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A COMPARISON OF FINAL GRADE OUTCOMES OF VETERANS ENROLLED IN  
ENGLISH I THROUGH ONLINE AND FACE-TO-FACE INSTRUCTIONAL MODALITIES  
AT A PUBLIC FOUR-YEAR COLLEGE

by

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A dissertation submitted in partial fulfillment of the requirements  
for the degree of Doctor of Education  
in the Department of Child, Family and Community Sciences  
in the College of Education and Human Performance  
at the University of Central Florida  
Orlando, Florida

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Major Professor: Rosemarye Taylor

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## **ABSTRACT**

Since the passing of the first GI Bill in 1945, the community college, now two-and-four-year college, has provided access to veterans in pursuit of postsecondary education. As the college system has grown and expanded during the second half of the 20<sup>th</sup> Century, online learning has become increasingly important to the development of four-year colleges. Research into online learning has yet to reach an agreement on its effectiveness compared to traditional face-to-face instruction. Additionally, little research into the academic outcomes of veterans taking courses through use of the online instructional modality has been conducted.

To address this gap, the current study used the Theory of Student Integration (Tinto, 1975) and three research questions to explore these gaps. A quasi-experimental design was applied to investigate three research questions: (a) how do the academic outcomes of veterans, as measured by final grades, of veterans enrolled in an online version of English I (ENC 1101), compare with veterans enrolled in a face-to-face version of the same course with and without consideration of gender? (b) How do the academic outcomes, as measured by final grades, of veterans compare to nonveterans in both online and face-to-face versions of the course English I (ENC 1101) with and without consideration of gender? (c) What ability, if any, do instructional modality, veteran status, and age have in predicting final grade outcomes in the course English I (ENC 1101)?

Archival data were gathered from a public, four-year state college in Florida of final grade outcomes and student demographics for course ENC 1101 for academic years 2012-2013, 2013-2014, and 2014-2015. Demographic data included: (a) age, (b) veteran status, (c) gender, and (d) instructional modality. Participants examined for this study were veteran and

nonveterans enrolled in the course English I (ENC 1101) in two instructional modalities: online ( $n = 2,080$ ) and face-to-face ( $n = 17,415$ ). Additionally, participants were examined as groups of veterans ( $n = 544$ ) and nonveterans ( $n = 18,951$ ).

Quantitative analysis utilizing independent samples  $t$ -tests of the archival data revealed that veterans earned statistically significant different final grade outcomes between the two instructional modalities  $t(55.65) = 2.18, p = .03$ . Veterans enrolled in the face-to-face version of ENC 1101 performed significantly better ( $M = 2.44, SD = 1.48$ ) compared to veterans in the online version ( $M = 1.90, SD = 1.67$ ). No significant differences were found when comparing final grade outcomes within gender across instructional modalities.

Independent samples  $t$ -tests of the data revealed no statistically significant differences between the final grade outcomes of veterans and nonveterans within the face-to-face,  $t(17,413) = 0.25, p = .80$ , or online instructional modality,  $t(2,078) = 0.94, p = 0.35$ . Statistically significant differences were found between male veterans and nonveterans within the face-to-face modality,  $t(8,086) = -2.56, p = .01$ . Male veterans in the face-to-face instructional modality had statistically significant higher final grade outcomes ( $M = 2.48, SD = 1.47$ ) compared to male nonveterans ( $M = 2.28, SD = 1.48$ ). Additionally, statistically significant differences between female veterans and nonveterans within the face-to-face instructional modality were found,  $t(9,138) = 2.16, p = .03$ . The final grade outcomes of female nonveterans were significantly higher ( $M = 2.60, SD = 1.46$ ) than those of female veterans ( $M = 2.30, SD = 1.50$ ) in the face-to-face modality. No statistically significant differences were comparing the final grade outcomes from the online modality of veterans and nonveterans by gender.

Multiple linear regressions were used to determine what relationship age, veteran status, and instructional modality had on final grade outcome. Analysis revealed that age and

instructional modality were statistically significant in predicting final grade outcome, while veteran status was not,  $F(3, 19,491) = 85.07, p < .001$ . The model predicts that older students will earn higher final grade outcomes than younger student in the face-to-face instructional modality regardless of veteran status.

Throughout the 20<sup>th</sup> and 21<sup>st</sup> Centuries, the four-year college has continued to grow in both number and program offerings. This growth has helped the four-year college to remain a leading source of postsecondary educational opportunities for veterans. With the development of online learning technology in the late 20<sup>th</sup> Century, four-year colleges have utilized this new technology to provide opportunities to larger groups of students than they had previously been able to reach. However, the effectiveness of this instructional modality has yet to be fully ascertained when compared to face-to-face instruction, especially for veterans, a population that has demonstrated at-risk characteristics (Kasworm, 2005). The findings of this study provide implications for four-year college administrators, instructors, and educational researchers to continue working to support veterans as they enter higher education.

For my family.

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To my parents Don and Karol Hoke, who have always encouraged their three sons to live up to their potential in whatever endeavors they pursue. You both never doubted I would reach this point, even when I was young. Now I stand proud, ready to uphold the title of 'difficult'. To my brothers Matthew and Carson, you both set high bars when it came to accomplishments. Thank you both for being involved and asking me questions to help keep me motivated to finish.



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# **CHAPTER ONE: INTRODUCTION**

## General Background

As America continued to grow and develop during the 19<sup>th</sup> Century, a new concern began to arise due to the burgeoning economic opportunities of the age. With the rise of new jobs in the developing industrial economy, American workers needed training to fill these new roles, as well as the drive to increase social equality through increased education of the populace (Brubacher & Rudy, 2008). Due to this concern, the public two-year state college system was established to better prepare citizens to realize these ambitions (Cohen & Brawer, 2008). And since its beginnings in the late 19th Century, the public two-year state college system has continued to develop to meet the needs of the communities they serve.

Throughout the 20<sup>th</sup> Century, public two-year colleges developed numerous programs to address the changing landscape of the nation, including adult education, career and technical, as well as serving as a means of articulation to four-year universities. Additionally, the public two-year state college offered a more affordable method for students intending to continue their education in a baccalaureate program, as well as those utilizing education to attain vertical mobility in the job market through career and technical training, allowing students to enter into the workforce with more marketable skills (Brubacher & Rudy, 2008).

With the closing of World War II, the United States public two-year state college system entered into a period of rapid expansion and became a primary center of learning for a previously underserved population of citizens (Brubacher & Rudy, 2008). Following the passing of the Servicemen's Readjustment Act of 1944 (GI Bill), millions of men and women who had served in the armed forces were provided financial means to obtain a postsecondary education. The GI

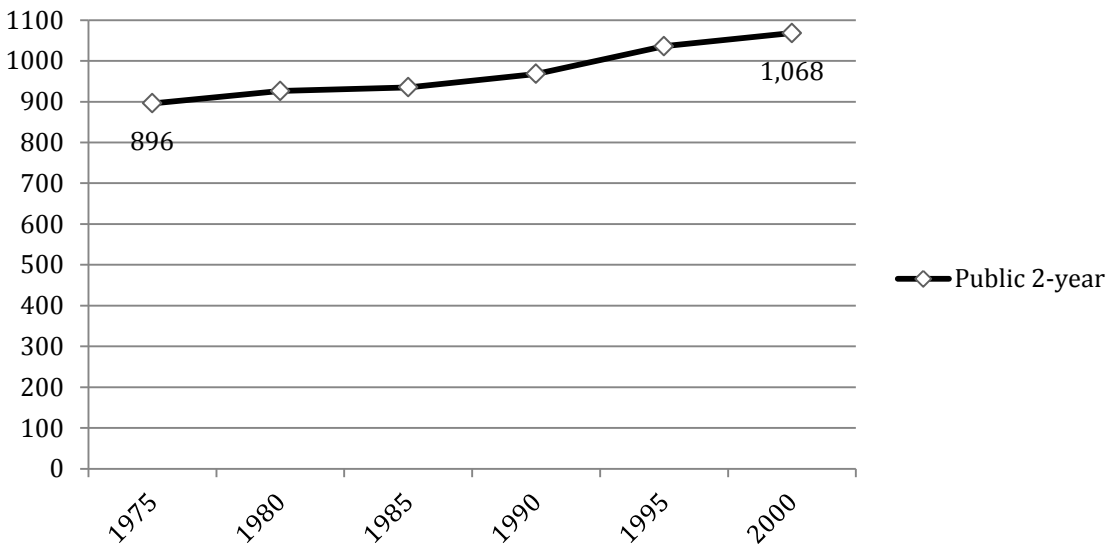


Bill was seen by the national leaders of the time as something to which the nation was “morally obliged” (Serow, 2004, p. 483) and necessary to assist those who had served in the military with catching up with their peers who had not had their lives interrupted by wartime service (Altbach, Berdahl, & Gumport, 2005). Through the GI Bill, veterans were able to receive financial assistance which aided many in being able to pursue postsecondary education. However, the Truman Commission Report of 1946 detailed that nearly 25% of returning veterans did not have sufficient academic skills to pursue baccalaureate degrees. Additionally, many veterans were unable to travel the distances to attend four-year public colleges and universities, given family economic limitations. As a result a large percentage of veterans utilized their 48 months of GI Bill benefits for educational pursuits other than a college degree that would prove of value.

Of the original 7.8 million veterans who made use of GI Bill benefits to pursue a postsecondary education, approximately five million engaged in career and technical education and training programs (Serow, 2004). To accommodate the number of veterans across the country, the Truman Commission recommended that the public two-year state college system expand to better serve and reach not only veterans, but also other Americans who were limited by their means of travel to obtain career and technical training and postsecondary education (Serow, 2004). This movement worked in conjunction with the prevailing notion of the public two-year state college being a place meant to aid students in completing general education and professional or pre-professional coursework intended to promote the chances of joining the workforce (Eells, 1939). This training and instruction would eventually prepare veterans for the post-war job boom of the 1950s and 1960s (Serow, 2004).

As a result of this developing need, the number of public two-year state colleges dramatically increased throughout the second half of the 20<sup>th</sup> Century. From 1965-1972, public

two-year colleges were opening in America at a rate of nearly one per week (Brubacher & Rudy, 2008) and growth has continued into the 21<sup>st</sup> Century. To illustrate this growth, figure 1 shows the continued expansion of public two-year state colleges from 1975 through 2000.



