellings, 2006 as cited in U.S. Department of Education, 2006) offered a similar picture. If United States schools were to maintain the community and national economies, part of the answer was to become better educated as a nation. Education Secretary Spellings' report (U.S. Department of Education) pointed out that the United States was losing pupils in high schools because educators had not assumed responsibility for preparing those students for postsecondary education and training. While Spellings indicated that not all students needed to go to college, she contended that all students needed some postsecondary education. Further indications revealed some students did not complete their studies because the colleges and universities did not accept responsibility for their success (U. S. Department of Education). Kuh, Cruce, Shoup, Kinzie, and Gonyea (2008) added that although there was much research about effective practices, many colleges did not use it to improve teaching and learning.

From their inception community colleges formed by a convergence of forces. These forces included the need to train workers to operate the nation's expanding factories and the drive for social equality facilitated through access to higher education (Cohen & Brawer, 2008). Murray (2007) indicated that it was central to the mission of the community college to boost student achievement and educational attainment. As verification of the public's awareness of community colleges, the *Chronicle of Higher Education* released 2008 enrollment figures that

indicated public 4-year and public 2-year institutions enrollment levels at 7, 166,661, and 6,324,119, respectively (The Chronicle of Higher Education, 2009, p. 5). Thus, at a time when public 2-year institutions rival the 4-year institution in enrollment, the importance of proven strategies that lead to successful outcomes should not be underestimated in terms of America's future.

Despite the classification of both as higher education, community colleges and 4-year institutions have some major differences. Most community college students do not live on campus; two-thirds do not attend full time for the entire year; and most work a large percentage of the time (Tinto, 2009). Additionally, Cohen and Brawer (2008) pointed out the ability levels of community college students could differ, as represented by Scholastic Aptitude Test (SAT) scores from students at 4-year institutions. In 2004-2005 SAT composite scores were 841 for students whose intent was to garner a 2-year degree and a 968 composite for students selecting the 4-year option. To increase the productivity of teachers and learners based on these factors, the current study investigated the effects of formative assessment to increase students' ability to become emotionally involved, increase study skills, participate in class, and raise classroom performance (student engagement).

Statement of the Problem

The purpose of this quantitative study was to determine if there were a significant relationship between formative assessment in classes and student course engagement in a public community college. A secondary purpose determined if there were differences in the dimensions of student course engagement (study skills, emotional engagement, participation interaction, performance) based on gender, student classification (freshman versus sophomores), and age.

Significance of the Study

This study design should provide educators with an awareness of educational strategies that could increase student learning and understanding. The study related contextually to the evolution and mission of community colleges and their students. The study took place at the classroom level where factors from previous studies and information could help students with issues that hinder their ability to gain the resourceful understanding needed to become successful in the community college classroom. Further, the information gleaned could help instructors and the higher education systems assess current practices based on college mission, learning theory and practice, student engagement, and knowledge of results to increase benefits of their students learning experience.

Definitions of Terms

Assessment. “[O]ften used as a synonym for evaluation, but sometimes used to prefer to a process that is more focused on quantitative and/or testing approaches” (Scriven, 1981, p. 10).

Student Engagement- [R]epresents both the time and the energy students invest in educationally purposefully activities and the effort institutions devote to using effective educational practices” (Kuh et al., 2008. p. 542).

Evaluation. “The process of determining the merit or worth of something; or the product of the process’ (Scriven, 1981, p. 47).

Formative Evaluation. A process conducted during the development or improvement of a program or product (or person, etc). It is an evaluation, conducted *for* the in-house staff of the program, that normally remains in-house; but an internal *or* an external evaluator or (preferably) a combination may conduct the evaluation (Scriven, 1981).

Criterion-referenced test. A type of test that “provides information about the individual’s (or a group’s) knowledge or performance on a specific criterion. The test scores are thus interpreted by comparison pre-determined performance criteria rather than by comparison with a reference group” (Scriven, 1981, p. 35).

Norm-Referenced Tests. Tests that “are constructed to yield a measure of relative performance of the individual (or group) by comparison with the performance of other individuals (or groups) taking the same test e.g. in terms of percentile ranking” (Scriven, 1981, p. 91).

Summative Evaluation. A term used “to indicate the type of evaluation used at the end of a term, course, or program for purposes of grading, certification, evaluation of progress, or research on the effectiveness of a curriculum, course of study, or educational plan” (Bloom, Hasting, & Madaus, 1971, p. 117).

Delimitation and Limitations

The study involved Walters State Community College courses taught in the traditional face-to-face method and was limited to community college students at Walters State Community College in Morristown, TN. Due to the nature of community college students, some in this study did not enroll during all semesters or terms. The transient nature of the students may affect the nature of the responses to questions and the nature of the class. This observation is especially noteworthy because the community college under study is within 100 miles of five 4-year institutions. The results may not be generalizable to any courses that involve online or hybrid instructional methods. This survey for this study employed purposeful sampling with participants designated by class size and general-education criteria.

Summary

The purpose of this study was to investigate Walters State Community College in the State of Tennessee to determine the relationship between formative assessment and student engagement. The study should provide educators with an awareness of educational strategies to increase student learning and understanding. The study related to the goals of the institution and students, factors related to student engagement, student learning, and strategies instructors use in providing feedback. It also considered the students' ability to organize ideas and their experiences in light of the feedback given to the students by their instructor.

CHAPTER 2

REVIEW OF THE RELATED LITERATURE

The Community College Formation

From as early as 1851 prominent leaders such as Henry Phillip Tappan, who soon would become the president of the University of Michigan, suggested that American universities should require students to complete a general curriculum before entrance into the university. In that proposal, Tappan supported an elitist curriculum similar to the universities of Germany, where general education would protect the university from the unprepared (Witt, Wattenbarger, Gollattscheck, & Suppiger, 1994).). In 1859, including maturity as a factor, William Mitchell, a University of Georgia trustee, also advocated the separation of freshman and sophomores from the university. Mitchell remarked that young students were not ready and needed grooming for university rigor (as cited in Witt et al.).

In 1870, William Folwell, who was the president of the University of Minnesota, devised a plan to extend high school to grades 13 and 14. According to Fowell's plan, upon completion of the freshman and sophomore curriculum, students would earn a "certificate of fitness" (Witt et al, 1994, p. 10), whereby they could enter the university. Witt et al. noted that, if adopted, the plan would create the first 6-year high school.

Several notables such as William Rainey Harper, founding President of the University of Chicago, Edmund James of the University of Illinois, and Stanford University president David Starr Jordan, proposed that the American system follow the lead of the European universities, and assume responsibility for higher-order scholarship. Harper went a step further and indicated that weaker 4-year institutions might improve by becoming stronger 2-year institutions (as cited

in Cohen & Brawer, 2008). Thus, the community college standing among university leaders in the beginning was both good and bad. In a good sense it gained support from influential university leaders who sought a buffer that would cull the ill prepared and send only the best-prepared students to major universities. On the other hand, it tainted the image of community colleges by labeling them as alternative institutions.

The Morrill Land-Grant College Acts of 1862 and 1890 provided for wider programs in higher education. Specifically:

[T]he 1862 Morrill Act provided grants in the form of federal lands to each state for the establishment of a public institution to teach agriculture, military tactics, and the mechanic arts as well as classical studies so that members of the working classes could obtain a liberal, practical education. Schools benefitting from this act are referred to as 1862 land-grant schools.

The 1890 Morrill Act provided for land grant schools to be used for instruction in food and agricultural sciences and for facilities used for such instruction. The law prohibited land-grant schools from receiving these funds if, in admitting students, they discriminated on the basis of race or color. This act also provided, however, that states could receive funds in spite of discriminatory admissions practices if they proposed an equitable division of the funds between a land-grant school for white students and one for black students that was also receiving state funds. (U.S. General Accounting Office, 1995, p. 2-3)

Community service gained popularity in American colleges in the 1860s and programs of business, forestry, journalism, and social work became common. Whatever the social or personal problem, schools were designated to solve them (Cohen & Brawer, 2008).

From an organizational standpoint, most of the early community colleges grew from upward extensions of secondary schools. In 1871 Henry Barnard, the first United States Commissioner of Education along with William Rainey Harper and Alexis Lange (of the University of California) proposed that schools in the District of Columbia be divided into five sectors, one of that would be “superior and special schools” (Cohen & Brawer, 2008, p. 9) that

valued a continuation of the studies of the secondary school. The aim of the proposal was to have high schools extend their programs through the freshman and sophomore years of college.

Community College Evolution

The junior college movement began to take hold at the University of Chicago and Joliet High School in Illinois. Though previously reported suggestions included those made by Henry Barnard, the first U. S. Commissioner of Education; John W. Burgess, a professor at Columbia College; Henry Phillip Tappan, later President of the University of Michigan; William Folwell, President of the University of Minnesota; and Alexis Lange, a University of California professor and member of the California State Board of Education, the movement took shape in 1890 when William Rainey Harper became the founding president of the University of Chicago (Witt et al., 1994). Harper divided the curriculum into what he referred to as the junior college and senior college divisions. Initially, he called the lower division “Academic Colleges” and the upper division “Senior Colleges” but eventually labeled the lower division as the junior college division. Harper was given free reign over the university, funded by a gift from his friend, John D. Rockefeller. Thus, Harper had the means, the scholarly influence, and the will to put his ideas into use. In 1899 he created the associate degree and, 2 years later one of the schools affiliated with the university, through an articulation agreement, formed the first 6-year high school (Witt et al.). The school was Joliet High School, which in 1849 was designed to be part of the school system of the city of Joliet under the tutelage of J. Stanley Brown, superintendent of Joliet city schools and friend of Harper.

In 1899 Brown became superintendent of the newly created, separate Joliet High School district, and in December 1900 he announced his intention to offer postdiploma courses (Witt et

al., 1994). With the enrollment of six students in the inaugural class, the school offered a 2-year curriculum preparing them to enter the university system as juniors. Because the University of Chicago, the University of Illinois, and Northwestern University agreed to accept credit for the coursework, Joliet was primed for success. During the 1901 opening address at Joliet, Brown praised the program and indicated it would be beneficial in keeping students in schools who otherwise might have ended their education in high school (Witt et al.).

Although there was disagreement about the actual starting dates, Tollefson (2009) indicated that “[I]t is generally recognized that Joliet Junior College, established in 1901, has been the longest institution in continuous operation as a public 2-year college” (p. 387). As reported by Witt et al. (1994), the best documentation of early 2-year institutions began in high schools. Lasell Female Seminary opened in 1851, and New Ebenezer College planned for enrollment in 1887. Lasell, that offered the last two years of high school and the first 2 years of college, morphed into a two-year institution until it began to operate on a baccalaureate basis in 1889. Witt, et al. indicated that New Ebenezer began as a preparatory school that also provided two years of college work. Later, New Ebenezer would become a branch of the Georgia State College of Agriculture and Mechanical Arts.

In 1907, Anthony Caminetti, a California state senator and proponent of local education, became one of the most renowned figures in California state education history. Caminetti authored legislation, often referred to as the Caminetti Bill, that authorized high schools to provide upward extension courses for postgraduates (Tollefson, 2009; Witt et al., 1994). In 1910, Fresno High School took advantage of the Upward Extension Law to establish a junior college, advocating the need for an institution of higher education within 200 miles (Cohen & Brawer, 2008). In 1917, the California legislature passed the Ballard Act that authorized state financial

support for junior colleges in districts with existing taxable property of at least three million dollars (Tollefson, 2009; Witt et al., 1994).

Eells's (as cited in Cohen & Brawer, 1963) definition of a junior college was:

it was generally university branch campuses offering lower division classes on the parent campus or in separate facilities; state junior colleges supported by state funds and controlled by state boards; college-level courses offered by secondary schools; and local colleges formed by groups acting without legal authority. (p. 3)

Later in 1922, the American Association of Junior Colleges defined a junior college as “an institution offering two years of instruction of strictly collegiate grade” (Cohen & Brawer, p. 4).

By 1925, the definition was modified to say “[T]he junior college may, and is likely to, develop a different type of curriculum, suited to the larger and ever-changing civic, social, religious and vocational needs of the entire community in which the college was located” (p. 4). The design of the work was appropriate for high school graduates but to be of a “strictly collegiate grade” (p. 4).

Typical mission statements of public community colleges in the latter half of the 20th century included the provision of associate degree programs leading to immediate employment and other associate-degrees transferable into baccalaureate programs at 4-year institutions. Also included in typical mission statements were provisions for financial and geographic access to equalize educational opportunities, special assistance for the mentally and physically handicapped, and centers for workforce and economic development (Tollefson, Garrett, Ingram, & Associates, 1999).

The curricular functions of the community and junior college mission usually included academic transfer preparation, vocational-technical education, continuing education, remedial education, and community service (Cohen & Brawer, 2008). Vocational-technical education became part of the plan for community college mission statements in the 1930s. Programs

offered in the programs sometimes included radio repair, secretarial services, and laboratory technical studies. In 1936, Hollinshead indicated that, “The junior college should be a community college meeting community needs” (as cited in Cohen & Brawer, p. 22).

Where academic transfer credit functioned as institutional, popularizing, and democratizing pursuits, it also served to fulfill institutional purpose and mission, it popularized higher education, and democratized the communities in which it served by providing an avenue of access to higher education. Additionally, remedial education, sometimes also known as developmental education, developed because of the lack of basic academic preparation in the secondary schools. The increased numbers of people entering college brought remedial education to the forefront (Cohen & Brawer, 2008).

In North Carolina in 1950, a significant sequence of events occurred. They started as:

[T]he State Superintendent of Public Instruction authorized a study of the need for a system of tax supported community colleges. The resulting report, by Dr. Allan S. Hurlburt, was published in 1952. It proposed a plan for development of state-supported community colleges. In 1957, The General Assembly adopted the first Community college Act and provided funding for community colleges. (North Carolina Community College System, 2008, p. 4)

Community College Growth

During the 1950s and 1960s, the term "junior college" was applied to the lower divisions of private universities and to 2-year colleges supported by churches, whereas, the designation “community college” gradually came to indicate a comprehensive publicly supported institution. By the 1970s, the term community college applied to both types and was defined as “any institution regionally accredited to award the *associate in arts or the associate in science* as its highest degree” (Cohen & Brawer, 2008. p. 5).

As community colleges experienced their greatest growth from the 1960s through the 1980s, the availability of adequate student financial aid was an important factor in their development because early students who received aid were primarily war veterans or economically disadvantaged students. In addition, during much of the early 1980s the increase in community college enrollment was due in part to participation by older students and part-time attendance. Other factors included higher attendance by students of low ability and increased attendance by women and minorities. Of particular note was the fact that community colleges recruited students on the premise that the colleges had something to offer everyone in the community (Cohen & Brawer, 2008)

The reclassification of students also affected the enrollment numbers of community colleges. Because the schools reclassified students as degree-credit, or nondegree credit, or community service, the lines defining students became blurred, that allowed reclassification of tallies as well as of courses. Cohen and Brawer (2008) pointed to examples such as public and private agencies, police academies, hospitals, and banks as possible factors that made it possible for the colleges to gain augmented funding by increasing enrollment numbers.

Community College Accountability

For the purposes of the present study, accountability refers to the responsibility of community colleges and other state institutions of higher education to report performance measures to state government agencies (Tollefson et al., 1999). The authors indicated that graduation rates, transfer rates, and faculty workload information were three of the most common measures. Further, more than 40% of states used performances measures in budgeting,

typically amounting to .5% to 4% of the budget. Exceptions included South Carolina and Tennessee. Beginning in 2000, South Carolina reportedly based 100% of its community college budget on performance measures, and Tennessee used a formula that provided performance funding up to 5.45% of the total community college budget (Tollefson et al.).

To determine that students persisted to transfer to 4-year institutions or when and why they left, community colleges began tracking students, analyzing their transcripts, and examining attendance patterns. Tinto (1993) said the initial year of college did much to determine the subsequent persistence of students. He contended “[T]his largest proportion of institutional leaving occurs in that year and prior to the beginning of the second year” (p. 14). Tinto (1993) also related student attrition to the extent a college selected its students; a quality not generally afforded public 2-year community colleges due to their open-door policy. He added that colleges with the highest selectivity levels also had the lowest levels of student attrition among beginning full-time students. In a 1992 American College Testing Program report, among a grouping that included public and private 4-year and public and private 2 year institutions, public 2-year institutions had the highest levels of attrition among the four groups for the time period 1983-1992. From those data, Tinto (1993) detected a disturbing trend for public 2-year institutions. During the period 1983-1992, all groups’ attrition levels declined somewhat, except the 2-year public institution, that increased steadily from 46.0 % in 1983 to 47.9 % in 1992.

Tinto (1993) referred to Neumann and Neumann’s study to glean insight on longitudinal persistence. He indicated that the study emphasized a *Quality of Learning Experience* approach. The approach indicated that junior and senior student “persistence is conceptually linked to student perceptions of the quality of their learning environment and their interaction with faculty about learning issues” (p. 135). Furthermore, Tinto (1993) said that early in the students’ 1st

year, social relationships might be more important than academic affiliation. He pointed to Durkheim's use of the term "integration," that noted that individuals seek connection with the community. Tinto (1993) emphasized that the community of the college, especially in academic life, was the engagement of the student in the classroom. He linked persistence to academically involved and socially invested students who sought relationships with faculty and other students.

The Tennessee Board of Regents (TBR), the governing body of the community colleges in Tennessee, addressed accountability in the form of a public report card, or performance funding standards, reported to the governor, legislature, and the public. The report card was organized around four major categories to quantify accountability, each of which had various numerical indicators that, when taken together revealed the status of a particular category. The categories of the Tennessee Board of Regents Agenda 2000 document included: Student Learning, Academic Programs, Faculty Productivity, and Financial Accountability. Examples of indicators for student learning included passing rates for licensure, percentages of students placed in jobs, measures of student and alumni satisfaction; for academic programs, program accreditation status was an indicator; faculty workload was an indicator under faculty productivity; and indicators for financial accountability were expenditures in functional areas, staffing patterns, private giving, and financial aid (Phillips-Madison, & Malo, as cited in Tollefson et al., 1999).

Because community college students were diverse and described varying needs, the Center for Community College Student Engagement (CCSSE, 2007) indicated more than half planned to transfer to 4-year institutions, sometimes while simultaneously attending other institutions of higher learning. Despite the challenges, community college students expressed a high degree of satisfaction with their educational experiences, generally reporting they would

recommend the experience to friends and family members. Most students cited the support they received at community colleges as the reason for their continued success.

American Graduation Initiative

As recently as July 2009 President Barack Obama proposed a landmark federal support plan for community colleges. The plan would be the most significant action for the community college since the G.I. Bill (American Association of Community Colleges, 2009). In a statement released by the American Association of Community Colleges (AACC), it indicated the plan briefly consisted of:

- **Community College Challenge Fund:** This fund would go to improve programs at community colleges, with an emphasis on those for high demand jobs. Funds would also be focused on increasing high school dual enrollment programs and articulation with four-year institutions, improving developmental education and increasing access to “wrap around” services such as tutoring and child care.
- **College Access and Completion Fund:** Previously proposed by the Administration, these funds would go to innovative programs to increase student success. The total funding for the challenge and Completion Fund is proposed at 9 billion over 10 years.
- **A renovation/construction fund:** The federal government would put up to \$2.5 billion to leverage \$10 billion in funding for renovation and construction on community college campuses. The resources could be used to pay the interest on bonds or other debt, seed capital campaigns, or create state revolving loan funds.
- **National Online Skills Laboratory:** The proposed program would provide federal funding for the development of 20-25 high quality web-based high school and college-level courses. Career oriented classes would be the initial priority. The Department of Defense, Labor, and Education will work together to make the courses freely available through one or more community colleges and the Defense Department’s distributed learning network. Funding for this program would be 50 million over ten years. (American Association of Community College, 2009, p. 1)

The AACC endorsed the President’s plan, and the plan will move to the House of Representatives and the Senate. (AACC, 2009).

In an interview in *The Chronicle of Higher Education*, Lipka (2007) talked with Kuh, the director of the Center for Postsecondary Research at Indiana University at Bloomington and former director of the National Survey of Student Engagement (NSSE). Lipka asked about the current trend of increasing accountability in higher education. Kuh responded that the push for accountability was largely external, in part from state legislators and in part from the federal government, the Spellings Commission Report, and the media. The Spellings Commission Report (U.S. Department of Education, 2006) assessed the status of United States education and outlined goals and recommendations for the future of higher education, indicating that students faced shortcomings in graduation rates and years to degree. The report further illuminated a study by the National Assessment of Adult Literacy, that noted:

The National Assessment of Adult Literacy indicates that, between 1992 and 2003, average prose literacy (the ability to understand narrative texts such as newspaper articles) decreased for all levels of educational attainment, and document literacy (the ability to understand practical information such as instructions for taking medicine) decreased among those with at least some college education or a bachelor's degree or higher. (U.S. Department of Education, p. 13)

The Spellings report's conclusions depicted a grim future for workers who were ill prepared and had lowered ability to write, problem solve, and think critically (Lipka).

In recent years college degrees reportedly has replaced a high school diplomas as the minimum educational level required to attain economic independence and responsible citizenship (Kuh et al., 2008). The responsibility for fostering higher-level student skills increased as societal demands for successful functioning included more than basic knowledge and understanding. Gijbels and Dochy (2006) indicated that to meet the demands higher education could develop and implement learning and teaching practices that would nurture student skills needed to apply knowledge efficiently, to think critically, to analyze, to synthesize, and to draw

inferences. In light of the special circumstances faced by many community college students, such needs placed additional emphasis on the integration of techniques and practices used by teachers, consolidating prerequisite skills prior to introducing new skills and focusing on the important aspects of each subject taught. It also involved encouraging improved learning strategies such as giving students opportunities to practice skills, providing knowledge of outcomes and corrective feedback, and giving help in monitoring their progress to develop self-evaluation skills (Gijbels & Dochy).

Educational accountability was ready for reform. Along with President Obama's American Graduation Initiative, many have states joined a reform for high schools as well. The American Diploma Project had four specific actions, including to:

1. Align standards and assessments with the knowledge and skills required beyond high school.
2. Require all high school students to take challenging courses that actually prepare them for life after high school.
3. Build college and work-ready measures into statewide accountability systems.
4. Hold schools accountable for graduating students who are college and/or workforce ready, and hold postsecondary accountable for students' success once enrolled. (Tennessee Department of Education, 2009)

Tennessee adopted a plan called the Tennessee Diploma Plan headed by leaders from the state and local governments. Also represented are business and education leaders including postsecondary and K-12 (Tennessee Department of Education, 2009).

Learning Theory

The primary reason for conceptualizing a list of learning theories was that a single theory might not be appropriate for all students (Beard & Wilson, 2005). Although not exhaustive, the theories below represent some of the major tenets associated with learning and especially with adult learning. Some of the theories that warrant consideration include Mastery Learning,

Behaviorism, Social Cognitivism, and Andragogy. Because students are diverse in the ways they encode information (Beard & Wilson), the conceptualized theories have been used to develop strategies for use in actual practice. Beard and Wilson proposed that because of each learner's uniqueness, learning models that emphasized ways to combine different aspects of learning should accompany a review for design practitioners with limited knowledge of learning theories.

Mastery Learning

Mastery learning blossomed from Bloom's (1984) theory that students would not move to new levels of learning until they had mastered prior levels. Bloom's mastery learning model provided students with formative assessment or feedback about whether they had met and mastered prior goals. Mastery learning is an instructional technology adopted by many community colleges as well as by many high schools (Zimmerman & Dibenebeto, 2008). If there were problems with mastery, the instructor would provide "just-in-time correctives" such as additional reading or other learning tools designed to assist the students in obtaining those levels (Guskey, 2007). After feedback, the student had additional opportunities to display mastery before moving to additional topics.

Bloom (1984) predicted that by use of mastery learning individual differences among students would diminish. He declared that 95% of a class could reach levels of mastery if given sufficient time and appropriate help. Additionally, Bloom predicted that the method would help weaker students learn more quickly and adjust to the mastery approach. Bloom further indicated that the mastery learning approach had improved individual as well as group scores. According to Bloom perhaps the clearest indication of mastery was that students desired to know more of the subject or persisted longer.

Behaviorism

According to Skinner (1985) behaviorists “look at antecedent events in the environment and the environmental histories of both the species and the individual” (p. 291). Skinner posited the environment *selected* behavior. Behaviorism contends that learning occurs when environmental stimuli produced a relatively permanent change in a learner’s response (Ormrod, 2006). Behaviorists suggested that learning connected to observable events called stimuli and responses. Ormrod described antecedent stimuli as observable environmental events with the potential to increase behavioral responses or overt behaviors. Behavioral learning models explained how different eliciting, consequential, and antecedent stimuli affected behavior (Ormrod). A *consequence* was a stimulus that occurred immediately after a response and had the effect of making a response more or less likely to occur again. *Antecedents* were stimuli that preceded and cued learners to respond in certain ways if they wanted to earn reinforcement or avoid punishment.

Behavioral strategies for learning include creating an environment conducive to students making correct responses. Creating environments by cueing behavior, setting the environment for collaboration, and arranging a classroom in such a manner as to increase behavioral momentum were common strategies used by behaviorists. Once the correct response was made, others in the group reinforced the instructor or group member (Ormrod, 2006).

Social Cognitivism

Social Cognitivism is a learning theory with observing others as the primary focus. Modeling, the primary method of instruction, occurred when a person demonstrated behavior for someone else (Ormrod); thus, learners acquired new or complex behaviors quickly by observing and then demonstrating the desired modeled behaviors (Wang & Lin, 2007). Learners

demonstrated goal-directed behaviors that were challenging and achievable as well as becoming self-regulated learners who were self-governed (Ormrod, 2006). According to Ormrod, from a social cognitivist perspective learners not only acquired knowledge by doing, they also processed information vicariously through observing others.

Self-regulated students became active participants in their learning (Zito, Adkins, & Gavins, 2007). They were self-starters as opposed to relying on teachers, parents, or other external agents to impart knowledge. In contrast students who lacked self-regulation appeared to be low achieving, to set lower goals, and to be less accurate in assessing their own abilities. Zito et al.) said the deficiencies in non-self-regulated students affected their emotional well-being, leading to low self-esteem and low intrinsic motivation.

Wang and Lin (2007) noted that the personal influences of self-regulation included the motivational components of expectancy (“Can I do the task?”), the value of the task (“Why I am doing the task?”), and an affective component (“How do I feel about the task?”).

Expectancy-value theory has been one of the most important views on the nature of achievement motivation, beginning with Atkinson’s (1957) seminal work and continuing through the work of Battle (1965; 1966), the Crandalls (e.g., Cradall, 1969; Cradall et al., 1962) and more recently Feather (1982, 1988, 1992) and Eccles, Wigfield and their colleagues (e.g., Eccles, 1948 a, b; Eccles, et al., 1983, 1984; Wigfield and Eccles, 1992) (Wigfield, 1994, p. 1).

In addition, the expectancy, value, and affective components of personal influences had a positive collective relationship with academic achievement. Affective considerations reflected a student’s emotional reaction to a task (Wang & Lin). It examined the role of anxiety and its prevalence in schools as a determinant force in learning contexts. As a result, when collaborative learning was considered and implemented as a learning strategy, group efficacy and motivation improved by increases in student function, effort, persistence, and achievement.

Advocates of self-regulation proposed that feedback and assessment were critical to the process of teaching and learning (Wang & Lin). Wang (2007) also proposed that components, such as modeling and achievement played significant roles in the development of the learning student. Feedback was an effective determinant in a social learning process. The authors indicated that through feedback from students and teachers students received assessments about their conceptions, improved their academic achievement, and experienced an enhanced sense of motivation. The feedback in this case was a *developmental intervention* to assist learners in more masterful and deeper understandings.

Andragogy

Knowles (1984) popularized andragogy as a theory of learning that was applicable to adults, as pedagogy was applicable to children. Knowles indicated andragogy was parallel, not antithetical to pedagogy, as a model used to facilitate learning. The model or process assumed the needs of children and adults in the learning environment were similar, although the approaches were different. Knowles proposed the characteristics of adult learners could include the concepts of the learner, the learner's experience, readiness to learn, the orientation to learning, and motivation. Pedagogical roles included: 1) the learner's dependency on the teacher to make decisions; 2) entrance by children into the educational experience with few resources for learning; 3) children's readiness to learn what they were told; and 4) children's subject-centeredness and external motivation.

Knowles (1984) also contended that adults were self-directed, usually had developed self-concepts, and brought greater resources into the educational environment. Knowles's model proposed that adults were motivated when there was something they needed to know. Although external pressures such as jobs and salary increases motivated adults, the andragogical model

depicted adults as being primarily motivated by internal virtues such as quality of life and greater self-confidence. The model assumed that adults needed to be involved in their learning.

Characteristics of adult-centered activities included task activities and instructional activities that accounted for the varied backgrounds of different learners and provided needed guidance but allowed for self-direction and self-discovery (Merriam & Cafferella, 1999). Furthermore, adults want to know the ways to apply information to what they were supposed to do as well as to the purpose of each exercise. Knowles's theory of andragogy emphasized that adults expected to take responsibility for their decisions and that experience provided the basis for learning activities.

In addressing strategies for creating learning environments, Beard and Wilson (2005) discussed various components in the physical environment that could enhance the learning process. Depending on the set-up, furnishings could jump-start conversation in activities, such as problem-based learning (PBL) and provide opportunities to work cooperatively for a deeper understanding and sense of togetherness (Clouston, 2005). This (PBL) learning strategy proposed that theory can be transferred from one context to another to solve problems (Brzovic & Matz, 2009) Informal learning environments, such as studios, laboratories, malls, and even relaxation rooms used in concert with traditional lecture rooms were testament that use of furnishings and space facilitated growth of the student learner (Beard & Wilson). Building on Tinto's (2000) communities of learners' notion, Beard and Wilson said that increased emphasis on communication, as well as collaborative learning, were achievable through use and manipulation of furnishings. Beard and Wilson also promoted the use of technologies as interactive modes of engagement through which students provided initiative. Those technologies could include compact disc assignments or whiteboard discussions.