Data compiled from the 2011 Digest of Educational Statistics Table 279 (Snyder, Dillow, & National Center for Education Statistics, 2012). Retrieved from [https://nces.ed.gov/programs/digest/2011menu\\_tables.asp](https://nces.ed.gov/programs/digest/2011menu_tables.asp)

*Figure 1. Number of Public Two-Year Colleges: 1975-2000*

As the public two-year state college system continued to evolve, veterans were able to apply their GI Bill benefits toward matriculation into postsecondary institutions. The lower tuition rates of public two-year state colleges, in comparison to those of four-year colleges and universities, have helped veterans maximize the financial remunerations provided by the government for their education. Finally, public two-year state colleges have been noted for providing a more supportive environment, resulting in higher retention rates among students, including veterans and students of nontraditional age (Cohen & Brawer, 2008). Such supportive environments are especially important to veterans returning to civilian life from service as they adapt to their new environment (Evans, Pellegrino, & Hoggan, 2015; Zinger & Cohen, 2010).

At the end of the first decade of the 21<sup>st</sup> Century, with the decrease in military campaigns in the Middle East, the relationship between public two-year state colleges and veterans has become an increasingly important as many have returned to the United States intending to pursue an education. As of Fall 2013, 48 percent of military veterans in the United States were enrolled at a public two-year state college (American Association of Community Colleges, 2015). With the number of military personnel transitioning out of service and back to civilian life, many may pursue higher education just as veterans returning from past wars have done (Serow, 2004).

To help meet the needs of students, public two-year state colleges made use of not only their physical campuses but also distance learning to reach additional students who may not be able to attend classes in person due to familial obligations, medical limitations, or economic restrictions. Though distance learning originated through mail-delivered courses in the mid-19<sup>th</sup> Century (Verduin & Clark, 1991), the continued development of technology and communications have allowed the practice to spread to reach students who had been unable to attend classes on campus.

Since the late 1990s, online distance learning has expanded and drawn greater attention from veterans (Bothel, 1999). This has been demonstrated through the increased enrollment of veterans in institutions that focus primarily on online instruction. Most notably this has been illustrated by the University of Phoenix, a private institution emphasizing online instruction. In 2007, the school became the largest recipient of GI Bill aid, demonstrating the interest of veterans in online education (Field, 2008). As the number of military personnel exiting active service and reentering into civilian life has been expected to increase due to reduction of operations in the Middle East, the number of veterans utilizing GI Bill aid to attend a higher educational institution will increase (Field, 2008). As the two-and-four-year college system

maintains lower tuition and greater geographic availability compared to traditional universities, instructors and administrators of these institutions must be aware of the needs of this population and how best to support and ensure the success of veterans.

The advancement of online instruction has received increasing support from veterans interested in pursuing a higher education. In addition to the array of programs offered through online, the ability to set one's schedule and make use of the home environment rather than travel to a campus are often cited as reasons veterans make use of this instructional modality (Field, 2008). In addition to the costs associated with higher education, convenience and support have aided in the selection of two-and-four-year colleges historically for veterans. This is demonstrated through the tendency of veterans to attend colleges near to military bases, as historically these institutions have greater experience in addressing the needs of veterans (Field, 2008).

However, in a review of the GI Bill and online learning, McMurray (2007) noted areas of concern for veterans pursuing their education through online instruction, specifically those attending private and for-profit institutions. With the increased availability to develop online courses, private, for-profit postsecondary institutions have experienced dramatic expansion (McMurray, 2007). However, the for-profit, private institutions have come under criticism for what has been viewed as aggressive marketing to military veterans and in certain cases misrepresenting the accreditation status of their institution (Blumenstyk, 2006). This increased presence of private, for-profit colleges and universities created a more competitive market for public, two-year state colleges to operate within when it came to recruiting military veterans. Sullivan (2001) noted that this increase in the private sector of higher education was creating

increased competition for public, non-profit state colleges, resulting in a need to increase their offerings of online courses to compete.

As public two-year state colleges continue to expand their program offerings to include baccalaureate degrees (Cohen & Brawer, 2008; Gonzalez, 2011), online distance learning has also continued to grow. As baccalaureate programs increased at public two-and-four-year colleges during the first decade of the 2000s, institutions have utilized online learning to provide services and attract larger numbers of students while lowering the costs to the college (Austin, 2010).

With the combined increase in the number of veterans enrolling in the public two-year state colleges and the movement toward Internet-based access to coursework there is a need to evaluate related outcomes for this student population. This study will contribute to filling in the gap in the literature related to veterans in public state colleges who take online courses.

### Statement of the Problem

As public two-year state colleges continue to increase both in number and in the size of their student population, the use of online distance learning will increase to meet the demand. With the addition of baccalaureate degree programs being offered at public two-year state colleges (Gonzalez, 2011), the added incentive of lower tuition than four-year public colleges and universities, many students will elect to make use of these offerings. However, when acclimating to civilian life, the transition from military service to the public two-year state college setting can be challenging for veterans (Evans, Pellegrino, & Hogan, 2015). Additionally, with the increased emphasis on utilizing online modes of learning, the discussion

on the effectiveness of this new medium in comparison to traditional content delivery methods has not included the impact on veterans.

Therefore, the problem to be studied is how the move to online delivery of instruction impacts veterans' success in a public four-year state college. As formal military campaigns continue to conclude and soldiers return home to civilian life and enroll in public two-year state colleges, administrators will have a greater need to ensure that these students are successful. Additionally, increasing the availability of online education has become a larger priority for public two-year state colleges. However, few studies have been conducted to determine whether or not veterans are proving more successful in online courses. Having characteristics which could classify them as an at-risk population (Kasworm, 2005), veterans are at an increased risk of not completing their programs compared to their traditional-aged colleagues.

### Purpose of the Study

The purpose of this research is to explore the educational outcomes of veterans enrolled in online distance learning at one public four-year state college in Florida. As these institutions continue to increase the amount of offerings provided through digital, rather than solely in-person methods, the performance of veterans enrolled in both face-to-face and online delivery of course content will be explored. Additionally, as public two-year institutes compete with an increasingly popular private sector (Field, 2008), online learning is able to offer an increased presence for public educational institutions in the marketplace. In addition to investigating the overall performance of veterans as a group, the statistical model was created to explore variables that predict academic performance of veterans enrolled in an online course. This quantitative

study was designed to determine the success of veterans in an online academic environment and how their demographic variables contribute to the earned grade outcomes.

### Significance of the Study

There is a large amount of literature on the outcomes associated with distance learning in postsecondary educational settings, including public two-year state colleges. Though this research explored different facets of the public four-year state college student population, veterans have remained a largely unexplored area of study within this medium of coursework delivery. With the continued expansion of both the student veteran population and the availability of online delivery of courses, this research is intended to address this gap in the literature. The findings of this study will assist public four-year state college administrators in providing support services for veterans electing to engage in online delivery of course material. If the study demonstrates a higher propensity for veterans to be less successful in an online course environment, then academic plans minimizing this curriculum delivery may be important in the long term success of these students. Finally, as veterans are predominantly students of non-traditional age (Zinger & Cohen, 2010), this study will help expand the field of research on how this population responds to online course content delivery.

### Conceptual Framework

The study utilized Student Integration Model (Tinto, 1975) as a guide for the research. The conceptual framework also included military veterans in higher education and online learning in public two-year state colleges.

## Tinto's Theory of Student Integration

Tinto (1975) explored the area of student retention, the determination of underlying factors contributing to the persistence or withdrawal of students, in higher education. The Student Integration Model was developed by Tinto as a means of exploring and explaining the factors associated with student attrition and how these factors interact with the higher educational instructional and social environments. These interactions were viewed as reciprocal in nature, as the academic and social environments are intertwined in colleges and universities, with each impacting the interaction of the student (Tinto, 1975). Finally, these connections the student makes between both the academic and social environments are critical in how the student grows and matures while attending a higher educational institution.

Student integration refers “to the extent to which an individual shares normative values and beliefs with peers and faculty and adheres to the formal and informal structural requirements for membership in the community or its subgroup” (Pascarella & Terenzini, 2005, p. 54). When a student attends a college or university, his or her integration into the social and academic systems was reciprocal; suggesting that over emphasis in one of the two areas would cause a detriment to the other, which could result in a student deciding to withdraw from an institution (Pascarella & Terenzini, 2005). This can be illustrated by a student focusing primarily on academic achievement and neglecting to establish a peer support network, becoming socially disconnected, and ultimately resulting in withdrawal from the institution. Alternatively, a student who establishes these social supports while neglecting academic responsibilities may be withdrawn from the college or university as a result as well. Through successful integration into both the academic and social areas, student commitments to the institution are enhanced, and student persistence increases as a result (Tinto, 1975).



In the development of his theory, Tinto made use of the work derived in other areas of the social sciences, including anthropology and ethnography (Pascarella & Terenzini, 2005). Of interest to Tinto's study of higher education was the work of Durkheim (1951), who examined reasons behind the decisions of people to remove themselves from society. This work emphasized how the decision of a person to remove him or herself from society stems from the development of a disconnection from the society. Tinto (1975) viewed the university as analogous to a society, in this case a microsystem, with established practices and norms. When a student becomes disconnected, the student may ultimately remove him or herself from the microsystem much in the same as an individual experiencing disconnection in a larger society (Tinto, 1975).

Additionally, Tinto's Theory of Student Integration incorporated previous work by Van Gennep (1960) and Spady (1970) in the creation of the Student Integration Theory. Van Gennep (1960) researched the importance of established rituals and rites used to denote transitions of individuals in societies and cultures into new stages of life. Tinto (1975) viewed the attendance of college as a similar ritual, marking the passage from adolescence into adulthood for American students. Spady (1970) also studied student attrition in higher education and theorized that attrition could be best predicted through the interaction between both the social and academic environments. Drawing upon the works of both Van Gennep (1960) and Spady (1970), Tinto (1975) explored the reciprocal nature of these interactions and how they contributed to attrition and persistence.

These studies aided Tinto in creating his Student Integration Model, incorporating the role of background demographics and the interactions of the academic and social aspects of college in the ultimate decision of a student to persist or dropout. Since the inception of his

theory of student departure in 1975, Tinto has continued to refine his work to expand upon factors contributing to student persistence in universities and two-year colleges (Tinto, 1993; Tinto, 2005). Among the additions to his work, Tinto (2005) suggested that demographic variables such as age and race impact student performance.

Building off of these additions, a study of the effects of gender and age in a college-level algebra course presented both online and in a traditional method, the use of background demographics and the academic environment from Tinto were utilized as the theoretical framework (Amro, Mundy, & Kupczynski, 2015). This contributed to the selection of this aspect of Tinto to be used as the theoretical framework for the current study.

The background characteristics facilitate the interaction of a student with the academic and social environments of a higher educational institution and play an important role for military veterans, as many are of non-traditional age (Zinger & Cohen, 2010). Further, they may not come from families with a history of higher educational participation (Wurster, Rinaldi, Woods, & Ming Lui, 2013).