Clouston (2005) described problem-based learning as an active process of learning that integrated concepts, allowing students to become critical, explorative, and dynamic participants in the learning environment. Clouston suggested that problem-based learning could be an alternative to traditional teaching, allowing students to engage in solving real-life problems. Further, the problem-based approach could reapply over time to generate a more thorough understanding. Clouston also said that problem-based learning (PBL) was cyclical, multi-dimensional, empowered self-directed learning, enabled students to work through their decisions, and developed strategies that fostered lifelong learning.

Student Engagement

Handelsman et al. (2005) described student engagement as the active employment of study skills, emotional involvement with course material, student interaction, and student performance. Additionally, Kuh et al. (2008) contended there was evidence that certain practices influenced student engagement, persistence, and satisfaction. The list published by the American Association of Colleges and Universities included learning communities, writing intensive courses, study abroad, student-faculty research, and such culminating experiences as capstone courses, comprehensive exams, and theses. Theses represented the most common type of student engagement practices-or activities. They improved writing skills and critical thinking, although field placements offered much broader gains such as working with others and solving real-life problems (Lipka, 2007).

Kuh et al. (2008) stated that even though there had been a great deal of research published about effective teaching practices, faculty at many colleges did not use the research practices to improve teaching and learning. Kuh et al. suggested the reason for this disconnect

could be that researchers frequently used wording that teaching specialists did not understand, adding that researchers wrote to improve the knowledge base rather than writing for the people who were more likely to apply the information. Lipka indicated that although several practices were effective and published nationally by the National Survey of Student Engagement, they did not extend to most students. For example, only 9% of African-American seniors had studied abroad, whereas 15% of white seniors had done so. First-generation college students, those over 24 years of age, and those who had transferred from other institutions participated less across the spectrum of the activities. Male and female students participated in such activities at about the same rate among learning community participants.

Tinto (2006) referred to the 2005 publication, *Our Underachieving Colleges: A candid look at how much students learn and why they should be learning more*, a text written by the former president of Harvard University, Derek Bok. Tinto (2006) asserted that Bok's students were atypical college students asserting that Bok's audience included only students attending 4-year residential campuses where most students attended full time. Rather, as Tinto (2006) explained, those institutions and those students were not typical of the majority of postsecondary educational institutions in the United States. Tinto (2006) explained that the majority of students who attended American postsecondary institutions were nonresidential, part-time students in less-than-baccalaureate programs and employed.

According to CCSSE (2007), “[C]ommunity colleges enroll disproportionate numbers of students from low-income and other historically underserved backgrounds – many of whom are underprepared for college level work” (CCSSE, 2007, p. 2). CCSSE added that:

[R]esearch shows that the more actively engaged students are with college faculty and staff, with other students, and with the subject matter they study the more likely they are to learn, to stick with their studies, and to attain their academic goals. Student engagement, therefore, is a valuable yardstick for assessing the

quality of colleges' educational practices and identifying ways they can produce successful results across all subgroups of students. (CCSSE, 2007, p. 4)

As a leader in data gathering and validation studies, CCSSE suggests lessons to educators to increase the likelihood of students attaining their goals. Included among the lessons to focus on was to be intentional because colleges should encourage students to become purposeful in their efforts. CCSSE (2007) also posited, "Engagement matters for all students, but it matters more for some than for others" (p. 5). CCSSE found that learning gaps had appeared among subgroups of students, and those students were in the groups categorized at the highest risk of failure including the underprepared had made the most significant gains.

As Tinto (2006) contended, most community college students, especially those from low-income backgrounds, had spent little of their time on the college campuses unless they were in classes or laboratories. Essentially, he added, much of the learning that occurred in the community college rested on the faculty, who typically taught five or six classes per term, unlike the two or three taught by most university faculty members. Tinto (2008) was quick to explain that this finding did not mean community college faculty were not concerned with instructional methodology, assessment, or student learning, but it meant that they did not have the luxury of spending as much time on each course as did their counterparts in senior institutions.

As one of the more consistently mentioned strategies to increase student engagement, Tinto (2000) explained that learning communities came in various forms. They included the basic form of coregistration or block scheduling, that enabled students to take courses in intact groups for several terms. In some cases, students would take courses that linked well together such as a writing course along with a literature or social problems course. In another example, a learning community would involve 20 to 30 students who would often attend lectures and remain together for smaller discussion sessions, led by graduate students or upper class students.

Engstrom and Tinto (2008) investigated a few of the possible benefits of learning communities in a systematic, multi-institutional, longitudinal 4-year study of the impact of various teaching and learning practices. The study involved 13 two-year and 6 four-year colleges in California, Florida, Massachusetts, Maryland, New Jersey, New York, North Carolina, Pennsylvania, Tennessee, Texas, and Washington. On each campus, students replied to questionnaires using a variant of the Community College Survey of Student Engagement (CCSSE) to ascertain patterns of academic and social engagement. Case study analysis was also included in three 2-year and two 4-year institutions. The conclusions of the study were that students in learning communities were more likely to persist in college than were their institutional peers; the average difference between groups of similar backgrounds, such as low-income was nearly 10% in the 4-year institutions, and slightly more than 5% for the 2-year group. Specifically, the students spoke of a supportive place to learn, where they spent more time together outside of class, and of being actively involved in classroom learning. The learning community enhanced the participants' understanding; they were more invested in their learning, and more engaged academically and socially. Finally, the students in the learning communities indicated collaborative learning environments fostered the norm of educational citizenship (Engstrom & Tinto; Tinto, 2000).

Tinto (2000) and Marzano (2003) posited that learning communities did not represent a magical approach to student learning because there were limits with any type of instruction. For example, some students did not like learning with others, and some faculty found collaborating difficult. Tinto (2000) suggested programs and the establishment of instructional strategies that would provide the data institutions needed to improve their efforts over time. Kuh et al. (2008) listed three factors that could help colleges enhance student learning and increase the numbers

who persisted and graduated. First, institutions must become familiar with the research on effective instruction and determine how to use it effectively. Second, governing boards should determine the areas needing modifications and locate faculty with concrete ideas on how to mobilize other faculty and staff. Third, a credible entity such as the American Association of Collegiate Registrars and Admissions Officers should offer its seal of approval on certain products and practices that were acceptable for increasing student retention and success.

In light of the community service component of the community college mission, Cohen and Brawer (2008) described that the need for better citizenship was widely cited. When students were able to understand such concepts as social systems, art, or computer science, they became better citizens. Because the students and, thus, the community college were embedded in families, tribes, and communities, learning the necessities of life in a civil society allowed them to participate in the broader community. Service learning was student learning that involved not only the students and faculty but also the community (Engstrom & Tinto, 2008). Engstrom and Tinto listed some of the benefits of service learning as it contributed to the development of the student and communities. Those benefits included engaging people in responsible and challenging actions, providing structured opportunities to reflect critically, articulating clear service and learning goals, matching service providers and service needs through a process that recognized changing circumstances, and included training, supervision, monitoring, support, recognition, and evaluation to meet service-learning goals.

Center for Community College Student Engagement

The Center for Community College Student Engagement (CCSSE), formerly known as the Community College Survey of Student Engagement, is the sister organization of the National

Survey for Student Engagement (NSSE). The organization, founded in 2001 at the University of Texas in Austin and directed by Kay McClenney of the University of Texas, uses a survey to gather data for community colleges about student learning and retention to improve community college performance and quality level. The survey questions inquire about institutional practices and student behaviors related to student success.

The survey takes place throughout the United States and in British Columbia, Nova Scotia, and the Marshall Islands. A broad category of activities comprises student data collected each spring. They include the frequency of engagement in active and collaborative learning, the level of students effort applied to educational pursuits, the degree of academic challenge at their colleges, the amount of student-faculty interaction either in class, outside of class, or on-line, and learner support provided through institutional practice and students' use of certain college services. The collected data have been since 2001-2002, under the sponsorship of the Lumina Foundation, Houston Endowment, MetLife Foundation, and The Pew Charitable Trusts.

The CCSSE underwent validation studies from 2-year, primarily Hispanic-serving institutions, data from 28 community colleges in Florida, and data from Achieving-the-Dream colleges in five states.

Achieving-the-Dream is a national initiative with the goal of helping more community college students succeed. Colleges participating in the initiative contribute student-level data that track academic performance, persistence, and completion (McClenney, Marti, & Adkins, 2007, p. 3).

CCSSE has collaborated with several national projects focused on the improvements of student outcomes in community colleges including Vincent Tinto's Pathways project. The survey has operated on a self-sufficient basis since 2004, and has been conducted by staff members at the University of Texas-Austin. Randomly selected students from across disciplines in each school

participate; Walters State Community College in Tennessee is one of the schools that participate in CCSSE.

NSSE operates through the Center for Postsecondary Research and Planning at Indiana University in Bloomington. NSSE was launched through contributions from The Pew Charitable Trust but over time the organization has become self-sufficient. The organization obtains yearly information on how students spend their time and how instructional practices affect student outcomes. The survey, directed by Alexander McCormick, formerly of The Carnegie Foundation for the Advancement of Teaching, concentrates on empirically researched practices that are used both in and out of the classroom.

The Community College Survey of Student Engagement (CCSSE) is built on the premise that student engagement – involvement, integration, and quality of effort in social and academic collegiate experiences – is significantly related to student learning, persistence, and academic attainment. The connection between student engagement and student success is grounded in decades of research. Thus it makes sense that measures of student engagement may serve as a useful proxy for desired outcomes of students' collegiate experience. (McClenney et al., 2007, p. 2)

Formative Assessment

Tyler, Gagne, and Scriven (1967) coined the term and described formative evaluation as “feedback on the basis of which he [an instructor] again produces revisions” (p. 43). They suggested that formative evaluation provided information about intermediate deficiencies and successes in the development of teaching curricula. Bloom et al. (1971) asserted that the purpose of formative observations was to make determinations about the degree of mastery students achieved. In other words, Bloom contended that the intent of using mastery learning was not to grade the learners but to help them and their teacher focus on aspects that needed attention.

Black and Wiliam (1998) noted that formative assessment was the key to increased achievement for all students including those who were typically low achievers. Shortly thereafter

Cowie and Bell (1999) said, “[F]ormative assessment can be described as an integral part of teaching and learning” (p. 115). Rushton (2005) indicated that formative assessment had been used to assist learners in finding more masterful and deep understanding and to assist the formative development of students through feedback based on a construct central to providing information about the learning activities in which students were engaged. Rushton orchestrated studies that defined feedback as the information about the existing gap between the actual level and the reference level of performance, stressing that information was only feedback if used to alter the gap. Moreover, Wang, Wang, Wang, and Huang (2006) specifically clarified that formative assessment should engage students and that, for the feedback to be effective, it should be early in the learning process.

According to Rushton (2005) feedback possessed two key components, in which the instructor was providing the feedback and the student was receiving it. It necessitated consideration of the difference between the provision and the perception of feedback, depending on an individual model of self-esteem. Rushton advocated a constructivist view of learning that indicated a student’s involvement in the learning process was essential. Additionally, self-assessment was a strategy to increase a student’s perceptions of his or her present knowledge gap.

Yorke (2003) noted that formative assessment could be formal or informal. Formative assessment spanned a spectrum ranging from the very informal, almost casual, to the highly formal. Formal formative assessments were those defined as assessments and took place with reference to specific curricular frameworks. They involved required activities for the students and typically undertaken by academic staff or supervisors of placement activity with a

collaborative organization. Parents, peers, relatives, and other students not involved in the same program participated in assessment.

According to Elwood (2006) formative assessment was not widely used as a teacher-development program or as part of a large-scale assessment initiative. However, it was more common to find that individual teachers employed formative assessment practices. That view led to Elwood's making three claims: 1) that achievement gains associated with formative assessment were the largest ever reported for educational interventions; 2) that formative assessment might create greater equity of student outcomes; and 3) that by building students' self-assessment and peer-assessment skills and helping students understand their own learning teachers had provided skills needed for lifelong learning. Because students generally benefited from early intervention and sustained attention at key points, faculty and staff members should clarify institutional values and expectations early and often to solidify the goals and objectives of the individual course sections (Kuh et al. 2008).

Formative assessment engaged students in learning activities (Wang et al., 2006). Greene, Marti, and McClenney (2008) contended that for students to be successful in college they needed numerous academically engaging sessions to assure quality efforts with faculty and peers. They also emphasized that student learning environments should consist of active and collaborative sessions. They said that if the formative assessment intervention came early in the learning process, more students would generally benefit (Kuh et al., 2008).

Summative Assessment

Summative assessments were considered to be end-points of student learning (Taras, 2005). Bloom (1971) posited that they pointed toward larger outcomes developed over the entire

course or for the greater part of it. The purpose of summative assessment was to report learning achievements to parents, teachers, and students in summary form. Additionally, they provided end-point information to various parties including teachers and administrators. An important role of summative assessment was its overall big picture of educational progress rather than increases from day to day teaching (Harlen, Wynne, James, & May, 1997).

Yorke (2003) concluded that summative assessments were usually not designed to provide immediate contextualized feedback that was useful for helping teachers and students during the learning process, although on occasion a summative assessment would be formative in nature. Sadler (1998) summarized that generally summative assessments indicated student progress. They could include end-of-unit, standardized assessments, or any evaluation of learning wherein some type of score served as feedback. Taras (2005) contended that although summative assessments marked an ending, they should be tools for learning and not discounted in favor of formative assessment. As Taras (2005) explained, many teachers sometimes did not separate formative and summative assessments because they used the feedback that summative evaluations provided. Summative assessments could be either criterion-referenced or norm-referenced. The assessments could take place in several intervals when summations of achievement are to be recorded. The results could be used for various purposes including the verification of criterion-referenced questions. The review of conditions for effective summative assessments included student performances that were held against specific criteria, applications against the criteria to determine the best fit, and some means of ensuring the judgments of one teacher were comparable with those of other teachers (Harle et al., 1997).

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

Introduction

This chapter provides a general description of the study along with methods and procedures used in the collection and analysis of the data. It also contains information about the selection of students for participation in the study.

The purpose of this quantitative study was to determine if there were significant relationships between the mean scorers on the Walters State Community College Student Opinion of Teaching and Course (WSCCSOTC) in classes and the mean scores on a survey of Handlesman's Student Course Engagement Questionnaire (SCEQ). A secondary purpose determined if there are differences in student course engagement dimensions (study skills, emotional engagement, participation interaction, and performance) based on gender, student classification (freshman versus sophomores), and age.

The Population and Sample

The population of this study was comprised exclusively of Walters State Community College courses taught in the traditional face-to-face method. The Walters State Community College campus located in Morristown, Tennessee served as the site for administering the survey instrument. A comprehensive community college, Walters State is located in the Northeast region of the state. The primary service area includes students from 10 primarily rural counties. The total headcount student enrollments for fall and spring semesters were 5,918 and 5,574, respectively. Full-time student enrollments for fall and spring semesters were 4,082 and 3,843.

The 4-year total headcount and full-time enrollment trends were steady for both fall and spring semesters. The summer semester 4-year was approximately 1,800 total head count and 700 full-time students (WSSC, 2009). The participants were enrolled in traditional general education day and evening classes, and they had fewer than 60 hours of college credits. The study used a purposeful sample of general education classes, that included 239 students. Students enrolled in the selected classes answered the WSSCSOTC and SCEQ, a paper-pencil questionnaire designed to measure student opinions about the class and their level of course engagement. Participation was voluntary. Because students in a given class answered the survey instrument in the context of that specific class, some students may have taken the survey more than once.

Instrumentation

The survey instrument used in this study is located in Appendix A. The questionnaire measured formative assessment and four dimensions of student course engagement.

WSSCSOTC supplied the 15-item instrument that was used to measure formative assessment.

Written permission to use the items is contained in Appendix B. For this study, a four-point scale measured each of the 15-items, , where 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree. The formative assessment items are contained in Section B of the questionnaire.

The formative assessment score for each student was the sum of the 15 items divided by the number of items.

This study also employed the Student Course Engagement Questionnaire (SCEQ) developed by Handelsman et al. (2005) to ascertain measures of student course engagement.

Permission to use the instrument was granted by the license, found in Appendix C. The four dimensions of student course engagement included nine items that measured study skills (Section

C, items 1 – 9); five items that measured emotional attachment (Section C, items 10 – 14); six items that measured participation/interaction (Section C, questions 15 – 20); and three items, that measured the performance dimension (Section C, items 21 – 23). All 23 items of the Student Course Engagement Questionnaire used a five-point scale and asked: “To what extent do the following behaviors, thoughts, and feelings describe you in this course?” The response categories were: 1 = not at all characteristic of me; 2 = not really characteristic of me; 3 = moderately characteristic of me; 4 = characteristic of me; and 5 = very characteristic of me. The score for each of the four dimensions as indicated in Table 1 equaled the sum of the items included in the dimension divided by the number of items. In the Handelsman et al. study, the alpha reliability coefficients for the four dimensions were: skills (.82), emotional engagement (.82), participation interaction (.79), and performance (.76). Administration of the WSSCSOTC and SCEQ instrument occurred during the 13th week of the fall 2009 semester. This period was sufficient for students to develop a sense of the course and to adapt to the environment.

Table 1
Cronbach’s Alpha Reliability Coefficients for the Four Engagement Dimensions

	Cronbach’s Alpha	
	Handelsman Study	Current Study
Skills Engagement	.82	.88
Emotional Engagement	.82	.89
Participation-Interaction Engagement	.79	.81
Performance Engagement	.76	.88

Research Questions and Hypotheses

The following research questions guided this study.

1. Is there a relationship between the Walters State Community College Student Opinion of Teaching and Course (WSSCSOTC) instrument and each of the four dimensions of Handlesman's Student Course Engagement Questionnaire (SCEQ)?

To answer this research question, four Pearson correlation coefficients tested the following null hypotheses.

Ho₁₁: There is no relationship between the means scores on the WSCCSOTC and the mean scores on the skills dimension of student course engagement.

Ho₁₂: There is no relationship between the mean scores on the WSCCSOTC and the mean scores on the emotional dimension of student course engagement.

Ho₁₃: There is no relationship between the mean scores on the WSCCSOTC and the mean scores on the participation/interaction dimension of student course engagement.

Ho₁₄: There is no relationship between the mean scores on the WSCCSOTC and the mean scores on the performance dimension of student course engagement.

2. Are there differences in the mean scores on the four dimensions (study skills, emotional engagement, participation interaction, and performance) of student course engagement between male and female students?

The *t* test for independent samples assessed the following four null hypotheses.

Ho2₁: There is no difference in the mean scores on the WSCCSOTC formative assessment scale between male and female students.

Ho2₂: There is no difference in the mean scores on the study skills dimension of student course engagement between male and female students.

Ho2₃: There is no difference in the mean scores on the emotional engagement dimension of student course engagement between male and female students.

Ho2₄: There is no difference in the mean scores on the participation/interaction dimension of student course engagement between male and female students.

Ho2₅: There is no difference in the mean scores on the performance dimension of student course engagement between male and female students.

3. Are there differences in the mean scores on the four dimensions (study skills, emotional engagement, participation interaction, and performance) of student course engagement between freshman and sophomore students?

Five *t* tests for independent samples tested the following null hypotheses.

Ho3₁: There is no difference between the mean scores on the WSCCSOTC formative assessment scale between freshman and sophomore students.

Ho3₂: There is no difference between the mean scores on the study skills dimension of student course engagement between freshman and sophomore students.

Ho3₃: There is no difference between the mean scores on the emotional engagement dimension of student course engagement between freshman and sophomore students.

Ho3₄: There is no difference between the mean scores on the participation/interaction dimension of the student course engagement between freshman and sophomore students.

Ho3₅: There is no difference between the mean scores on the performance dimension of the student course engagement between freshman and sophomore students.

4. Are there differences in the mean scores for the four dimensions (study skills, emotional engagement participation interaction, and performance) of student course engagement among the four age groups?

Five one-way ANOVA models tested the null hypotheses. When an ANOVA is statistically significant, an appropriate *post hoc* test determines that pairs of means are different.

Ho4₁: There is no difference in the formative assessment mean scores among the three age groups (18-19, 20-23, and 24 years old and older).

Ho4₂: There is no difference in the mean scores on the study skill dimension of student course engagement among the three age groups (18-19, 20-23, 24-above).

Ho4₃: There is no difference in the mean scores on the emotional engagement dimension of student course engagement among the three age groups (18-19, 20-23, 24-above).

Ho4₄: There is no difference in the mean scores on the participation/interaction dimension of student course engagement among the three age groups (18-19, 20-23, 24-above).

Ho4₅: There is no difference in the mean scores on the performance dimension of student course engagement among the three age groups (18-19, 20-23, 24-above).

Data Analysis

Both descriptive and inferential statistics analyzed the data. The descriptive statistics used in this study included means, standard deviations, correlation coefficients, and effect size measures (η^2 and r^2). Inferential statistics included tests for Pearson correlations, t tests for independent samples, one-way ANOVAs, and an appropriate *post hoc* multiple comparison test. The inferential statistics significance level was .05. SPSS software analyzed the data.

Summary

The purpose of this study was to determine if there were a significant relationship between formative assessment in classes and student course engagement in a public community college. A secondary purpose was to determine if there were differences in the dimensions of student course engagement (study skills, emotional engagement, participation interaction, performance) based on gender, student classification (freshman versus sophomores), and age. Four research questions guided the study. The first research question used four Pearson correlation coefficients to test the null hypotheses. The remaining three research questions used independent sample t -tests and ANOVA models to determine if there were differences in each of

the dimensions of student engagement. In analyzing the data, results either rejected or retained the null hypotheses. The specific results of this study are in Chapter 4.

CHAPTER 4

ANALYSIS OF DATA

This study investigated the relationship between formative assessment and student engagement at Walters State Community College in Morristown, TN. Student engagement for this study consisted of four dimensions: skills engagement, emotional engagement, participation interaction, and performance. Further, an independent samples *t*-test and ANOVA models determined if there were differences in each of the dimensions of student engagement, formative assessment, and student demographics, such as gender, school classification, and age. The data analyzed were for the fall 2009 semester at Walters State Community College.

Research Question 1

Is there a relationship between the Walters State Community College Student Opinion of Teaching and Course (WSSCSOTC) formative assessment instrument and each of the four dimensions of Handlesman's Student Course Engagement Questionnaire (SCEQ)?

To answer this research question, four Pearson correlation coefficients tested the following null hypotheses. In order to control for Type I error, Holm's Sequential Bonferroni Method was used to calculate the needed alpha levels to reject the null hypotheses.

Ho₁₁: There is no relationship between the scores on the WSCCSOTC and the mean scores on the skills dimension of student course engagement.

Ho₁₂: There is no relationship between the scores on the WSCCSOTC and the mean scores on the emotional dimension of student course engagement.

Ho₁₃: There is no relationship between the scores on the WSCCSOTC and the mean scores on the participation interaction dimension of student course engagement.

Ho₁₄: There is no relationship between the scores on the WSCCSOTC and the mean scores on the performance dimension of student course engagement.

As shown in Table 2, the relationship between formative assessments and each of the four student engagement dimensions was significant; therefore, rejecting the four null hypotheses for Research Question 1. All four correlations showed a weak, but definite positive relationship. The correlations ranged between .15 for the relationship between formative assessment and performance engagement to .22 for formative assessment and participation-interaction engagement.

Table 2
Pearson's Correlations for Formative Assessment with the Four Dimensions of Student Engagement

Engagement Dimension	N	Formative Assessment		
		R	p	Alpha
Participation-Interaction Engagement	228	.222	.001***	.013
Emotional Engagement	232	.188	.004**	.017
Skills Engagement	231	.161	.014**	.025
Performance Engagement	232	.149	.023*	.050

*Note:** Significant at the .05 level,** Significant at the .01 level,*** Significant at the .001 level

Research Question 2

Are there differences in the mean scores on the WSCCSOTC formative assessment scale and the four dimensions (study skills, emotional engagement, participation interaction, and performance) of student course engagement between male and female students?

Ho₂₁: There is no difference in the mean scores on the WSCCSOTC formative assessment scale between male and female students.

An independent samples *t* test determined whether there was a difference in the formative assessment means between male and female students. The test variable was formative assessment and gender was the grouping variable. The test was not significant, $t(232) = .628$, $p = .531$; therefore retaining the null hypothesis. The effect size as measured by η^2 was small ($<.01$) with less than 1% of the variance in formative assessment accounted for by gender. The formative assessment mean for female students ($M = 3.56$, $SD = .55$) was only slightly higher than the mean for males ($M = 3.50$, $SD = .63$). The 95% confidence interval for the mean difference was $-.11$ to $.22$. Figure 1 shows the distribution for formative assessment scores by gender.

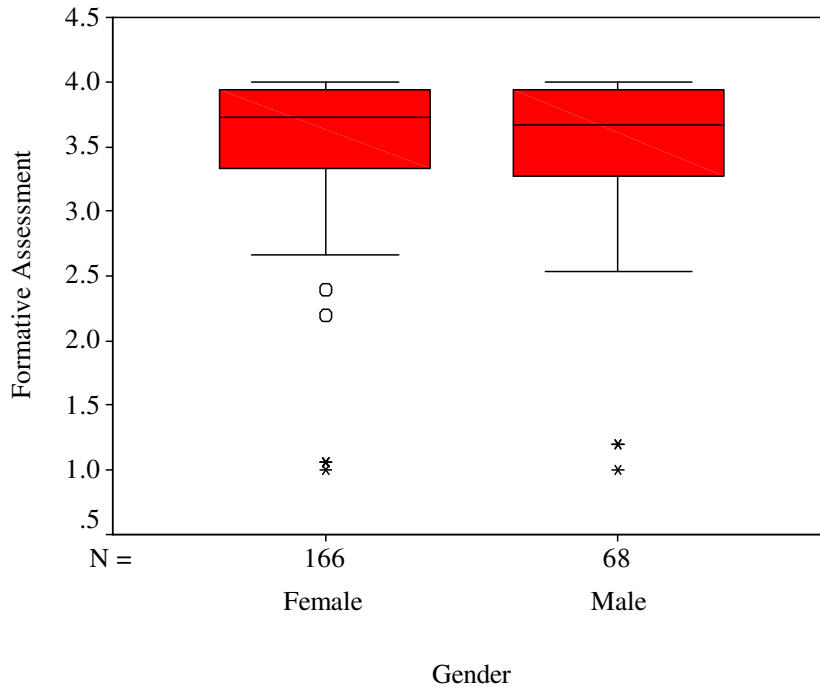


Figure 1. Formative Assessment by Gender.

Note: o = an observation between 1.5 times to 3.0 times the interquartile range; * = an observation b, that is more than 3.0 times the interquartile range.

Ho: μ_2 : There is no difference in the mean scores on the study skills engagement dimension between male and female students.

An independent samples *t* test evaluated the mean difference in the skills engagement dimension between male and female students. The test variable was skills engagement and gender was the grouping variable. The *t* test was significant, $t(232) = 3.413, p = .001$; therefore rejecting the null hypothesis. The effect size as measured by η^2 was small (.05). Gender accounted for 5% of the variance in the skills engagement scores. The skills engagement mean for female students ($M = 4.11, SD = .63$) was somewhat higher than the mean for male students ($M = 3.80, SD = .65$). The 95% confidence interval for the mean difference was .13 to .49. Figure 2 shows the distribution of the skills engagement scores by gender.

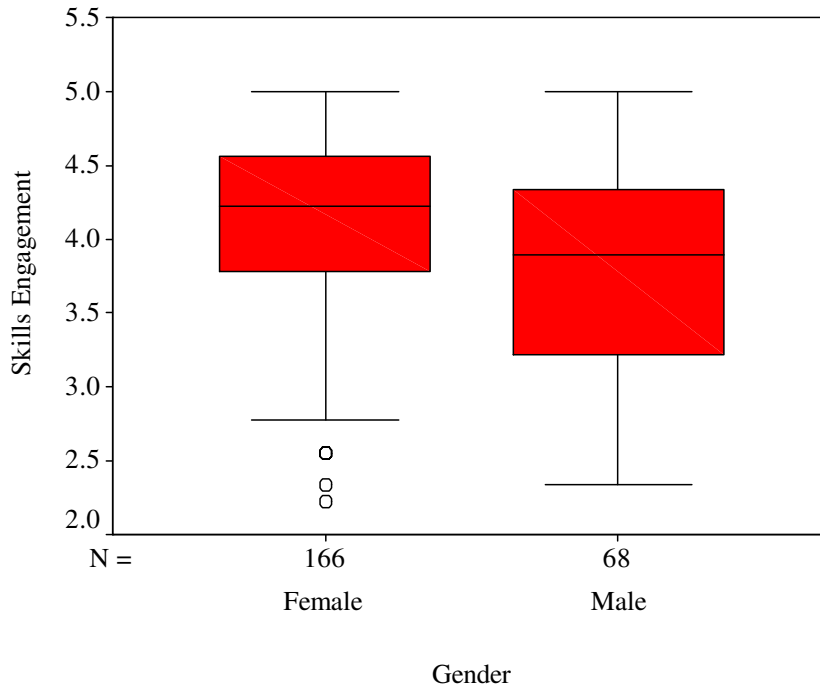


Figure 2. Skills Engagement by Gender.

Note: o = an observation between 1.5 times to 3.0 times the interquartile range.

Ho: 2_3 : There is no difference in the mean scores on the emotional engagement dimension between male and female students.

An independent samples *t* test evaluated the mean difference in the emotional engagement dimension between male and female students. The test variable was emotional engagement and the grouping variable was gender. The *t* test was not significant, $t(233) = -.541$, $p = .589$; therefore retaining the null hypothesis.. The effect size as measured by η^2 was small ($< .01$) with gender accounting for less than 1% of the variance. The emotional engagement mean for male students ($M = 3.70$, $SD = .80$) was slightly higher than the mean for female students ($M = 3.64$, $SD = .89$). The 95% confidence interval for the mean difference was -.31 to .18. Figure 3 shows the distribution for emotional engagement scores by gender.