### Military Veterans as Students

To investigate the interactions veterans have with nonveteran peers in the college environment, Wheeler (2012) conducted qualitative interviews veterans enrolled in a two-year college in New York. Upon conducting the interviews, the veterans indicated that while they were overall pleased with the public two-year state college experience. However, respondents also included criticisms regarding the commitment to education demonstrated by nonveteran peers of traditional college age (Wheeler, 2012). Additionally, respondents reported difficulties in forming social support networks among their nonveteran peers and challenges in forming

friendships through attending classes. The veterans interviewed indicated that having more direct control over the progress of their education was a goal in selecting their institution and course schedules (Wheeler, 2012).

Similar findings were made by Persky and Oliver (2011) through a mixed method study involving 1,300 participants including students, faculty, and staff of a college. Among the themes reported in the findings was the perception of veterans relating to the need for college faculty and staff require additional training to better address their needs. Additionally, much like in the results seen by Wheeler (2012), veterans in this study reported difficulties in adjusting to and working alongside younger nonveteran peers (Persky & Oliver, 2011). Both studies further reported the overall satisfaction by veterans for the college system and the opportunities it provides, while simultaneously attempting to minimize the interactions with younger nonveteran peers due to difficulties in establishing social relationships.

These feelings of isolation are also seen in a review of public two-year state colleges and their services to veterans according to Rumann, Rivera, and Hernandez (2011). In this study, Rumann et al. (2011) noted the difficulties experienced by student veterans attempting to acclimatize and relate to their younger peers. However, respondents did indicate that use of the veterans affairs office services offered through the campus did help to decrease levels of stress, most notably caused by navigating the financial aid systems (Rumann, et al., 2011).

To combat these feelings of isolation and offer support to student veterans, many public two-year state colleges are instituting programs specifically geared toward their needs (Persky & Oliver, 2011; Wheeler, 2012). These programs include helping veterans learn how to adjust to campus life and expectations, such as utilizing new educational technology, how to make use of campus-offered workshops, as well as developing interpersonal skills to help interact with their

younger peers (Chappell, 2010; Community College Times, 2009). However, despite the increase in the availability of support services, obstacles still remain for veterans such as isolation from their fellow students and inexperience in navigating the bureaucratic paperwork involved in accessing services (Zinger & Cohen, 2010).

### Online Learning

Distance learning in American higher education can be traced back to the use of correspondence education delivered via mail carriers in the 19<sup>th</sup> Century. This allowed for students in various locations, including place-bound students unable to travel, to pursue postsecondary education (Moore & Anderson, 2003; Verduin & Clark, 1991). Instruction would consist of correspondence between student and instructor on a regular basis, with an exchange of curricular material and assessments (Aggasiz, 1991). This method remained the most widely utilized form of distance education in the United States until the 1970s (Garrison & Shale, 1987).

The evolution of communications technology impacted the direction and development of distance learning in higher education. Utilizing developing recording technologies, the University of Iowa produced educational programs in 1932 (Koenig & Hill, 1967) and Western Reserve University introduced the first college-credit granting educational television programs in 1952 (Tracey & Richey, 2005). As televised instruction began to combine with audio interaction between the distance learner and instructor, distance learning began to develop interactivity (Simonson, Smaldino, Albright, & Zvacek, 2000). With the furthering of computer and networking technologies, online distance learning opportunities have become increasingly available since the 1980s (Aclermann, 1995; Tracey & Richey, 2005). As these technologies

have further developed since the 1980s, higher educational institutions have explored ways instruction can be presented to a wider audience of learners (Teo & Gay, 2006).

As distance education has developed and spread, from its beginnings in correspondence education, to modern online-based delivery methods, there have been contrasting findings related to the effectiveness of online distance learning in comparison to traditional, face-to-face instruction. In an exploration of outcomes in nursing programs, Kummerow, Miller, and Reed (2012) reported a lack of significant differences between students in the online and face-to-face instructional modalities. A similar lack of significant differences was reported in a comparison of online and face-to-face modalities for students in a pathophysiology program (Marin, Costello, & Plack, 2008).

Finally, further exploration of the outcomes earned in online instruction has suggested that this modality may prove beneficial for student outcomes. Through a review of online instructional practices, the U.S. Department of Education reported that the use of hybrid instruction, combining both online and face-to-face interactions, may be most effective for ensuring success in students (Means, Toyama, Murphy, Bakia, & Jones, 2010). These studies suggest that though differences may exist between the outcomes of both instructional modalities, they may not be statistically significant.

With a myriad of contrary studies investigating the effectiveness of distance education, several meta-analytical studies have attempted to ascertain a more definitive understanding. Among meta-analyses of distance education, Russell (1999) conducted one of the most thorough to date. Through a review of 355 studies performed between 1928 and 1998 investigating distance education utilizing a variety of media (e.g., radio and television), as well as online offerings, Russell determined that no significant difference could be found in 90 percent of

studies comparing outcomes of face-to-face and distance education. Student outcomes from these studies were determined to not have been significantly impacted by the use of distance education media.

Since Russell's analysis was published, recent studies have continued to disagree on the overall effectiveness of online education. Dutton, Dutton and Perry (2002) found that students taking an online version of a computer programming course earned higher final grades than those taking the same course through face-to-face means. However, in an examination of public, state college students taking algebra through face-to-face and online, Amro, Mundy, and Kupczynski (2015) found the face-to-face students earned a higher grade than their online colleagues. As more studies continue to be conducted, the results of online education compared to face-to-face continue to contrast.

However, two meta-analyses published in the 2000s introduced a new lens through which to view the historical analysis of distance learning effectiveness. In a review of 19 comparative studies conducted between 1943 and 1997, Machtmes and Asher (2000) determined that, while the learning outcome differences between face-to-face and distance education were not significant, the effect sizes related to those differences was increasing throughout the decades. As technology continued to advance, allowing for new methods of delivering distance education, the authors noted that "The effect sizes increased and moved toward positive values as the decades progressed: 1960s = -0.09; 1970s = -0.20; 1980s = +0.04; and 1990s = +0.23" (Machtmes & Asher, 2000, p. 40). As the effect size moved into positive values, the test group of distance learners was beginning to move toward a significant difference between their face-to-face peers. Developments in technology were attributed with the increase in effect sizes, most notably the dramatic growth seen in the 1980s and 1990s.

However, the findings of Machtmes and Asher (2000) brought another topic to light, a large amount of variation in the populations examined existed across the studies examined. This is seen in examining the overall effect size of all studies involved in the meta-analysis,  $-0.0093$  having a range of  $-0.005$  to  $+1.50$ . The researchers added that “considerable heterogeneity was indicated” (Machtmes & Asher, 2000, p. 36), suggesting that there was a significant difference between the two groups when examined as a whole rather than individual studies. These varying findings suggest that the effectiveness of online learning compared to face-to-face has yet to be fully determined.

Through a study of both two-year college and high school students employing both online and face-to-face instructional modalities for the same course, Roblyer (1999) studied how individual choice impacts educational decision-making. A quantitative study focusing on the attitudes and attributions was administered to the participants. Findings indicated that participants who placed greater importance on maintaining logistical control and determining the pace of their education were more likely to make use of the online instructional modality (Roblyer, 1999). These findings are consistent with those reported by previous studies that suggested veterans place value on determining the pace of their education while maintaining a degree of logistical control (Wheeler, 2012; Zinger & Cohen, 2010).

However, in addition to the advantages presented by online instruction, there are potential concerns as well. In a follow-up to a 2004 study, Jaggars and Xu (2010) examined the online distance learning system used by the two-year college system in Virginia. Upon examination of final course outcomes, the data indicated a greater likelihood of failure or withdrawal from online courses compared to face-to-face. Additionally, these negative outcomes were not impacted by previous academic preparedness. Finally, students pursuing online education were

also more likely not to return to in ensuing semesters and less likely to transition to a four-year university than those who employed face-to-face instruction (Jaggars & Xu, 2010).

Similar findings were made in a study of writing courses offered through online instruction (Sapp & Simon, 2005). Respondents reported a negative perception of both the effectiveness of instruction as well as the establishment of a sense of community, contributing to unsatisfactory completion for many students. A study of students employing online learning at Italian institutions also reported similar deficits in establishing a sense of community, through fewer interactions with peers (Pigliapoco & Bogliolo, 2008).

Finally, a study of students at a public, state college with at-risk grades (Goomas & Clayton, 2013) found that on-campus success scores of A, B, and C grades were significantly higher than those participating in distance learning, online courses. This is concerning as veterans demonstrate variables most commonly associated with at-risk students, such as being of nontraditional age (Kasworm, 2005). These findings suggest that the successful completion of programs and retention of online learners must be examined by public two-year state college leaders.

Ultimately, distance learning has become more widespread over the last decade and research suggests a 33% annual growth rate of postsecondary courses being offered in an online environment (Tallent-Runnels, Lan, Thomas, Cooper, Ahern, Shaw, & Liu, 2006). This growth and development suggests that veterans will continue to find online courses when they enroll in public two-year state colleges. With over one million veterans having returned home from service (Randall, 2012) with more to follow throughout the remainder of the decade, it is important for public two-year state colleges to be aware of how veterans perform when placed in



a physically isolated, online learning environment and indeed if they can prove to be as successful if not more successful than in a traditional classroom.

### Research Questions

As veterans continue to enroll in large numbers in public, two-and-four-year public state colleges with courses being offered through traditional, face-to-face as well as online methods of delivery, one aspect of this research will be to determine the outcomes of veterans in both methods of content delivery. For the purposes of this study, grade outcomes for students in sections of English I (ENC 1101) administered entirely online and entirely face-to-face will be examined for the academic years 2012-2013, 2013-2014, and 2014-2015. An academic year will be defined as fall, spring, and summer semesters (e.g., Fall 2012, Spring 2013, and Summer 2013). Through this exploration of the grade outcomes of veterans, a second aspect of this research will be to investigate the demographic characteristics associated with veterans and their academic outcomes from ENC 1101. The research questions that will guide the study are as follows:

1. How do the academic outcomes of veterans, as measured by final grades, of veterans enrolled in an online version of English I (ENC 1101), compare with veterans enrolled in a face-to-face version of the same course with and without consideration of gender?
2. How do the academic outcomes, as measured by final grades, of veterans compare to nonveterans in both online and face-to-face versions of the course English I (ENC 1101) with and without consideration of gender?

3. What ability, if any, do instructional modality, veteran status, and age have in predicting final grade outcomes in the course English I (ENC 1101)?