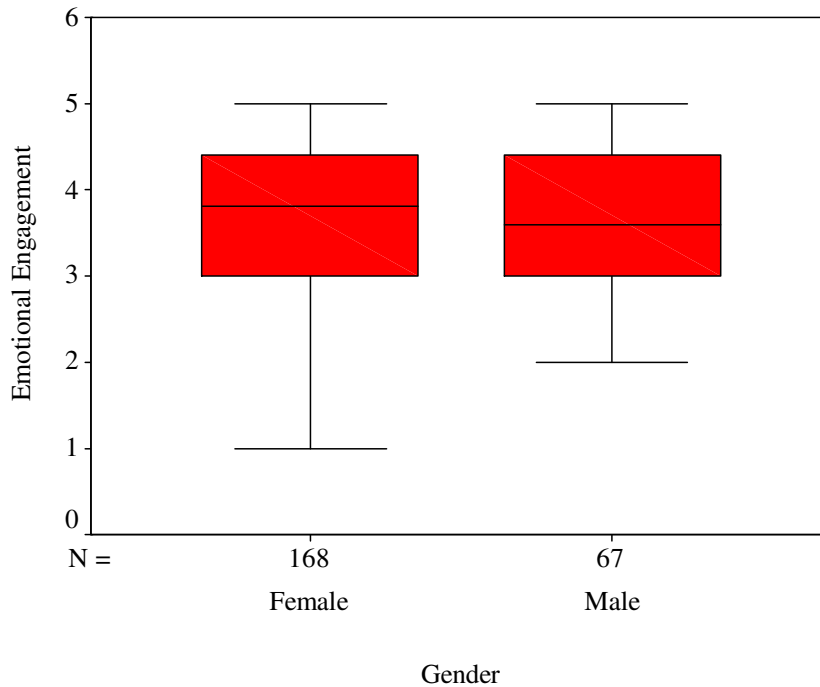


Figure 3. Emotional Engagement by Gender.

Ho: 2₄: There is no difference in the mean scores on the participation interaction dimension of student course engagement mean scores between male and female students.

An independent samples *t* test evaluated the mean difference in participation interaction engagement between male and female students. The test variable was participation interaction and the grouping variable was gender. The *t* test was not significant $t(229) = 1.934, p = .054$, therefore retaining the null hypothesis. The effect size as measured by η^2 was small (.02). Gender accounted for 2% of the variance in the participation/interaction scores. The participation interaction mean for female students ($M = 3.61, SD = .78$) was slightly higher than the mean for male students ($M = 3.40, SD = .71$). The 95% confidence interval for the mean difference was -.004 to .43. Figure 4 shows the distribution of the participation interaction scores by gender.

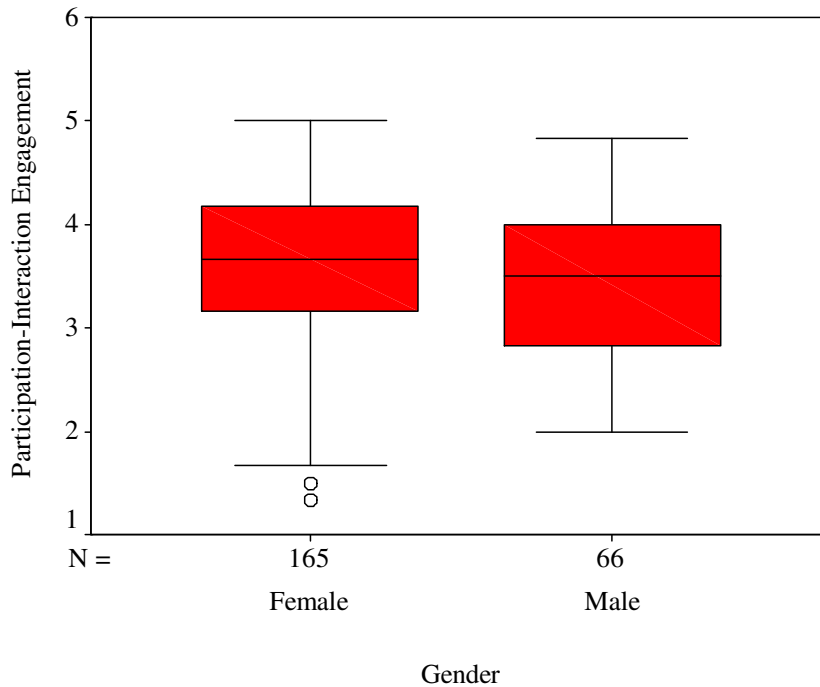


Figure 4. Participation-interaction Engagement by Gender.

Note: o = an observation between 1.5 times to 3.0 times the interquartile range.

Ho: 2_5 : There is no difference in the mean scores on the performance dimension of the student course engagement between male and female students.

An independent samples *t* test evaluated the mean difference in performance engagement between male and female students. The test variable was performance engagement and the grouping variable was gender. Equal variances could not be assumed, $F(1, 233) = 4.956, p = .027$, thus necessitating the use of the *t* test that does not assume equal variances. The *t* test was significant, $t(148) = 2.422, p = .017$, therefore rejecting the null hypothesis. The effect size as measured by η^2 was small (.02), indicating that gender accounted for 2% of the variance in performance engagement. The performance mean for males ($M = 4.12, SD = .77$) was somewhat higher than the mean for female students ($M = 3.83, SD = .96$). The 95% confidence interval for

the mean was -.53 to -.054. Figure 5 shows the distribution of the performance engagement scores by gender.

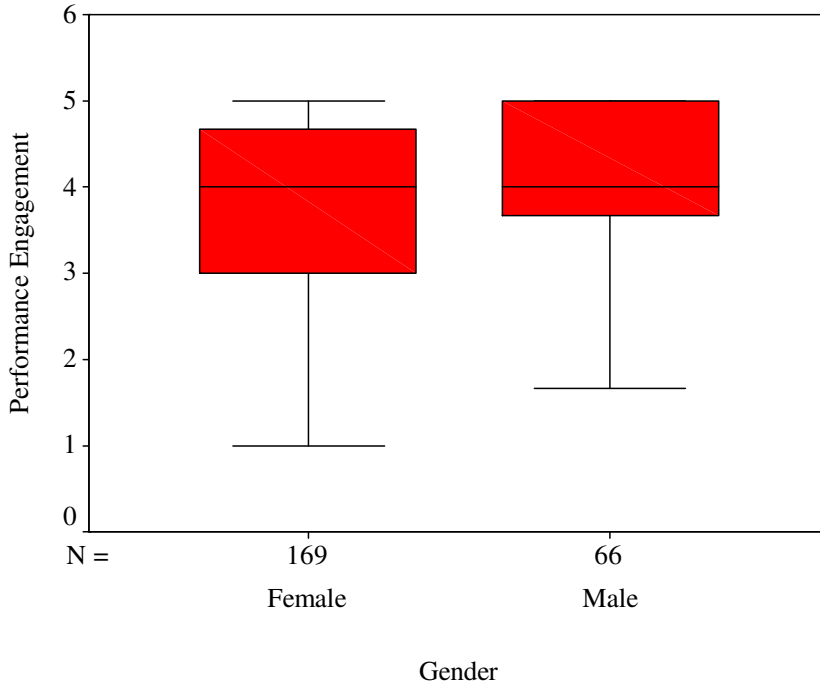


Figure 5. Performance Engagement by Gender.

Research Question 3

Are there differences in the mean scores on the WSCCSOTC formative assessment scale and the four dimensions (study skills, emotional engagement, participation interaction, and performance) of student course engagement between freshman and sophomore students?

Ho3₁: There is no difference between the mean scores on the WSCCSOTC formative assessment scale between freshman and sophomore students.

An independent samples *t* test determined whether there was a difference in the formative assessment means of freshman and sophomore students. The test variable was formative assessment and student classification was the grouping variable. The test was not significant, $t(233) = .624, p = .533$, therefore retaining the null hypothesis. The effect size as measured by η^2

was small ($<.01$) with less than 1% of the variance in formative assessment accounted for by student classification. The formative assessment mean for sophomore students ($M = 3.56$, $SD = .58$) was slightly higher than the mean for freshman students ($M = 3.51$, $SD = .57$). The 95% confidence interval for the mean difference was $-.20$ to $.10$.

Figure 6 shows the distribution for formative assessment scores by student classification

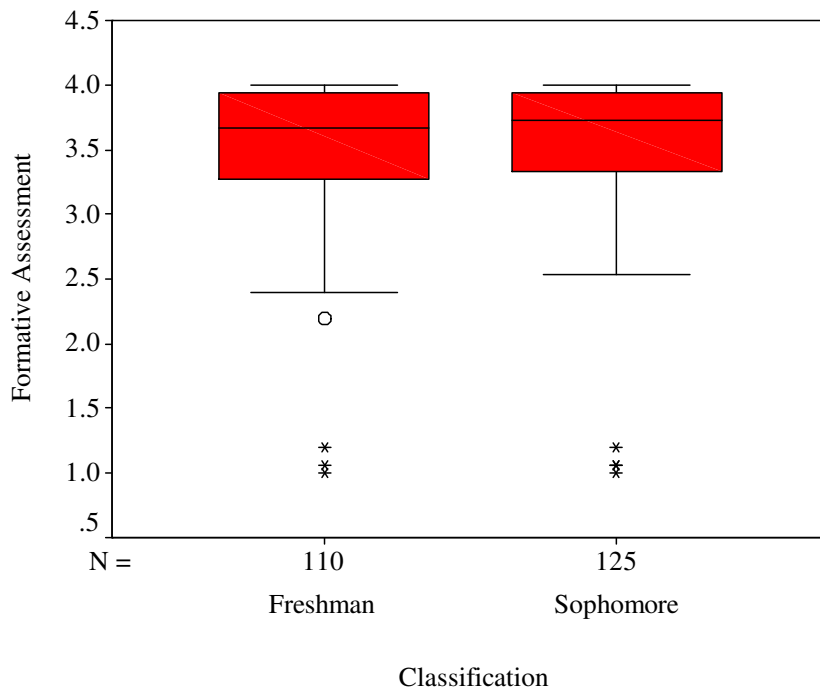


Figure 6. Formative Assessment by Classification.

Note: o = an observation between 1.5 times to 3.0 times the interquartile range; * = an observation b that is more than 3.0 times the interquartile range.

Ho₃₂: There is no difference between the mean scores on the study skills dimension of student course engagement between freshman and sophomore students.

An independent samples *t* test determined whether there was a difference in the study skills dimension means of freshman and sophomore students. The test variable was study skills

engagement and student classification was the grouping variable. The test was not significant, $t(233) = .944, p = .346$, therefore retaining the null hypothesis. The effect size as measured by η^2 was small ($<.01$) with less than 1% of the variance in study skills engagement accounted for by student classification. The study skills mean for freshman students ($M = 4.06, SD = .63$) was slightly higher than the mean for sophomore students ($M = 3.98, SD = .67$). The 95% confidence interval for the mean difference was $-.09$ to $.25$. Figure 7 shows the distribution for formative assessment scores by student classification.

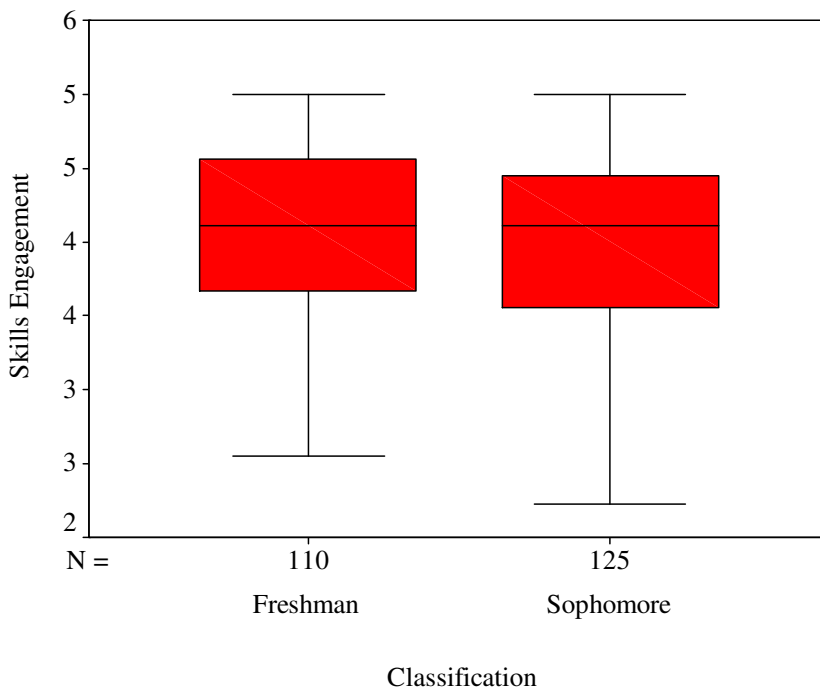


Figure 7. Skills Engagement by Classification.

Ho₃: There is no difference between the mean scores on the emotional engagement dimension of student course engagement between freshman and sophomore students.

An independent samples *t* test evaluated whether the emotional engagement dimension means differed between freshman and sophomore students. The test variable was emotional engagement and student classification was the grouping variable. The test was not significant, $t(234) = .661, p = .509$, therefore retaining the null hypothesis. The effect size as measured by η^2 was small ($<.01$) with less than 1% of the variance in emotional engagement accounted for by student classification. The emotional engagement mean for freshman students ($M = 3.69, SD = .89$) was slightly higher than the mean for sophomore students ($M = 3.61, SD = .84$). The 95% confidence interval for the mean difference was $-.15$ to $.30$. Figure 8 shows the distribution for emotional engagement scores by student classification.

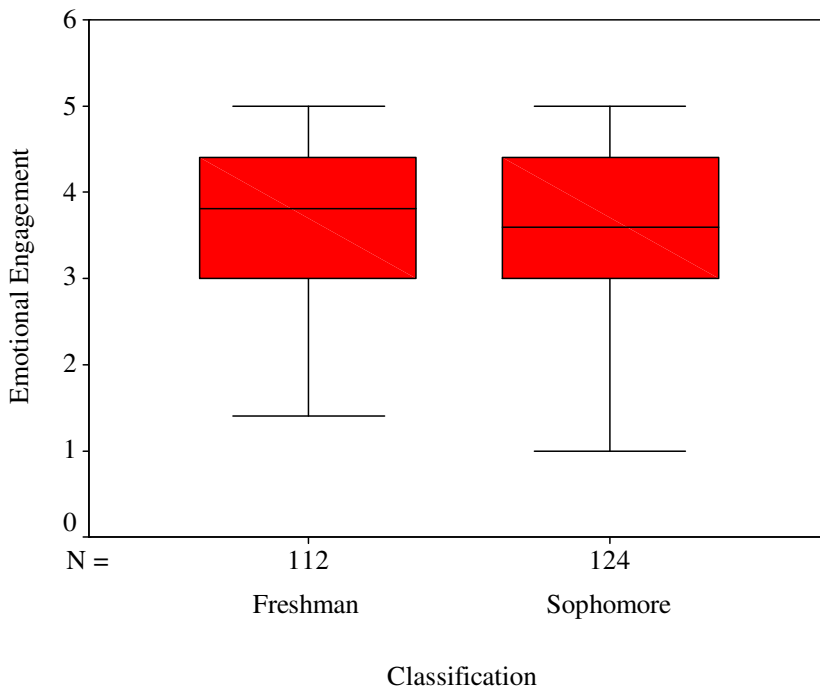


Figure 8. Emotional Engagement by Classification.

Ho3₄: There is no difference between the mean scores on the participation interaction engagement dimension of student course engagement between freshman and sophomore students.

An independent samples t test evaluated the difference in the participation interaction engagement dimension means of freshman and sophomore students. The test variable was participation interaction and student classification was the grouping variable. The test was not significant, $t(230) = .201, p = .841$, therefore retaining the null hypothesis. The effect size as measured by η^2 was small ($<.01$) with less than 1% of the variance in participation interaction accounted for by student classification. The participation interaction engagement mean for sophomore students ($M = 3.56, SD = .75$) was almost identical to the mean for freshman students ($M = 3.54, SD = .79$). The 95% confidence interval for the mean difference was $-.22$ to $.18$. Figure 9 shows the distribution for participation interaction engagement scores by student classification.

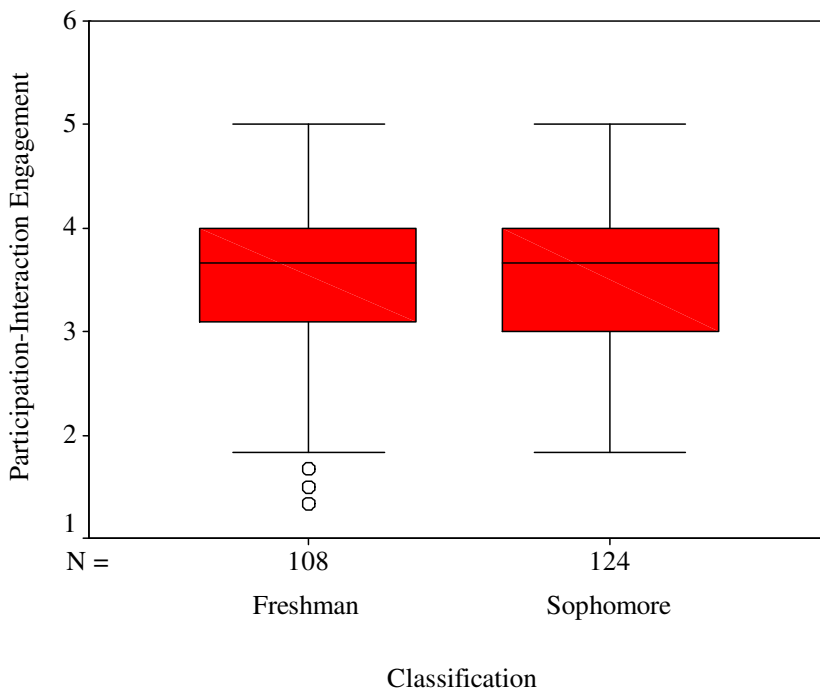


Figure 9. Participation-interaction Engagement by Classification.

Note: o = an observation between 1.5 times to 3.0 times the interquartile range.

Ho3₅: There is no difference between the mean scores on the performance engagement dimension of student course engagement between freshman and sophomore students.

An independent samples *t* test determined whether there was a difference in the performance engagement dimension means of freshman and sophomore students. The test variable was performance engagement and student classification was the grouping variable. The test was not significant, $t(234) = 1.634, p = .104$, therefore retaining the null hypothesis. The effect size as measured by η^2 was small (.01) indicating student classification accounted for 1% of the variance in performance engagement. The performance engagement dimension mean for sophomore students ($M = 4.00, SD = .89$) was slightly higher than the mean for freshman students ($M = 3.80, SD = .95$). The 95% confidence interval for the mean difference was -.43 to .04. Figure 10 shows the distribution for performance engagement scores by student classification.

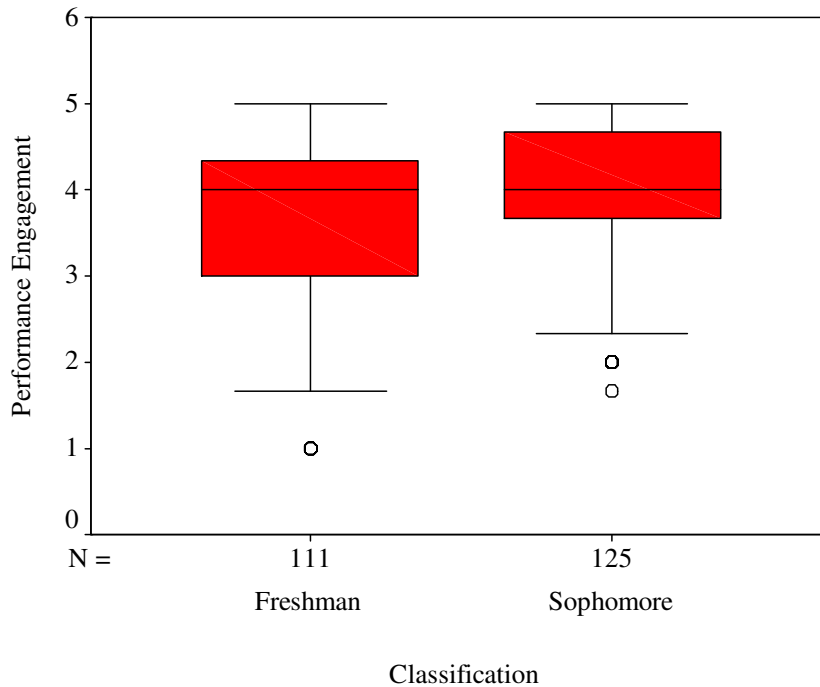


Figure 10. Performance Engagement by Classification.

Note: o = an observation between 1.5 times to 3.0 times the interquartile range.

Research Question 4

Are there differences in the mean scores on the WSCCSOTC formative assessment scale and the four dimensions (study skills, emotional engagement, participation interaction, and performance) of student course engagement among the three age groups?

Five one-way ANOVA models tested the null hypotheses.

Ho₄₁: There is no difference in the formative assessment mean scores among the three age groups (18-19, 20-23, and 24 years old and older).

A one-way analysis of variance evaluated the differences in formative assessment mean scores among three age groups. The test variable was formative assessment and the grouping variable was age categorized into three student groups: aged 18 to 19, 20 to 23, and 24 and older.

The ANOVA was not significant, $F(2, 231) = 2.050, p = .131$, therefore retaining the null hypothesis. The effect size as measured by η^2 was small (.02). In other words, age accounted for only 2% of the variance in formative assessment scores. The means and standard deviations for formative assessment by age, as well as the 95% confidence intervals for pairwise differences are in Table 3. The boxplot showing the distribution of formative assessment scores by age is in Figure 11.

Table 3
Means and Standard Deviations for Formative Assessment by Age with 95% Confidence Intervals for Pairwise Differences

Age	<i>N</i>	<i>M</i>	<i>SD</i>	18 – 19 years old	20 – 23 years old
18 – 19 years old	109	3.46	.52		
20 – 23 years old	65	3.64	.47	-.39 to .03	
24 and older	<u>60</u>	3.57	.74	-.33 to .11	-.17 to .31
Total	234				

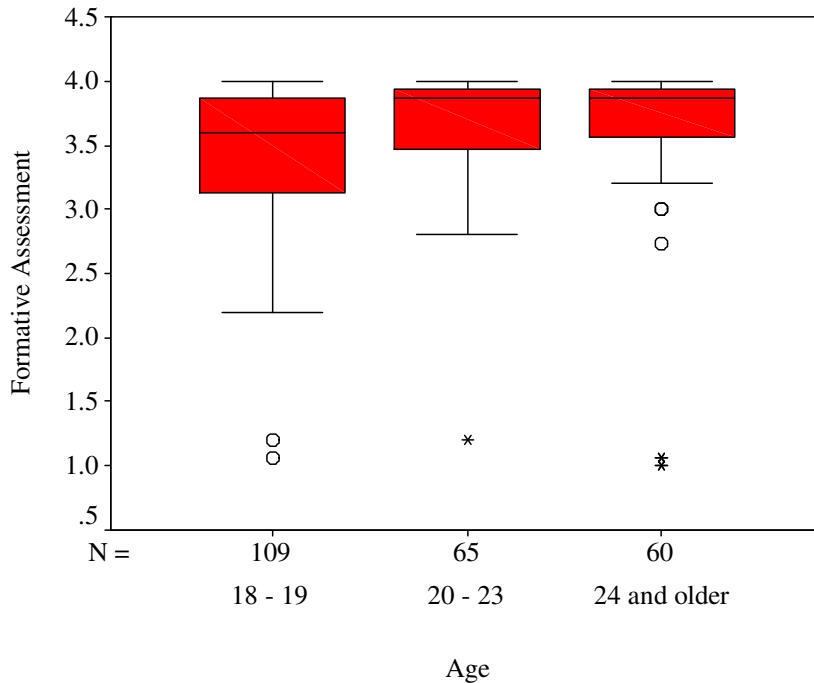


Figure 11. Formative Assessment by Age.

Note: o = an observation between 1.5 times to 3.0 times the interquartile range; * = an observation b that is more than 3.0 times the interquartile range

Ho4₂: There is no difference in the mean scores on the skills dimension of student course engagement among the three age groups (18-19, 20-23, and 24 years old and older).

A one-way analysis of variance evaluated the differences in skills engagement means among three age groups. The test variable was skills engagement while the grouping variable was age, categorized into three categories: students aged 18 to 19, students aged 20 to 23, and students 24 and older. The ANOVA was significant, $F(2, 231) = 9.182, p < .001$, therefore rejecting the null hypothesis. The effect size as measured by η^2 was medium (.07). Age accounted for, 7% of the variance in skills engagement scores.

Because the overall F test was significant, post hoc multiple comparisons determined that pair of means was different. The Tukey post hoc test was used because equal variances were

assumed, $F(2, 231) = 2.100, p = .125$. The Tukey procedure showed the skills engagement mean for students 24 years old and older was significantly different from both the mean for 18 to 19 year olds ($p < .001$) and the mean for 20 to 23 year olds ($p = .04$). In each case, the skills engagement mean for students 24 and older was higher. There was no difference between the means of 18 to 19 year olds and 20 to 23 year olds ($p = .239$). Table 4 shows the means and standard deviations for the skills engagement dimension by age, while Figure 12 shows the boxplot for skills engagement by age.

Table 4
Means and Standard Deviations for Skills Engagement by Age with 95% Confidence Intervals of Pairwise Differences

Age	<i>N</i>	<i>M</i>	<i>SD</i>	18 - 19 years old	20 - 23 years old
18 - 19 years old	111	3.86	.67		
20 - 23 years old	64	4.02	.62	-.39 to .07	
24 and older	<u>59</u>	4.30	.57	-.68 to -.19	-.54 to -.01
Total	234				

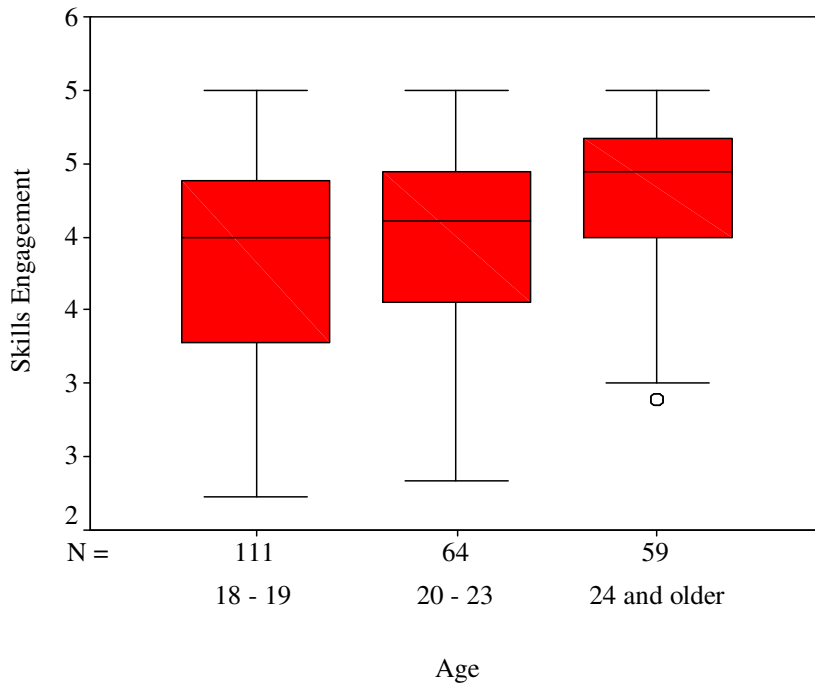


Figure 12. Skills Engagement by Age.

Note: o = an observation between 1.5 times to 3.0 times the interquartile range.

Ho₄: There is no difference in the mean scores on the emotional dimension of student course engagement among the three age groups (18-19, 20-23, and 24 years old and older).

A one-way analysis of variance evaluated the differences in emotional engagement means among the three age groups. The test variable was emotional engagement while the grouping variable was age, categorized into three categories: students aged 18 to 19, students aged 20 to 23, and students 24 and older. The ANOVA was significant, $F(2, 232) = 13.003, p < .001$, therefore rejecting the null hypothesis. The effect size as measured by η^2 was medium (.10). Age accounted for 10% of the variance in emotional engagement scores

Because the overall F test was significant, post hoc multiple comparisons determined that pair of means was different. The Dunnett's C post hoc test was used because equal variances were not assumed, $F(2, 232) = 4.208, p = .106$. The Dunnett's C procedure showed the emotional engagement mean for students 24 years old and older was significantly different at the .05 level from the mean for 18 to 19 year olds as well as different from the mean of 20 to 23 year olds. In each case, the mean for students 24 and older was higher. There was no difference in the emotional engagement means of students 18 to 19 year olds and students aged 20 to 23 ($p > .05$). Table 5 shows the means and standard deviations for the emotional engagement dimension by age, while Figure 12 shows the boxplot for emotional engagement by age.