### Definition of Terms

For the purposes of this study, definitions of the following terms are listed to provide an understanding of their use throughout the research.

Asynchronous Learning. Any course in which the material is delivered through electronic means by an instructor for a student to engage in at a time and place of the student's choosing (Wu, Bieber, & Hiltz, 2008).

Distance Learning. Any course in which material is broadcast or delivered electronically in part or in whole through the Internet, allowing students to complete the work without mandating face-to-face interaction (Rovai, Ponton, & Baker, 2008).

Nontraditional Student. Students who are above the traditional age range of 18-24 years and live off of the campus grounds. These students may be employed in either part or full time jobs and have additional obligations such as a spouse and/or dependents (Bean & Metzner, 1985). Additionally, a nontraditional student may also be defined as meeting one or more of the following requirements: (a) delayed enrollment into postsecondary education, (b) attends college part-time, (c) works full time, (d) is financially independent for financial aid purposes, (e) has dependents other than a spouse, (f) is a single parent, (g) or does not have a high school diploma (Horn & MPR Associates, 1996).

Persistence. Movement of a student toward an educational goal, which may include the completion of a course, a program, or a degree (Tinto, 1993).

Traditional Student. Any student who begins his or her first year of college between ages 18-24 or immediately after completing high school, without an interruption in their academic experience (Stewart & Rue, 1983).

Veteran. Anyone who has previously served in active duty in the U.S. military and has since been discharged.

### Methods

This section will discuss the methods that will be employed in the investigation. For the purpose of this study, the population is all students taking English I (ENC 1101) during the spring, summer, and fall terms of the academic years 2012-2013, 2013-2014 and 2014-2015 in a public Florida four-year state college. Data related to all students who have taken ENC 1101 are archived, allowing the entire population to be included in this study.

For the purposes of this study, the performance of students was measured through an analysis of grades earned by students enrolled in a designated course. Grades earned in English I (ENC 1101), were examined for both students taking the online and face-to-face versions. This course is designed for both first-time students and those returning to education after a number of years, such as veterans. ENC 1101 provides instruction on skills and practices needed to demonstrate college-level research and writing skills (Seminole State College, 2016). As ENC 1101 is intended to be taken by newly entering students and is designed to provide students with skills to help them reach program completion, the grades earned could be representative of future performance and be useful in providing support services to aid in retention and completion.

## Population

The public four-year state college examined in this study serves approximately 30,000 students through both on-campus programs and online distance learning service. This college population is made up of approximately 56% females and 44% males. As of Fall 2015, the four-year college serves approximately 400 veterans across its six campuses and online services. This group of veterans is made up of approximately 75% males and 25% females (M. Morgan, personal communication, October 31, 2016).

## Context

The public four-year state college in Florida offers a variety of online distance learning options for students. First beginning to investigate and develop online learning resources in the 1990s, the college now offers approximately 300 courses through its online learning program. Students enrolled in distance learning courses through the public four-year state college make use of students and faculty chat, e-mail, discussion forums, and digital resources to interact with the instructor and fellow students and online quizzes and assignments to complete coursework (Seminole State College, 2016a).

## Design

This research utilized a quasi-experimental design, as the participants were assigned to groups by the researcher, rather than allowing for random assignment. The groups were students, both veterans and nonveterans, taking English I (ENC 1101) via online and face-to-face instructional modalities during academic years 2012-2013, 2013-2014, and 2014-2015.

Analyses were made between groups based on instructional modalities, online and face-to-face, as well as across veteran status.

Data for this study were collected through the Department of Institutional Research of the public two-year state college. Following receipt of approval from the university Institutional Review Board on November 21, 2016 (see Appendix A), the state college's Institutional Research department was contacted by the researcher to make a formal data request for data for academic years 2012-2013, 2013-2014, and 2014-2015 for students enrolled in the online and face-to-face version of ENC 1101 on November 14, 2016. After receiving approval from the college's IRB on November 22, 2016 (see Appendix B), archival data were provided by the college to the researcher with all identifiable information removed from individual student records and an identification variable will be generated to separate records to ensure compliance with privacy requirements.

Requested data included the following demographic data: course method of online or in-person, age, gender, final grade, year and term of course, and veteran status. For this study, the dependent variable was the final letter grade outcome earned for the examined course. The state college provided data to the researcher by secure e-mail on November 28, 2016. Files obtained from the public two-year state college were maintained on a secure, password-protected computer accessible only by the researcher, with deletion of the data occurring as per UCF IRB guidelines.

## Analysis

Upon receipt of the data, the investigator utilized Statistical Package for the Social Sciences (SPSS) for analysis. To answer the research questions of the current study, participants

were examined both as whole groups such as veterans and nonveterans, as well as a more granular analysis conducted based on the individual demographics of the participants, such as age for academic years 2012-2013, 2013-2014, and 2014-2015.

To investigate research question one, independent samples *t*-tests were performed to compare the final grade outcomes of veterans enrolled in the online version of English I (ENC 1101) with veterans enrolled in the face-to-face version. The participants were evaluated on their final grade outcomes, the dependent variable, based on their grouping in online or face-to-face instructional modalities, the independent variable.

To address research question two, independent samples *t*-tests were performed to examine the differences between veterans and nonveterans in both online and face-to-face instructional modalities. The independent variable for these analyses was veteran status in each of the instructional modalities, online and face-to-face. This analysis explored differences among the samples of participants in both instructional delivery methods.

Finally, for research question three, a linear regression analysis was performed to determine the effect of age, veteran status, and instructional modality on final grade outcomes in ENC 1101. The analyses selected for each research question are outlined in Table 1.

Table 1

*Analyses*

Research Question	Data Source	Analysis
1. How do the academic outcomes of veterans, as measured by final grades, of veterans enrolled in an online version of English I (ENC 1101), compare with veterans enrolled in a face-to-face version of the same course with and without consideration of gender?	Public four-year state college provided data file including final grade data, demographic data, and veteran status	Independent samples <i>t</i> -test
2. How do the academic outcomes, as measured by final grades, of veterans compare to nonveterans in both online and face-to-face versions of the course English I (ENC 1101) with and without consideration of gender?	Public four-year state college provided data file including final grade data, demographic data, and veteran status	Independent samples <i>t</i> -test
3. What ability, if any, do instructional modality, veteran status, and age have in predicting final grade outcomes in the course English I (ENC 1101)?	Public four-year state college provided data file including final grade data, demographic data, and veteran status	Linear regression

Limitations

The results of this research contain some limitations in its practical application. Two notable limitations include (a) the ability to generalize results to the overall population of

veterans enrolled in public four-year state colleges throughout the country, and (b) the lack of longitudinal data to follow up on the examined sample to determine any possible long term trends. The scope employed by this study was limited to one public two-year state college in Florida and will have limited generalizability as a result. However, the findings of this study provide insight into the impact of online course delivery on veterans' learning outcomes. Finally, though the absence of longitudinal data on individuals is a concern, the current study employed three years of data to provide a large sample of data points to review.

### Delimitations

The delimitations utilized by the researcher in this study serve the purpose of focusing the scope of this study on military veterans and their final grade outcomes in online coursework at one public, four-year state college. Specifically, the researcher sought to analyze the final grade outcomes of veterans enrolled in the same course provided through online and face-to-face means. The researcher did not include data from private colleges and universities. The inclusion of data from private colleges and universities would introduce the possibility that the same material would be presented to all students across the examined institutions. Private colleges and universities were excluded from the analyses to control for variables that may or may not be present in public, two-year state colleges.

### Assumptions

The study functions under the following assumptions: (a) the design and implementation of curriculum in ENC 1101 are the same in both the online and face-to-face modes of the course and (b) those students identified as military veterans have supplied the public two-year state college with documentation supporting their membership in this student population.



### Summary

In summation, the programs and offerings of public two-year state colleges have grown over the last half-Century. Additionally, these institutions have helped to provide education, training, and opportunities for veterans. With the increase in distance learning, public two-year state college leaders have an interest in the characteristics involved with successful completion for veterans. This study will examine the factors underlying successful completion for these students and examine implications for practitioners and support services. As the public two-year state college has continued to evolve to serve the needs of the nation, veterans have aided and benefited from its growth and development. With more and more veterans returning home from service and utilizing their benefits to pursue an education, it is critical that public two-year state college professionals and educational practitioners understand how new technology will impact this population.

## **CHAPTER TWO: REVIEW OF LITERATURE**

### Introduction

Chapter two provides a review of research literature related to veterans as students in higher education and their interactions with public state colleges. The review is introduced with a brief history of the development and growth of state colleges in the 20<sup>th</sup> Century. Following this overview is a synthesis of the literature examining veterans as students and the challenges this population faces in the pursuit of postsecondary education.

The development and spread of distance learning will be explored as it relates to state colleges and adult learners. The evolution of this medium of instruction will be explored to highlight its growing importance in modern higher education. Factors related to successful outcomes of distance learning education will be reviewed. Specifically, the outcomes of nontraditional age students will be outlined. This exploration will contribute to a discussion of the gaps in modern literature as it relates to the effectiveness of distance learning as a tool for veterans pursuing a two-or-four-year college education.

The conceptual framework utilized for this research indicated how the background demographic characteristics of the student veteran impact his or her means of successfully completing a postsecondary program. For this study, the characteristics of a military service background and a nontraditional age of entry into college will be explored. Additionally, a review of the research on the developing distance learning field was conducted to evaluate its effectiveness in providing an educational experience equivalent to face-to-face instruction. A comprehensive review of the literature related to these subjects is presented to illustrate the

importance of determining how this growing field of postsecondary education impacts a sensitive population such as veterans.

To conduct this review of available research, a search of various databases was conducted through use of the resources provided by the University of Central Florida. These databases included: Education Resources Information Center (ERIC), National Center for Education Statistics (NCES), Dissertations & Theses Full Text, SAGE Journals, and PsycInfo. The keywords employed in the search of these databases were state college, veteran, distance learning, online learning, community college, higher education, postsecondary education, state college AND veteran, veteran AND student, community college AND online learning, online learning AND outcome, community college AND veteran, online learning AND evaluation, nontraditional student, veteran AND completion, and military education AND online learning. Research provided through a selection of texts is also referenced throughout this chapter. The review of literature is arranged into three sections, each containing a synthesis of literature pertinent to the study: (a) American public two-year colleges, (b) veterans as students, and (c) online distance learning.

### American Public Two-Year Colleges

To better understand the transformational role that state colleges have played in the lives of veterans, the public, two-year college must be explored as an institution. Though the offerings and opportunities offered through public, two-year colleges have changed since their inception, core to the mission remains the belief that the institution “be a community college meeting community needs” (Hollinshead, 1936, p. 111). This statement has manifested in various ways, such as offering career and technical training, adult learning opportunities, and more recently

baccalaureate programs of study. This section will provide a brief history of the American, public two-year college as well as how it evolved through the course of the 20<sup>th</sup> Century to meet the needs of a changing population. Finally, an exploration of the student population of two-year colleges will be reviewed.

### Brief History of the Development of American Two-Year Colleges

With the rapid growth of industrialization in America throughout the course of the 19<sup>th</sup> Century, greater opportunities for pursuing education arose simultaneously. Elementary education experienced great growth as state and local governments transitioned from the encouragement of children attending schools to the creation of legislation compelling the establishment of formalized school districts, the taxation required to fund such ventures, and the compulsory attendance of children (Hutt, 2012). This resulted in a larger number of American children receiving formal education than had previously.

As a result of this increase in the number of students receiving formal elementary and secondary education, there was an increased demand for access to higher education. This is seen in the enrollment in American higher education growing from approximately 52,000 students in 1855 to a total of 238,000 by the end of the Century. This growth was aided in no small part due to the passage of the Morrill Acts of 1862 and 1890, which led to the rise of publicly funded universities in each state (Brubacher & Rudy, 2008). However, in addition to these land-grant colleges, the growth of existing liberal-arts colleges created a new concern for American higher education.

With the expansion of colleges into universities, the question of what work qualified as collegiate and that which was seen as of the university level became more widely discussed.

There was an increase in the number of liberal-arts colleges transitioning into universities made possible through their acquisitions of other professional schools, such as Harvard's additions of medical, law, and graduate education institutions in the 19<sup>th</sup> Century (Brubacher & Rudy, 2008). These acquisitions provided universities with new opportunities for research and prestige. However, as these institutions grew and developed through these new specializations, questions of how these new universities could, or if indeed they should, continue to address the collegiate need of preparatory education of students arose.

The first two years of collegiate education were primarily concerned with providing students sufficient education to allow them to pursue these specializations, as a result of the varying quality of secondary schools in their preparation of students for higher education (Cohen & Brawer, 2008). This period was referred to by William Harper, president of the University of Chicago, as a junior college, compared to the latter two years of study to which he referred to as a senior college. The term junior college would later become a widely used descriptor of these institutions in the early 1920s (Brubacher & Rudy, 2008).

Throughout the 19<sup>th</sup> Century, several institutions attempted to partition these first two years off into colleges including the University of Michigan attempt in 1851, the University of Minnesota in the 1870s, and Cornell in 1890 (Cowley, 1942). However, plans to separate collegiate and university into the proposed junior and senior campuses were often met with concerns from faculty, who primarily taught students during the first two years in the institution, that they would be "reduced to the status of high-school teachers" (Brubacher & Rudy, 2008, p. 255). Additionally, local communities feared that these newly proposed colleges would absorb high schools and damage the existing role of the bachelor's diploma as a four-year degree capable of providing vertical mobility for students (Brubacher & Rudy, 2008). Despite the

resistance, the concept of the two-year college and the need for an increased number of higher educational institutions to accommodate the growing population of students earning a high school diploma seeking opportunities persisted.

By the end of the 19<sup>th</sup> Century, local communities had begun to empower some high schools to develop their own forms of the two-year college, allowing students to complete their first two-years of higher education prior to attending a university. This allowed for a greater degree of local autonomy in determining the education needed for young citizens looking to contribute to their community. Through cooperation with larger universities, such as the state universities of Michigan and Illinois, graduates from these two-year colleges were able to enter at higher levels than a standard newly enrolled student (Brubacher & Rudy, 2008). The two-year college sector was beginning to establish itself in America and as the 20<sup>th</sup> Century began, its growth would only continue to increase.

As the populations of American states continued to increase throughout the 19<sup>th</sup> and early 20<sup>th</sup> centuries, the need for greater access to postsecondary educational opportunities grew as well. Two-year colleges began to develop from several possible sources, including the aforementioned separation of existing institutions into junior and senior colleges, the development of upward extensions of existing high schools, and uniquely created institutions both public and private in service (Brubacher & Rudy, 2008). As of 1909, approximately 20 two-year colleges had been established, with that number increasing to over 50 a decade later, growing to over 400 by the 1930s with a population of 70,000 (Brubacher & Rudy, 2008; Cohen & Brawer, 2008; Koos, 1924).

Several key factors related to the rapid expansion of junior colleges in the early part of the 20<sup>th</sup> Century. One of these was the further development and expansion of America's

highway system in the 1920s (Cohen & Brawer, 2008). This growth allowed a greater number of students to have access to the junior colleges, which may have been previously made difficult due to geographic isolation and the difficulties of travel. Similar increases in growth were seen following the passage of the Interstate Highway Act in 1956, which helped increase physical access to campuses physical access to campuses, one of the top determining factors in student decisions to attend two-year colleges (Horn, Nevill, Griffith, & MPR Associates, 2006).

Additionally, the increase in the aforementioned number of students earning high school diplomas by the end of the 19<sup>th</sup> Century would not have been able to be accommodated by the number of universities in America at the time (Brubacher & Rudy, 2008). The growth of the junior college system in America allowed these students to access higher education due to their increasing geographic presence. Finally, the Great Depression had a significant impact on the enrollment in two-year colleges (El-Khawas, 2011). With the economic downturn of the 1930s creating great scarcity in employment opportunities, many young Americans were unable to find gainful employment following high school. Through attending two-year colleges, these students were able to remain geographically near their families to continue to contribute to the household, while simultaneously gaining the postsecondary education which could aid them in procuring what employment was available (El-Khawas, 2011).

Growth in the population attending two-year colleges increased steadily throughout the 1930s before experiencing a decrease in the 1940s due to World War II (Brubacher & Rudy, 2008; El-Khawas, 2011). Throughout the 1930s, two-year colleges continued to function primarily as a means of students completing work prior to transferring to larger universities (Brubacher & Rudy, 2008; Cohen & Brawer, 2008). However, the close of World War II would

help contribute to the greatest expansion in number and in scope for two-year colleges in American history.

### The GI Bill and Post World War II Growth

After World War I, steps were undertaken by the American government to attempt to provide financial assistance for returning soldiers to ease the transition back to civilian life. The government drafted the World War Adjusted Compensation Act of 1924, also known as the Bonus Act, as the first major legislation passed for the purpose of providing financial benefits to veterans in their post-military service (U.S. Department of Veterans Affairs, 2009). The intent of the legislation was to provide veterans with monetary bonuses determined by the length of time served. Soldiers who served domestically were eligible to receive up to \$500, while those who served internationally could earn up to \$625 (Herndon, 1943). However, despite this attempt, the majority of money was not distributed to veterans over a twenty-year period as a result of government bureaucracy and the financially disastrous effects of the Great Depression in the 1930s (Brubacher & Rudy, 2008; Herndon, 1943).

During World War II, as millions of men and women served the nation across multiple military campaigns, the American government began to design a new legislation to provide support for these soldiers upon their return so that the previous mistakes of the Bonus Act would not occur again. As a result, the Servicemen's Readjustment Act of 1944 (GI Bill) was created. This legislation, drafted by Harry Colmery and authorized by President Roosevelt, created a new financial assistance program for veterans based on their length of time in the military (U.S. Department of Veterans Affairs, 2009). A particular inclusion in the GI Bill was the provision to aid veterans in receiving financial assistance in pursuing an education. Based upon their length



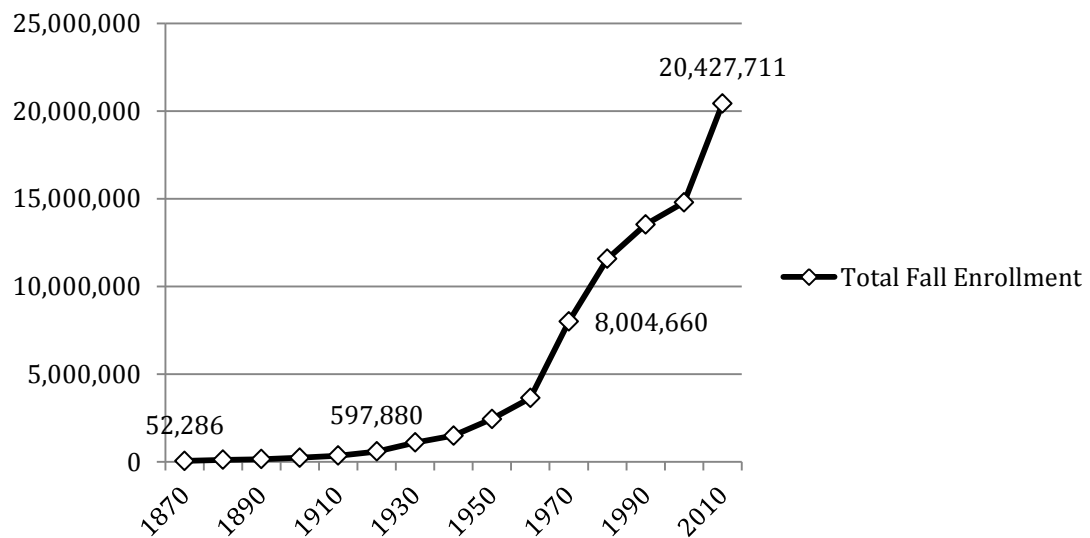
of service, veterans could be eligible to receive “up to 48 months of schooling, depending on length of service” (Greenberg, 2004, p. A56). This amount of time was determined based on the average duration of a baccalaureate degree program during the creation of the legislation. Among the benefits veterans were eligible to receive included an annual payment of \$500 for tuition as well as a monthly stipend of \$65 for educational expenses for up to 48 months based on their length of service. These financial allotments were seen as “generally enough to fully pay participants’ tuition, fees, and books” (McMurray, 2007, p. 144) at the time the legislation was drafted.

As a result of the GI Bill, veterans returning home now had new opportunities to access higher education. As a result of passing the GI Bill, the United States government invested approximately \$14.5 billion between 1944 and 1956 to assist veterans pursuing higher educational opportunities (Brubacher & Rudy, 2008; Serow, 2004). As a result this caused “a flood of veterans into higher education” (Maehl, 2004, p. 6). This was especially noteworthy as the majority of these returning veterans had come from families and backgrounds that were not focused on attaining baccalaureate degrees, thus contributing to a significant increase in the number of first-time college students (Brubacher & Rudy, 2008). As a result of this increase in first-time students, approximately five million of the eight million veterans employed GI Bill benefits between 1945 and 1950 employed these benefits in career and technical education (Serow, 2004).