Table 5
Means and Standard Deviations for Emotional Engagement by Age with 95% Confidence Intervals of Pairwise Differences

Age	N	M	SD	18 - 19 years old	20 - 23 years old
18 - 19 years old	110	3.40	.93		
20 - 23 years old	65	3.68	.74	-.59 to .02	
24 and older	60	4.07	.70	-.98 to -.37	-.70 to -.08
Total	235				

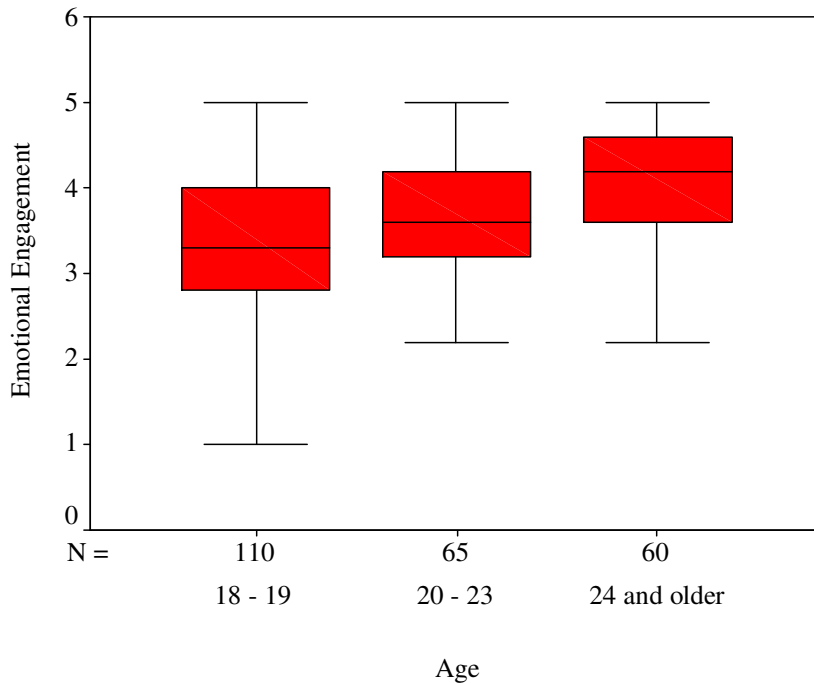


Figure 13. Emotional Engagement by Age.

Ho₄: There is no difference in the mean scores on the participation interaction dimension of student course engagement among the three age groups (18-19, 20-23, and 24 years old and older).

A one-way analysis of variance evaluated the differences in participation interaction engagement means among three age groups. The test variable was participation interaction engagement while the grouping variable was age, categorized into three groups: students aged 18 to 19, students aged 20 to 23, and students 24 and older. The ANOVA was significant, $F(2, 228) = 6.873, p = .001$, therefore rejecting the null hypothesis. The effect size as measured by η^2 was medium (.06). Age accounted for 6% of the variance in participation interaction engagement scores.

Because the overall F test was significant, post hoc multiple comparisons determined that pair of means was different. The Tukey post hoc test was used because equal variances were

assumed, $F(2, 228) = 1.153, p = .318$. The Tukey procedure showed there was a difference in the participation interaction engagement means between students 18 to 19 years old and students 24 and older ($p = .001$), and between students 20 to 23 years old and students 24 and older ($p = .04$). In each case, students aged 24 and older had the higher mean. There was no difference between the participation interaction means of students 18 to 19 years old and students aged 20 to 23 ($p = .573$). Table 6 shows the means and standard deviations for the participation interaction engagement dimension by age, while Figure 12 shows the boxplot for participation interaction engagement by age.

Table 6
Means and Standard Deviations for Participation Interaction by Age with 95% Confidence Intervals of Pairwise Differences

Age	<i>N</i>	<i>M</i>	<i>SD</i>	18 - 19 years old	20 - 23 years old
18 - 19 years old	107	3.40	.81		
20 - 23 years old	65	3.52	.68	-.39 to .16	
24 and older	<u>59</u>	3.85	.72	-.73 to -.16	-.65 to -.01
Total	231				

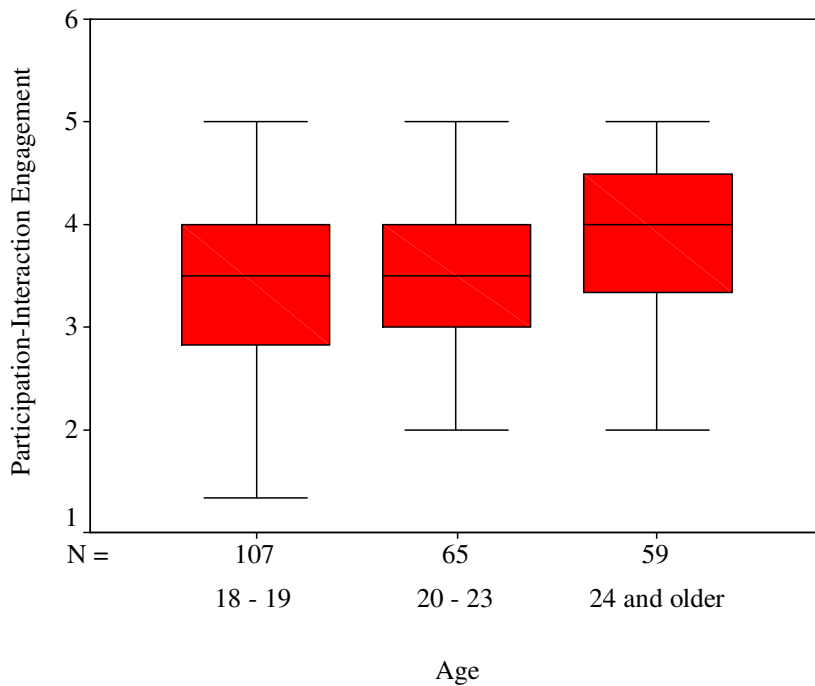


Figure 14. Participation Interaction by Age.

Ho₄₅: There is no difference in the mean scores on the performance dimension of student course engagement among the three age groups (18-19, 20-23, and 24 years old and older).

A one-way analysis of variance evaluated the differences in performance engagement means among three age groups. The test variable was performance engagement while the grouping variable was age, categorized into three groups: students aged 18 to 19, students aged 20 to 23, and students 24 and older. The ANOVA was significant, $F(2, 232) = 3.814, p = .023$, therefore rejecting the null hypothesis. The effect size as measured by η^2 was medium (.03), indicating age accounted for 3% of the variance in performance engagement scores.

Because the overall F test was significant, post hoc multiple comparisons determined that pair of means was different. The Tukey post hoc test was used because equal variances were assumed, $F(2, 232) = 1.327, p = .267$. The Tukey procedure showed there was a significant

difference in the performance means between students aged 18 to 19 years old and students 24 and older ($p = .04$). Students 24 and older had the higher performance mean. The performance mean for students aged 20 to 23 was not different from the mean of students aged 18 to 19 ($p = .09$) or from the mean of students aged 24 and older ($p = .94$) Table 7 shows the means and standard deviations for the performance engagement dimension by age, while Figure 12 shows the boxplot for performance engagement by age.

Table 7

Means and Standard Deviations for Performance Engagement by Age with 95% Confidence Intervals for Pairwise Differences

Age	<i>N</i>	<i>M</i>	<i>SD</i>	18 - 19 years old	20 - 23 years old
18 - 19 years old	111	3.74	.97		
20 - 23 years old	65	4.04	.82	-.63 to .03	
24 and older	<u>59</u>	4.09	.89	-.70 to -.01	-.44 to .33
Total	235				

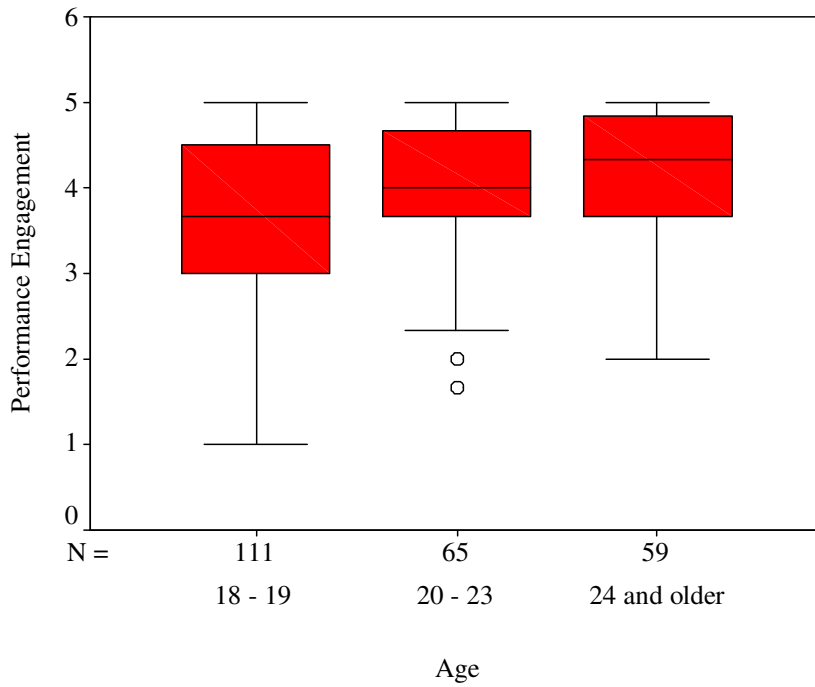


Figure 15. Performance Engagement by Age.

Note: o = an observation between 1.5 times to 3.0 times the interquartile range.

CHAPTER 5

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The design of this study was to provide educators with an awareness of educational strategies to increase student learning and understanding. Contextually, the study is related to the missions of community colleges and their students. The study was conducted in the attempt to identify factors from previous studies that would help students overcome barriers to successful completion of the community college academic program. Further, the findings and conclusions could help instructors and administrators improve practice.

Summary of Findings

The results of this study revealed a consistent pattern of positive associations between formative assessment and student engagement. When formative assessment scores were high, so were scores for student engagement. Likewise, when formative assessment scores were low, so were the scores for student engagement. Overall, there was a positive relationship between formative assessment and student engagement, although the strengths of the relationships in this study were low.

Formative assessment data were used to determine if there were differences in demographics (gender, classification, age) among the students. The most prominent trend among the student demographics was an increase in student engagement means scores among the 24-and-older age group. This group demonstrated higher skills engagement, emotional engagement, participation interaction, and performance engagement than did the 18-19-year-old group as well as higher mean scores in skills engagement and participation interaction compared to the 20-23

year-old group. There were no significant differences in mean scores among any of the four dimensions in 18-to-19-year-old group when compared to 20-23-year-olds.

Research Question 1

Is there a relationship between the Walters State Community College Student Opinion of Teaching and Course (WSSCSOTC) formative assessment instrument and each of the four dimensions of Handlesman's Student Course Engagement Questionnaire (SCEQ)?

There was a significant difference in formative assessment and student engagement at Walters State Community College. The study indicated a positive relationship between early and often informational feedback and corrections (formative assessment) that perhaps affected the student's ability to engage in community college coursework. Though the strength of the relationship was low or weak, some promise might reside with formative assessment in engaging students at Walters State.

Research Question 2

Are there differences in the mean scores on the WSCCSOTC formative assessment scale and the four dimensions (study skills, emotional engagement, participation interaction, and performance) of student course engagement between male and female students?

There were five null hypotheses evaluated for differences in formative assessment between male and female students at Walters State community College. Three of the five hypotheses were not significant. In other words, formative assessment, emotional engagement, and participation interaction engagement differences were statistically not significant, or virtually the same. The two other hypotheses, skills engagement and performance were

significant. The results of the skill engagement dimension yielded higher values for female students. Conversely, the performance engagement dimension reflected higher male values.

Research Question 3

Are there differences in the mean scores on the WSCCSOTC formative assessment scale and the four dimensions (study skills, emotional engagement, participation interaction, and performance) of student course engagement between freshman and sophomore students?

There were no significant differences in the formative assessment mean scores between freshman and sophomore students at Walters State Community College. For all freshman (110) and sophomore (125) students taking the survey, the mean scores were only slightly different. Sophomore students were slightly higher in formative assessment, participation interaction, and performance engagement. Freshman students were slightly higher, but not significant, in mean study skills and emotional engagement.

Research Question 4

Are there differences in the mean scores on the WSCCSOTC formative assessment scale and the four dimensions (study skills, emotional engagement, participation interaction, and performance) of student course engagement among the three age groups?

Five one-way ANOVA models tested the null hypotheses. A one-way analysis of variance evaluated the differences in formative assessment mean scores among three age groups. There were significant differences in four of the five hypotheses evaluating the mean scores on the formative assessment scale and the four dimensions of student engagement among the three age groups. The first hypothesis evaluating formative assessment was not significant among the

three age groups. However, the skills engagement, emotional engagement, participation interaction, and performance differences were significant.

In the skills engagement hypothesis, the Tukey procedure showed the skills engagement mean for students 24-years-old-and-older was significantly different from both the mean for 18-to-19-year-olds and the mean for 20-to-23-year-olds. In each case, the skills engagement mean for students 24-and-older was higher. There was no difference between the means of 18-to-19-year olds and 20-to-23-year-olds.

In the emotional engagement hypothesis, the Dunnett's C procedure showed the emotional engagement mean for students 24-years-old and older was significantly different from the mean for 18-to-19-year-olds as well as different from the mean of 20-to-23-year-olds. In each case, the mean for students 24-and-older was higher. There was no difference in the emotional engagement means of students' 18-to-19-year-olds and students aged 20-to-23.

In the participation interaction hypothesis, the Tukey procedure showed difference in the participation/interaction engagement means between students 18-to-19-years-old and students 24-and-older; and between students 20-to-23-years-old and students 24-and-older. In each case, students aged 24-and-older had the higher mean. There was no difference between the participation/interaction means of students' 18-to-19-years-old and students aged 20-to-23.

In the performance hypothesis, the Tukey procedure showed significant difference in the performance means between students aged 18-to-19-years-old and students 24-and-older. Students 24-and-older had the higher performance mean. The performance mean for students aged 20-to-23 was not significantly different from the mean of students aged 18-to-19 or from the mean of students aged 24-and-older.

Conclusions

In this study, data were gathered and analyzed to determine if a relationship existed between formative assessment and student engagement dimensions (skills engagement, emotional engagement, participation interaction, and performance) at Walters State Community College. The population consisted of 239 day and evening community college students enrolled in 10 varied general education classes that used a face-to-face teaching method. Consequently, some students may have taken the survey more than once.

According to the literature, the design of formative assessment should engage students (Wang et al., 2006). The current study found a positive relationship between formative assessment and student engagement. Although the strength of the relationship was low, the findings represent a tangible means for further exploration into formative assessment usage. Perhaps, with proper guidance and strategies instructors could find ways to implement this assessment form into their classroom. As Kuh et al. (2008) indicated certain practices influenced student engagement. Students in this study reported participation interaction as the engagement form with the highest correlation. Examples from the literature that reflected this finding included learning communities and student-faculty research.

The research found significant differences in the study skills dimensions between male and female students, with female students having a somewhat higher mean. The performance mean was also significantly different, although it was higher in males. As an interesting note, 24-year-olds were significantly different from both 18-to-19 and 20-to-23-year-olds in the skills engagement dimension and significantly different from the 18-to-19-year-old group in performance but not from the 20-to-23-year-olds in performance. The differences in the study skills dimension reflected a trend of female students' willingness to employ learning strategies

early and through the duration of the age groupings. In the performance dimension the older 24-year-olds and particularly the male students appeared to be confident that they could learn and could perform well on tests. This finding may support maturity as mentioned by Mitchell (1959) as a factor in the ability of early students to do well in college (Witt et al., 1994). However, one should certainly use caution with a broad presumption like the one from Mitchell and consider maturity on a case-by-case basis. This study found no significant differences in school classification dimensions (freshman or sophomore), further highlighting that age perhaps was a difference in the self-reporting of the students who took the survey instrument.