With this increased access to higher education came a need to address how America’s higher educational system could address this increase. To accommodate this influx of new students, the two-year college system was targeted to meet their needs. The Truman Commission made the recommendation to increase federal and state support of two-year colleges

to best accommodate the influx of new students (Serow, 2004). As a result, the number of two-year colleges in America began to increase dramatically following passage of the GI Bill.

Further promoting the growth of two-year colleges was the job boom of the 1950s and 1960s, with new industries and technical work developing at a quick pace (Serow 2004; Brubacher & Rudy, 2008). This new industrial focus of America necessitated that workers have a greater degree of technical skill and education to meet the needs of the changing labor market. With technical fields expanding, career and technical education was becoming increasingly in demand. As a result two-year colleges, which had focused on the transfer of students to universities prior to World War II, saw a shift in the needs of their communities to provide career and technical education in greater amounts (Cohen & Brawer, 2008). The new focus on career and technical education resulted in an increase in the number of students employing two-year colleges to meet these goals. Figure 2 illustrates the fall enrollment numbers of students in higher educational institutions throughout from 1870-2010, combining the populations of two- and-four year public institutions, with a notable increase in enrollment following World War II in the late 1940s and the post-war job boom of the 1950s.



Data compiled from the 2013 Digest of Educational Statistics Table 301.20 (Snyder, Dillow, National Center for Education Statistics, & American Institutes for Research, 2015). Retrieved from [https://nces.ed.gov/programs/digest/2013menu\\_tables.asp](https://nces.ed.gov/programs/digest/2013menu_tables.asp)

*Figure 2. Enrollment in Public Higher Education: 1870-2010*

### The Higher Education Acts of 1965 and 1972

A second piece of legislation became notable for its impact on higher education in post-war America. The Higher Education Act of 1965 became the first piece of federal measure to create a permanent program of financial aid for students, as well as for public and private institutions (Brubacher & Rudy, 2008). As a result of this act, both two-and-four year institutions were able to employ federal financing to address problems regarding available campus housing, continuing education, and social research. Access to federal financial aid dollars was further strengthened by the subsequent Higher Education Act of 1972 (Brubacher & Rudy, 2008).

These two pieces of legislation significantly aided in the dramatic expansion of higher educational opportunities in the late 20<sup>th</sup> Century. Both students pursuing traditional four-year universities as well as those wanting to attend two-year colleges received increased access to aid. Through increasing the amount of aid that students could receive, two-year colleges were able to receive more students and provide services to more members of their community (Brubacher & Rudy, 2008).

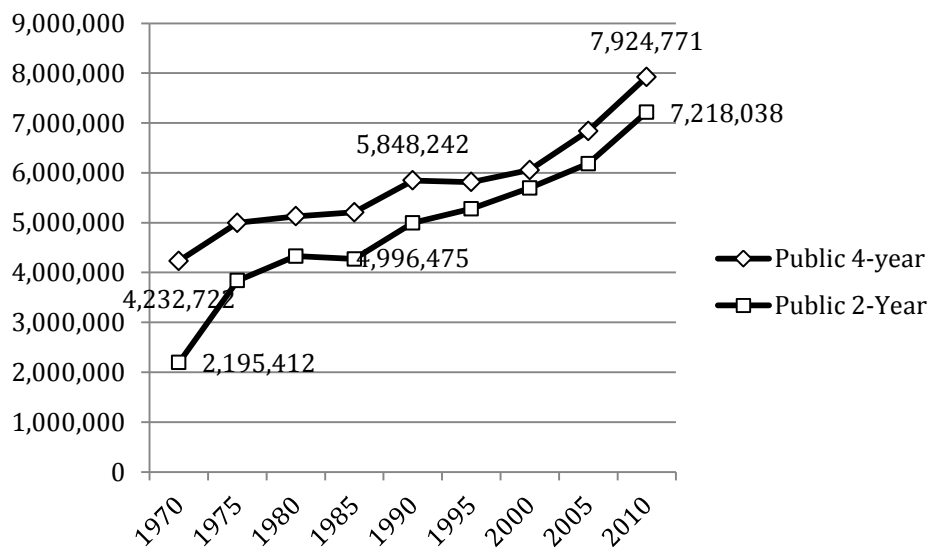
### The College Baccalaureate Degree and Four-Year Colleges

A final movement in the late 20<sup>th</sup> Century also significantly contributed to the growth and development of two-year colleges. This undertaking helped to update two-year colleges as places not only for students to complete pre-university work, but also to transition some to four-year institutions through the introduction of baccalaureate degrees. To continue evolving to meet the needs of the changing labor market and community interests, two-year colleges began to experiment with the offering of a baccalaureate degree as early as 1985 at Navarro College in Texas, Westark College in Arkansas in 1994, and Utah Valley Community College in 1997 (Cohen & Brawer, 2008). Two-year colleges introducing baccalaureate degrees often enter into partnerships with larger universities to provide students with greater access to resources. This movement was largely due to the rising cost of attending universities, stricter admissions criteria (McKinney, Scicchitano, & Johns, 2013) as well as the inability of some place-bound and lower income students to access baccalaureate-granting institutions (Floyd & Walker, 2009; Hanson, 2009). Since its inception at a few state colleges, this evolution of service has seen an increase since the start of the 21<sup>st</sup> Century. As of 2000, four states had two-year colleges offering

baccalaureate degrees, with that number increasing to 15 by 2012 (Community College Baccalaureate Association, 2012).

As two-and-four year colleges have continued to expand their offerings of baccalaureate degrees, there have been divergent opinions on the value of this direction. Critics of this movement question whether these baccalaureate degrees will be viewed as having less value than those from universities. Additionally, questions of whether or not these programs will cause detriment to the career and technical education and continuing educational aspects of the two-year college mission have been asked (Eaton, 2005; Wattenbarger, 2000). Others suggest that this development can contribute to the development of applied baccalaureates in keeping with the two-year college's historical focus on career and technical education (Hanson, 2009).

The offering of baccalaureate degrees at two-and-four-year colleges can permit students to take advantage of the greater geographical availability and lower tuition of the institutions. Veterans are able to make use of their GI Bill benefits to pay less money for a bachelor's degree, allowing remaining educational funds to be employed in other training or graduate options. Through the development of these programs, enrollment in two-year colleges has continued to increase over time. Figure 3 displays the fall enrollment for degree-granting institutions from 1970-2010, illustrating growth in two-year college enrollment has kept pace with four-year institutions, with both continuing to increase steadily.



Note. Graduate student population is included in the enrollment of four-year institutions. Data compiled from 2012 Digest of Educational Statistics Table 230 (Snyder, Dillow, & National Center for Educational Statistics, 2013). Retrieved from [https://nces.ed.gov/programs/digest/2012menu\\_tables.asp](https://nces.ed.gov/programs/digest/2012menu_tables.asp)

*Figure 3. Total Fall Enrollment in Two-and-Four-Year Higher Education: 1970-2010*

### Students Attending Two-and-Four Year Colleges

As previously discussed, two-and-four-year colleges have historically been institutions focusing on career and technical education and the preparation of students for attending four-year universities. As a result, the demographics of these institutions tend to vary more dramatically than the larger universities. These colleges are able to provide training necessary for high school graduates in preparation for baccalaureate paths as well as students of nontraditional age returning to obtain training needed to cope with changing labor markets.

Enrollment increases in public two-year colleges often coincide with the American economy entering into periods of instability, such as in the Great Depression of the 1930s and the recession experienced during the late 2000s (El-Khawas, 2011; Mullin & Phillippe, 2009; Pennington & McGinty, 2002). This can be seen as the result of the variety of services offered

through these institutions. While the progression of beginning a postsecondary education at a two-year college to then complete at a four-year college or university has always been a core component, these rates fluctuated throughout the 20<sup>th</sup> Century nationwide (Townsend & Wilson, 2006). This suggests that the career and technical and continuing adult education facets of two-year colleges remain a predominant factor in the decisions of students of varying ages to attend. Table 2 below provides a comparison of the demographic make-up of public two-and-four-year colleges to illustrate the diversity inherent in the two-year system.

Table 2

*Demographics of Public Two-and-Four-Year Institutions in Fall 2011*

Students	Public 2-Year		Public 4-Year	
	Total	%	Total	%
Total	7,062,467		6,626,325	
Full-time	2,776,731	39.32	5,118,175	77.24
Part-time	4,285,736	60.68	1,508,150	22.76
Women	4,035,120	57.13	3,598,184	54.3
Men	3,027,347	42.87	3,028,141	45.7
White	3,907,398	55.33	4,135,955	62.42
Black	1,081,446	15.31	799,578	12.07
Hispanic or Latino	1,330,061	18.83	845,169	12.75
Other minority	651,052	9.22	646,797	9.76
Nonresident alien	92,510	1.31	198,826	3
Under 18 years old	498,141	7.05	218,543	3.3
18-24 years old	3,707,654	52.5	5,019,209	75.75
25-39 years old	1,943,576	27.52	1,069,919	16.15
40 and older	899,400	12.73	313,094	4.73
Age unknown	13,696	0.19	5,560	0.08

*Note:* Data compiled from NCES 2012 online report tables 226, 228, and 268 (Snyder, T. D., Dillow, & National Center for Education Statistics, 2013). Retrieved from [https://nces.ed.gov/programs/digest/2012menu\\_tables.asp](https://nces.ed.gov/programs/digest/2012menu_tables.asp)

As demonstrated in Table 2, two-year colleges provided services to a larger proportion of students of nontraditional age, those 25 years of age and older, than four-year institutions. Students of nontraditional age make up 40.2 percent of the enrollment of two-year colleges, compared to 20.9% at four-year institutions. Additionally, minorities (e.g., black, Hispanic or Latino, and other minority) and nonresident aliens have larger representations at two-year colleges (28.1 percent) compared to four-year (22.2 percent). These data indicated that two-year colleges were able to better accommodate the needs of a more diverse population, such as students of nontraditional age, who often return to pursue an education from previous work or life engagements, such as military service, to obtain needed technical and career and technical training.

### Military Veterans as Students

Public two-year colleges originated from the need to address growing populations and changing economic times. Throughout the 20<sup>th</sup> Century they experienced large amounts of growth and evolution through the development of new programs and offerings. As previously discussed, one of the key factors to this growth was the passage of the GI Bill and the influx of veterans to higher education. This section will provide an overview of veterans as students, their interactions with two-year colleges, and the challenges they face in pursuit of obtaining postsecondary education.

### Military Veterans in Higher Education

Following the close of World War II, veterans have had increased access and financial support to attend postsecondary institutions (Serow, 2004). This growth can be attributed to



federal support of financial aid to veterans through the passage of the original GI Bill and subsequent iterations through the Vietnam Era GI Bill, the Montgomery GI Bill, and most recently the Post-9/11 Veterans Educational Assistance Act of 2008. Through this legacy of legislation, veterans have had increased access to higher educational institutions than ever before.

Following the success of the original GI Bill, America entered into periods of conflict in both Korea and Vietnam. As the nation mobilized its military, a new generation of veterans was created that would need support upon returning home from the conflicts. The Korean Conflict GI Bill and later the Veterans' Educational Assistance Program (VEAP) extended the benefits of veterans to include the availability of federal aid to be used in correspondence and career and technical education outside of the traditional two-and-four-year colleges and universities (Stover, 1981). These versions of the GI Bill, coupled with the Higher Education Acts of 1965 and 1972, helped increase the accessibility of higher education to veterans (Brubacher & Rudy, 2008).

Following the Vietnam era, there was a noticeable decrease in both the number of veterans making use of GI Bill benefits and in the number of people signing up for military service (Stover, 1981). To reenergize both, the GI Bill underwent its next major iteration through the efforts of Senator Gillespie "Sonny" Montgomery. This new legislation allowed those veterans who had been eligible under the VEAP to both continue utilizing and add on the new benefits of the Montgomery GI Bill (Montgomery, 1994). Among the most effective of these new benefits was the ability of veterans to *buy-up*, allowing individuals to contribute personal funds to receive additional entitlements (U.S. Department of Veterans Affairs, 2004). In this case, if a soldier invested up to \$600 during his or her military service, the federal government would contribute up to \$4,800 in additional benefits upon retirement from the

service (Montgomery, 1994). These benefits included, but were not limited to, additional educational stipends and support. Of additional interest for the Montgomery GI Bill was the inclusion of mandating high school graduate-status to be eligible to receive benefits. As a result, there was an increase in the number of more academically-prepared students entering higher educational institutions (McMurray, 2007; Montgomery, 1994).

After the events of 9/11, a new version of the GI Bill was created to meet the needs of a new generation of soldiers. This version of the legislation allowed for the expanding of veteran access to different higher educational institutions (Yuengling & Kravitz, 2011). Prior to this version, tuition reimbursements were adjusted annually. Under the new guidelines, veterans would have the ability to transfer their benefits to family members as well as make use of the Yellow Ribbon program, which would allow the financial aid received by the veteran to match that given by private or for-profit institutions (Yuengling & Kravitz, 2011).

Through the passage of these statutes, federal aid to veterans continued to adapt to meet the needs of new veterans over the last several decades. Former military personnel had increased access to both public and private educational institutions. This increased access also contributed to the further expansion of two-year colleges (McMurray, 2007).

The public, two-year college system has been one of the largest postsecondary destinations for veterans for decades. In examining the reasons for the proclivities of veterans for these types of educational institutions compared to four-year universities, Alvarez (2008) postulated “two-year colleges offer flexible class schedules, enroll older students and can feel less intimidating—all important issues to veterans, who are usually older and often married with families” (p. 14). This ability to serve the needs of students of nontraditional age is an important factor for veterans in selecting their postsecondary institution as the majority of the population of

veterans returning to formal education is age 25 and older (Radford & National Center for Education Statistics, 2011). Table 3 provides a demographic breakdown of military and nonmilitary undergraduates including institutional enrollment.

Table 3

*Demographics of Military and Nonmilitary Students in Higher Education, 2007-2008*

Students	Military Undergraduates		Nonmilitary Independent Undergraduates	
	Number	Percent	Number	Percent
Total	657,000		20,055,000	
Women	480,267	73.1	7,059,360	35.2
Men	176,733	26.9	12,995,640	64.8
White	394,857	60.1	11,431,350	57
Black	126,801	18.3	3,629,955	18.1
Hispanic or Latino	84,096	12.8	3,028,305	15.1
Asian	21,024	3.2	1,123,080	5.6
Other Minority	37,449	5.7	862,365	4.3
Under 18 years old		< 1		< 1
19-23 years old	98,550	15	2,727,480	13.6
24-29 years old	206,298	31.4	7,460,460	37.2
30-39 years old	185,274	28.2	5,314,575	26.5
40 years or older	163,593	24.9	4,392,045	21.9
Public 2-year	284,481	43.3	9,847,005	49.1
Public 4-year	140,598	21.4	3,830,505	19.1
Private 4-year	88,695	13.5	1,784,895	8.9
Private for-profit	81,468	12.4	2,948,085	14.7
Other	61,758	9.4	1,644,510	8.2

*Note:* Data compiled from online report including data from both public and private, two-and-four-year institutions, compiled from tables 2-B and 3-A (Radford, Wun, Weko, & National Center for Educational Statistics, 2009) and table 1 of Radford & National Center for Education Statistics (2011). An independent undergraduate is one who is not reliant upon parental income, with funds derived from personal or spousal income. Retrieved from <https://nces.ed.gov/pubs2009/2009182.pdf> and <https://nces.ed.gov/pubs2011/2011163.pdf>

Through the greater geographic accessibility and lower tuition rates (Cohen & Brawer, 2008), many veterans have elected to make use of two-year colleges in their post-service educational pursuits. However, tuition alone is not the sole determining factor in veteran choice. Two-year colleges have consistently been recognized for their efforts to establish programs to address the needs of underserved populations such as minorities, women, as well as veterans. Veterans, like other underserved populations, face barriers related to obtaining a postsecondary education, such as family obligations and the delay into higher education caused by military service (Townsend & Bragg, 2006). Through the career and technical and continuing educational offerings of two-year colleges, veterans can be better supported throughout their studies.

#### Military Veterans in Two-and-Four Year Colleges

To further explore the role of the nontraditional age learner in a public two-year state college, Kasworm (2005) conducted qualitative interviews, supplemented with a demographic questionnaire, with 28 public, two-year college students. The participants represented two age groups: (a) 18-29 years of age and (b) 30 years of age and above. Respondent data indicated that students of nontraditional age compared their identities as students to peers regardless of age as well as to a mental model of the ideal learner. Additionally, the establishment of a relationship between learner and faculty was determined to be of importance to older students. Several of the older participants indicated that the relationships formed with instructors contributed positively to their success throughout their time in the college (Kasworm, 2005). Finally, older students reported experiencing apprehension in their first interactions with their younger classmates. However, these reported feelings dissipated over time through exposure to younger peers in the classroom environment, leading to gradual acceptance (Kasworm, 2005). These results suggest

that older students, despite initial hesitancy in interacting with younger peers, find the college environment contributes to their success as learners.

This is advantageous for veterans who are predominantly students of nontraditional age. As of 2009, approximately 94% of active military personnel were 20 years of age and older (Defense Manpower Data Center, 2009). However, it should be noted that though being of nontraditional age is considered being an at-risk for dropping out, previous research has indicated that these older students experience academic achievement on par with or exceeding that of their younger peers (Richardson & King, 1998).

Veterans have demonstrated a greater deal of success in the completion of programs intended to result in practical, skill-based training, such as career and technical education, compared to baccalaureate work or programs focused on transitioning students to universities (Barnhart, 2011). Through the opportunities presented in the college system, veterans can access career and technical education as well as further academic pursuits if they choose. As the number of veterans attending higher educational institutions projected to increase during the 2010s (Burnett & Segoria, 2009), administrators and instructors must focus on how best to support this population and encourage success. However, veterans can encounter difficulties when transitioning from a rigidly structured culture such as that in the military to a significantly less structured culture in the college and federal bureaucracies in pursuit of an education and assistance (Eckstein, 2009; Olson & Gabriel-Olson, 2012; Spiro & Hill, 2010; Wright, 2008).

Achievement and completion data for veterans remain an area of dispute within the literature. Though a nationwide database of veteran outcome and grade outcome data does not exist, the Department of Veterans Affairs conducted a survey of beneficiaries in 2010 to determine educational program outcomes (Cate, 2014). A total of 704 veterans responded, with

242 (43.3%) having served in the recent Operation Iraqi Freedom/Operation Enduring Freedom. Findings yielded a decline in completion rates over time for veterans, particularly from 66.8% in the 1990s to 51.1% on or after 2001 (Cate, 2014). This suggested that the completion rates of veterans have decreased over time. However, as noted, the study was based off of only 704 replies to a survey and not to an existing database populated with data from higher educational institutions. Additionally, these findings are inconsistent with other research in the examination of veteran completion. Westat (2010) found through a survey of respondents that veteran completion of postsecondary programs was as high as 68%. Though, without a centralized data system and standardized reporting, these findings continue to rely off of survey responses rather than hard data from higher educational institutions.

Additionally, the grade point average (GPA) of veterans compared to nonveterans has been questioned in the literature in the past. In examination of the GPA of Vietnam War-era, Teachman (2005) found that the GPA of veterans was below that of nonveterans. It was suggested that this could be a result of men and women entering into military service while their contemporaries entered into postsecondary education, and that the effect diminished with greater time after discharge from the service, with servicemen with longer enlistments closing this gap at a faster rate than those with shorter times in the service (Teachman, 2005).

Similar findings were found by Durdella and Kim (2012) in a survey of participants in the University of California Undergraduate Experience. Veterans reported a lower GPA than nonveterans, despite higher reported levels of academic preparation and time management (Durdella & Kim, 2012). These results challenged the conventional ideas that academic preparation and time management, both characteristics attributed to veterans (Steele, Salcedo, & Coley, 2010), were positively related to GPA. These findings are important for two-year college

administrators as GPA has been shown to be positively correlated with the likelihood of students persisting from the first year to the second (Allen, Robbins, Casillas, & Oh, 2007; Bean & Metzner, 1985; McGrath & Braunstein, 1997). However, it should be noted that much like with the studies conducted by Teachman (2005) and Cate (2014), data were gathered from self-reported surveys and not databases populated by higher educational institutions.

In addition to academic challenges, social interactions can increase the likelihood of veterans withdrawing from college. Veterans on college campuses report struggles with establishing social support networks among new peers due to contrasting levels of maturity displayed by nonveterans and difficulties in asking for assistance when needed (DiRamio, Ackerman, & Mitchell, 2008; Evans, Pellegrino, & Hoggan, 2015; Wheeler, 2012).

As the research has illustrated, veterans often exhibit characteristics associated with at-risk students such as being of nontraditional age, delaying entry into higher education from high school, and external commitments such as work and family (Kasworm, 2005). These at-risk factors can contribute to veterans not establishing persistence and instead withdrawing from two-year colleges prior to degree attainment (Coley, 2000; Schmid & Abell, 2003). Historically, the two-year college practice of cooling out (Clark, 1960), in which students are tasked to adjust postsecondary expectations based on the individual's academic abilities, coupled with a lack of personalized advising at larger two-year colleges with insufficient personnel, can increase the chances of a veteran withdrawing (Calcagno, Bailey, Jenkins, Kienzl, & Leinbach, 2008). It becomes incumbent on two-year college leadership to be aware of the needs of academic advising and to ensure that appropriate personnel are available to assist at-risk populations such as nontraditional student veterans.