Recommendations to Improve Practice

The findings from this study may provide guidance to improve best practices in the use of formative assessment and student engagement. The correlation between formative assessments and student engagement was positive, therefore, there may be sufficient evidence to conclude that further efforts to promote formative assessment are beneficial if provided in a timely manner. Though formative assessment literature is becoming more prevalent, instructors and students may not be aware of the possible far-reaching implications. Opportunities for increasing the learning environments (learning communities) that foster formative engagement added to technologies could further expand the realm of possibilities. Raising the awareness of those involved (administration, faculty, students, parents) could aid strides toward Black and Williams (1998) claim that formative assessment was the key to increased achievement for all students including those who were typically low achievers.

Recommendations for Further Research

Suggestions for future research include:

1. A qualitative study should be conducted to determine student knowledge about beliefs and practices towards formative assessment and student engagement. This research should help to answer why students are more prone to use certain modes of engagement more than others.
2. A quantitative study should be conducted to ascertain the relationship between formative assessment and persistence to graduation in the community college. This research study could help to answer why there may be more of a need to engage community college students that are in pursuit of graduation.
3. A qualitative study should be conducted to ascertain whether the institution type (technical comprehensive) or subject area play a role in formative assessment in the classroom. A research study of this type could help to explain why specified formative assessment strategies may be more affective in distinct learning environments.
4. Other possible studies (quantitative, qualitative, or mixed) of interest could investigate diverse groups and usage of formative assessment in community college settings. Such groups could include economically and geographically disadvantaged, nontraditional (24-and-older) freshman and sophomore students, first-generation students, and students with disabilities. Research studies of this variety could help to determine why particular groups of students may have different formative assessment and engagement needs in order to increase their chances of educational achievement.

5. A variation of the research methodology in this study should be made by administering a formative assessment at approximately the 8th week of a semester, and the student engagement questionnaire during the final week of the semester. That could enable students to make corrections in their student engagement practices during the second half of the semester.

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APPENDICES

APPENDIX A

Survey Instrument

Course Assessment and Student Engagement Questionnaire

Thank you for volunteering to participate in this study. Your responses to this questionnaire will be treated with utmost confidentiality. The questionnaire has no identifying numbers or marks on it. Please do not indicate your name or put any identifiers that can be traced back to you. Please select only **one response** to each question. It will take approximately 10 minutes to complete this questionnaire. Thank you for your participation.

Section A

1. Name of this course _____

2. What is your gender?

____ 1. Female

____ 2. Male

3. What is your school classification?

____ 1. Freshman

____ 2. Sophomore

4. What is your age? _____

5. What is your major? _____

6. As of now, what grade do you have in this class?

____ 1. A

____ 2. B

____ 3. C

____ 4. D

____ 5. F

7. What final grade do you expect to get in this class?

____ 1. A

____ 2. B

____ 3. C

____ 4. D

____ 5. F

8. So far, how much have you learned in this course? (Check one.)

1. I have learned very little in this course
 2. I have learned a little in this course
 3. I have learned some in this course
 4. I have learned quite a bit in this course
 5. I have learned a great deal in this course

Section B: Student Opinion of Teaching and Course

Please indicate the extent to which you agree or disagree with the following statements <i>about this course</i> . Circle the number which best applies.	Strongly Disagree	Disagree	Agree	Strongly Agree
1. The instructor's explanations are clear.	1	2	3	4
2. The instructor helps students feel free to ask questions.	1	2	3	4
3. The instructor answers questions satisfactorily.	1	2	3	4
4. The instructor provides clear information on course requirements.	1	2	3	4
5. The instructor has high expectations for student learning.	1	2	3	4
6. The instructor carefully plans the course.	1	2	3	4
7. The instructor provides feedback on my progress in a timely manner.	1	2	3	4
8. The instructor uses methods of evaluation that measures learning.	1	2	3	4
9. The instructor seems genuinely interested in what he/she is teaching.	1	2	3	4
10. I can get personal help in this course by e-mail, telephone, or appointment.	1	2	3	4
11. The instructor provides helpful critique of my assignments.	1	2	3	4
12. The instructor encourages critical thinking and problem solving.	1	2	3	4
13. The instructor encourages the use of technology to help students learn.	1	2	3	4

Please indicate the extent to which you agree or disagree with the following statements <i>about this course</i> . Circle the number which best applies.	Strongly Disagree	Disagree	Agree	Strongly Agree
14. I find this course challenging.	1	2	3	4
15. I am an active learner in this course	1	2	3	4

Section C: Student Course Engagement

To what extent do the following behaviors, thoughts and feelings *describe you in this course*? Please circle the number which best applies.

1 = not at all characteristic of me	2 = not really characteristic of me	3 = moderately characteristic of me
4 = characteristic of me	5 = very characteristic of me	

1. Making sure to study on a regular basis	1	2	3	4	5
2. Putting forth effort	1	2	3	4	5
3. Doing all the homework assignments	1	2	3	4	5
4. Staying up on the readings	1	2	3	4	5
5. Looking over class notes between classes to make sure I understand the material	1	2	3	4	5
6. Being organized	1	2	3	4	5
7. Taking good notes in class	1	2	3	4	5
8. Listening carefully in class	1	2	3	4	5
9. Coming to class every session	1	2	3	4	5
10. Finding ways to make the course material relevant to my life	1	2	3	4	5
11. Applying course material to my life	1	2	3	4	5
12. Finding ways to make the course interesting to me	1	2	3	4	5
13. Thinking about the course between class meetings	1	2	3	4	5

14. Really desiring to learn the material	1	2	3	4	5
15. Raising my hand in class	1	2	3	4	5
16. Asking questions when I don't understand the instructor	1	2	3	4	5
17. Having fun in class	1	2	3	4	5
18. Participating actively in small group discussions	1	2	3	4	5

To what extent do the following behaviors, thoughts and feelings *describe you in this course*? Please circle the number which best applies.

1 = not at all characteristic of me	2 = not really characteristic of me	3 = moderately characteristic of me
4 = characteristic of me	5 = very characteristic of me	

19. Going to the instructor's office to review assignments or tests or to ask questions	1	2	3	4	5
20. Helping fellow students	1	2	3	4	5
21. Getting a good grade	1	2	3	4	5
22. Doing well on tests	1	2	3	4	5
23. Being confident that I can learn and do well in this class	1	2	3	4	5

Thank you for your participation!

APPENDIX B

Written Permission to Use Survey Instrument

Tollefson, Terrence A. [TOLLEFST@mail.etsu.edu]

From: Handelsman, Mitch [mailto:Mitchell.Handelsman@ucdenver.edu]
Sent: Friday, August 01, 2008 3:08 PM
To: Jenkins, Cary E.
Subject: RE: Student Engagement Questionnaire

Hi, Cary—

Got your email and phone call. The permission I gave has no expiration date. I and the other authors published the scale to be useful, so we are pleased that you find it so. We do not own the copyright, but the entire scale was published, so I don't know if there's a copyright issue or not with the publisher of the journal.

Let me know if you have other questions.

Cheers,

--mitch

PLEASE MAKE A NOTE OF MY NEW EMAIL ADDRESS!! Effective immediately, two letters have been swithced: mitchell.handelsman@ucdenver.edu

Mitchell M. Handelsman, Ph.D.
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FEDERAL ID # 52-6039144
REFERENCE #3160-03_042109_Jenkins

April 21, 2009

Cary Jenkins
Walters State Community College
500 South Davy Crockett Parkway
Morristown, TN 37813-6899
USA

RE: Request to reprint Table 1: Factor Structure of Student Course Engagement Questionnaire from Handelsman's "A Measure of College Student Course Engagement" in dissertation research

Permission is granted to reprint "Table 1. Factor Structure of Student Course Engagement Questionnaire from 'A Measure of College Student Course Engagement'," by Mitchell M. Handelsman, William L. Briggs, Nora Sullivan and Annette Towler (2005). This permission is for one edition only, in English, for distribution throughout the world. This permission excludes any material copyrighted by or credited to another source. Please use the following credit line:

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Sincerely,

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APPENDIX D

Permission to Conduct Research

MEMORANDUM
PLANNING, RESEARCH AND ASSESSMENT

Research Requests

TO: Marilyn Bowers
Lori Campbell
~~Wade B. McCarney~~ *WBM*
Office of Planning, Research and Assessment

FROM: *DS* Debra Scott, Vice President for Planning, Research
and Assessment

DATE: September 11, 2009

SUBJECT: Dissertation Request

Attached is a dissertation request from Mr. Cary Jenkins, a doctoral candidate at East Tennessee State University. This research study will examine the relationship between formative assessment and student engagement in select courses at Walters State. The survey (copy attached) will take approximately ten minutes to complete and will be administered to a sample of 200 to 250 students in select WSCC courses this fall semester. I have asked Mr. Jenkins not to sample sections affected by the SENSE Survey. I have discussed this proposal with Dr. Lori Campbell who has approved the project. We believe that findings from the study may assist Walters State to understand more about student engagement in the classroom.

Please note that the survey is anonymous and confidential although some demographic information is requested. Student rights and privacy are protected under ETSU IRB guidelines, and there is no penalty if students elect not to participate in the survey. I recommend approval of this study as detailed in the accompanying letter from Mr. Jenkins. If you concur with the recommendation, please sign as indicated on the attached form.

Please call if you have questions or need additional information. Thank you

vm

Attachments



A Tennessee Board of Regents College

Request ID: N/A Approval #:N/A

**Human Research Project Information Form
Walters State Community College
Institutional Review Board**

Application Date: 083109

Project Title: The relationship between Formative Assessment and Student Engagement in the
Community College environment

Study Director

Name:	Cary E. Jenkins
Division:	Behavioral Sciences
Program:	ELPA
Office Location:	120 MBSS
Phone Number:	423-585-6761
Email Address:	Cary.Jenkins@ws.edu

Funding Source

<input type="checkbox"/> Grant:	<input type="checkbox"/> Corporate:		
<input type="checkbox"/> Federal	Company		Title
<input type="checkbox"/> State	Contact Name		Email
<input type="checkbox"/> Intramural	Address		Phone
<input type="checkbox"/> Non-Profit	City		
<input checked="" type="checkbox"/> None	State ZIP		

Project Period

From: (mm/dd/yy) 8/31/09
To: (mm/dd/yy) 5/31/10

Other Participating Institutions/Organizations:

Institution	ETSU
Contact Name	Dr. Terrence Tollefson
Role on Project	Chairman
Email	Tollefson, Terrence A. [TOLLEFST@mail.etsu.edu]
Phone	(423) 439-7617
Institution	
Contact Name	
Role on Project	
Email	
Phone	

Continued on Next Page



Request ID: N/A Approval #:N/A

Signatures:

The principal academic review of the proposal is the responsibility of the office of Academic Affairs. Signatures certify that all information on this form is accurate. No project involving humans may be undertaken until a protocol has been approved by the Institutional Review Board. The office of Planning, Research, and Assessment (OPRA) is authorized to release the protocol and supporting information to cooperating institutions and/or sponsors listed in the application. All work will be performed in accordance with Tennessee Board of Regents and sponsor policies and follow commonly accepted scientific practices in conducting, recording, and interpreting research. Any changes in the status of conflict of interest (financial benefit) during the grant/contract (if applicable) period will be reported to the OIR.

Study Director:

Signature: Cory E. Johnson Date: 9/11/09

Division Dean or Administrative Supervisor (if applicable)

Signature: Marilyn R. Barnes Date: 9/11/09

Vice President for Planning, Research and Assessment: Dr. Debra L. Scott

Signature: Debra L. Scott Date: 9/11/09

Vice President for Academic Affairs: Dr. Lori Campbell

Signature: Lori Campbell Date: 9/11/09

President: Dr. Wade B. McCamey

Signature: Wade B. McCamey Date: 9-15-09

Continued on Next Page

Request ID: N/A Approval #:N/A

Use additional pages as necessary to provide the following information:

Project Summary (one page maximum)

- 1) Briefly describe the nature of the data to be collected.
Survey enrolled students in cluster of WSCC courses
- 2) Describe potential risks to subjects and what measures will be taken to minimize those risks.
Some slight risk of emotional stress due to survey. However, student may feel relieved after having had opportunity to express views.
- 3) How many subjects will be enrolled in this study? Approximately 200-250 How will subjects be recruited? In class administration Include any specific factors that will be used to exclude potential subjects. No student will be excluded
- 4) What measures will be taken to ensure a lack of bias based on age, gender, ethnicity, religion, nation of origin, or disability? No student singled out based on course size
- 5) How will the security of the subject information be maintained? Include the location where the information will be stored, measures that will be used to keep the information safe from unauthorized access, and measures that will be used to protect subject confidentiality.
Normal WSCC security and confidentiality measures
- 6) Include a copy of the Informed Consent form to be used for this study.

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Questions derived from 2 existing surveys (Walters State Student Opinion of Teaching and Course and Handelsman Student Engagement of Course Questionnaire) that have been widely used and validated. Copy of questions attached.

APPENDIX E

Letter of Explanation to Participants

Request ID: N/A Approval #:N/A

Letter of Explanation to Participants

Dear Participants,

My name is Cary E. Jenkins, and I am a graduate student at East Tennessee State University and faculty member at Walters State Community College. I am working on my Doctor of Education in Postsecondary Leadership and Policy Analysis. In order to finish my studies, I need to complete a research project. The name of my research study is "The relationship between Formative Assessment and Student Engagement in the Community College environment."

The purpose of this quantitative study is to determine if there is a significant relationship between formative assessment and student engagement in community college courses. A second purpose of this study is to determine if there are differences in student course engagement dimensions (study skills, emotional engagement, participation/interaction and performance) based on gender, student classification (freshmen versus sophomores) and age.


The survey should take about ten minutes to complete. You will be asked questions about your opinion about the teaching assessments (evaluations) in the course to this date. The questions will also inquire about your opinions about study skills, emotional involvement, participation, and performance in the course. Since the questions are your opinions, they may cause some minor stress. However, you may also feel better that you have had an opportunity to express yourself.

This survey is completely anonymous and confidential. In other words, there will be no way to connect your name with your responses. Although your rights and privacy will be maintained, the ETSU IRB (for non-medical research) and personnel particular to this research with the ELPA department will have access to the study records.

If you do not want to fill out the survey, it will not affect you in any way. There are no alternative procedures except to choose no to participate in the study. Participation in this research experiment is voluntary. You may refuse to participate. You can quit at any time. If you quit or refuse to participate, the benefits or treatment to which you are otherwise entitled will not be affected.

If you have any research-related questions or problems, you may contact me, Cary E. Jenkins, 423-585-6761. I am working on this project under the supervision of Dr. Terry Tollefson. You may reach him at 423-439-7617. Also, the chairperson of the Institutional Review Board at East Tennessee State University is available at 423-439-6055 if you have any questions about your rights as a research project. If you have any questions or concerns about the research and want to talk to someone independent of the research team, you may call an IRB Coordinator at 423-439-6055 or 423-439-6002.

Sincerely


Cary E. Jenkins

8/31/09