## Challenges Facing Current Veterans in Higher Education

As soldiers transition from military service into civilian life, a period of adjustment will occur as they reintegrate into American society, which can be challenging. A similarly challenging transition period occurs when these veterans enter into higher education (McMurray, 2007). This population of veterans returning as students will be primarily 25-years-of-age or older, will include a larger number of minorities, and first-generation college students (Olson & Gabriel-Olson, 2012). This difference in age, can contribute to feelings of isolation in veterans when interacting with younger peers (Kasworm, 2005). Additionally, minority students, such as non-white and students of nontraditional age, may experience an increased risk of withdrawing from classes and institutions based on negative group stereotyping (Beasley & Fischer, 2012). These challenges can increase the difficulties experienced by veterans as they attempt to pursue their postsecondary education and may result in attrition.

In addition to the at-risk factors discussed to this point, veterans who have served since the inception of the Post-9/11 Veterans Educational Assistance Act of 2008 (Post 9/11 GI Bill) may also return home with other difficulties resulting from their service. Soldiers returning from duty may have incurred various types of injuries which will make acculturation back to civilian life and success in two-year colleges increasingly challenging (Church, 2009). The Department of Defense has indicated that more than 50,000 injuries have resulted from the sustained Global War on Terror, including physical injuries, traumatic brain injuries, as well as the less physically noticeable post-traumatic stress disorder (Church, 2009). These impairments can increase difficult for veterans in physically accessing campuses as well making it more challenging for the veteran to adjust to his or her new environment and course workload.



Successful two-and-four-year colleges have worked to identify ways to support veterans through their transition period into the institution and throughout their time there. Peer support networks, such as those created on college campuses locally or through organizations (e.g., Student Veterans of America or the Servicemembers Opportunity Colleges) working between veterans on campus have been reported by veterans to be encouraging and beneficial in adjusting to civilian life and the less structured arrangement of the college (Wheeler, 2012). Additionally, creating offices to aid veterans in navigating institutional policies such as enrollment and assisting in financial aid navigation has been shown to ease transitions for veterans (Rumann & Hamrick, 2010; Zinger & Cohen, 2010).

An additional development that has increased access for veterans can be illustrated through the development of websites designed to aid in navigating enrollment procedures and financial aid questions, to the addition of distance learning courses accessible from anywhere (Rumann & Hamrick, 2010). However, the effectiveness of these courses has been the subject of debate for years and its impact on veteran outcomes has yet to be thoroughly examined.

### Online Distance Learning

Distance education has been a useful tool for institutions since its inception in the 19<sup>th</sup> Century (Verduin & Clark, 1991). Through development of communication technologies, colleges and universities have been able to provide students with additional resources to increase access to courses and support materials. However, whether distance learning is as effective as face-to-face instruction has yet to be firmly established in the literature. This section will provide a brief overview of online learning, examining veterans as online learners, as well as exploring the ongoing debate of effectiveness of this instructional approach.

## Growth of Online Learning

To further explore the impact of distance education, this section will examine the history of this type of instruction. As the number of students of nontraditional age returning to institutions to receive an education that will allow them engage in the high-tech workplace increases, higher educational institutions have looked to online learning to meet this growing need (Brown, 2001). During the 1990s and the first decade of the 2000s distance education has developed into method of instruction worldwide that continues to expand (Smith, 2016).

Among the reasons for the increase of online instruction at higher educational institutions in the 2000s, the competition for tuition among the growing number of institutions and the continued advancement of communications technologies via the Internet have been suggested as being primary explanations (Field, 2008). As the number of non-public institutions has grown, creating greater competition with public institutions for tuition dollars, the ability to leverage the Internet has become increasingly important to attract students, including veterans, to colleges. In response to the increase in competition, many public colleges and universities developed online instruction for many programs to attract students during the first decade of the 2000s (Meyer, Bruwelheide, & Poulin, 2009).

Through the use of online learning, institutions have been able to provide course offerings to larger groups than traditional face-to-face resources have allowed, contributing to lower costs for operation while simultaneously increasing revenues and returns on investments made on the systems (Parry, 2011). These programs allow institutions to reach “new student markets, increase student enrollments, and generate revenues” (Meyer, Bruwelheide, & Poulin, 2009, p. 37) while reducing costs associated with the “decrease in demand for parking,

classroom allocation and better utilization of faculty” (Konetes, 2011, p. 9), allowing for funds to be employed in other areas of need within the institution.

The benefits of this approach to higher education have been embraced by private for-profit institutions, which operate approximately 35% of the online higher educational market (Martin & Samels, 2009). With for-profit institutions such as the University of Phoenix attracting students of nontraditional age such as veterans (Field, 2008), two-year colleges must be aware of the competitiveness for students and how online learning can impact enrollment decisions. Additionally, as a result of the slowing economy experienced in the middle and later years of the 2000s, an annual growth rate of 19% was reported from 2002 to 2008 resulting from students employing online education for the purposes of obtaining work. With the growth in demand for distance education expected to continue to increase during the 2010s (Carnevale, 2004; Picciano, Seaman, & Allen, 2010), implementing and expanding online learning offerings is an important issue facing administrators in colleges and universities.

### Veterans as Distance Learners

An important factor of online education is the consideration of the independence of the learner, with the student being responsible for the pace of his or her progress. As previously discussed, veterans have reported the importance for maintaining control over the pace and method of their education (Wheeler, 2012). Self-regulated learning, such as that provided through asynchronous online learning, is important students enrolled in two-and-four year colleges concerned with establishing a balance between their educational needs and their commitments to non-collegiate obligations (Lease & Brown, 2009).

An additional consideration in online learning is the separation of the instructor and student. The division created by the instructional modality contributed to the idea that the distance experienced in this setting was "not merely geographic, but educational and psychological as well. It is a distance in the relationship of the two partners in the educational enterprise," (Moore, 1983, p. 155) and that this distance can impact the interactions between the student and instructor.

To achieve success in this type of learning environment, with asynchronous interactions and feedback, students must be able to self-regulate, plan out, and monitor learning goals to ensure their progress (Zimmerman, 2008). Through military service, an inherently asynchronous experience, veterans enter into the college environment with a familiarity established through pre-existing patterns of self-regulation and goal-setting conducive to this instructional approach (Artino, 2009; Bates, 2012). Additionally, self-regulation in an online learning environment requires that students be able to follow instructions and meet deadlines, both behaviors instilled in military personnel through their training (Starr-Glass, 2015). This preparation prior to entering college could be theorized to give veterans an advantage over nonveterans in the online learning environment (Downs & McAllen, 2014). However, studies have reported contrasting findings on whether or not veterans do prove more effective than nonveterans (Downs & McAllen, 2014) or if the opposite is seen (Durdella & Kim, 2012).

A challenging aspect in the establishment of effective online instruction is the development of a supportive teaching and learning culture. This culture represents "acquired behaviors, perspectives, and values characteristic of a particular group or community" (Uzuner, 2009, p. 2). The challenges of establishing a culture were demonstrated through an analysis of the Washington Online Virtual Campus, a consortium network developed by state colleges in

collaboration with each other to develop an online learning system in Washington (Hai-Jew, 2004). The creation of a cohesive culture supporting both students and faculty engaging in this nascent system was one of the most reported difficulties by participants in the study.

Additionally, the presence of students from culturally diverse backgrounds can also contribute to difficulties in establishing supportive cultures. As some students come from rigidly structured backgrounds that are not as conducive to establishing support, such as the military, this may impact the creation of a supportive culture in an online course (Hannon & D'Netto, 2007; Morse, 2003). This need to establish a common and supportive culture across students of varying backgrounds is something that administrators and instructors must set clear expectations to address.

An additional background characteristic related to military service that may contribute to veteran success in an online learning environment is the prior use of such technologies in trainings and daily routines. First launched in 1997, the Advanced Distributive Learning Initiative was a program designed to provide educational and training opportunities to American military personnel wherever they were stationed (Roceanu, 2012). This development was in response to the increasing need in the military, much like in the private sector, for workers to have increased and updated technical skills (Lenahan-Bernard, 2012).

Through experience in asynchronous learning in their military roles, veterans may enter the college environment with a greater familiarity with what is necessary to be successful in an online course. Finally, research into how the accessibility of online education can broaden "educational, and thus, professional opportunities for veterans with disabilities" (Ruh, Spicer, & Vaughan, 2009, p. 69) suggests that disabled veterans can make better use of offered educational

services through online learning. This can be important for colleges given the number of veterans with medical impairments (Wheeler, 2012).

### Effectiveness of Online Distance Education

For students of nontraditional age, many of whom are working at least part-time jobs and/or supporting families, online course offerings are preferable due to their convenience of scheduling offered by online courses. This is illustrated by the changes seen in the postsecondary population, with approximately 60% of two-year college students working 20 or more hours per week and 23% having dependent children (Picciano, Seaman, & Allen, 2010). For these students, the traditional schedule provided by colleges and universities proves difficult to manage given their other major life commitments. However, in spite of the convenience provided by online education and the increased popularity among veterans for this medium of instruction (McMurray, 2007), the question of the effectiveness of this medium for this population compared to face-to-face instruction remains a subject of debate.

In a study of 3,600 students enrolled in science, technology, mathematics, and engineering courses at a two-year college, Wladis, Conway, and Hachey (2015) evaluated the outcomes of students enrolled in online and comparable face-to-face courses. The results showed that students of nontraditional age achieved a significantly greater degree of successful course completion, defined as earning a “C-“ or higher as the final grade, in the online versions of courses than their counterparts in face-to-face. Finally, the study did also determine that female students in online courses did perform below those in face-to-face courses.

These results contrast with the work of Jaggars and Xu (2010) who found that despite women outperforming men in online courses, more students overall earned failing grades and

withdrew from online courses than face-to-face and were more likely to withdraw from college. In examining these contrasting findings, Wladis, Conway, and Hachey (2015) suggested that not all student background characteristics were taken into account during analysis. This is seen with the non-inclusion of veteran status as a demographic characteristic throughout the available literature. Finally, the authors proposed that the combination of asynchronous courses with hybrid courses, those that combine online and face-to-face time, in studies may not allow the effectiveness of online education to be determined.

A final suggestion as to the differences occurring in studies may be due in part to the years when the studies were conducted, with researchers questioning whether the effectiveness of distance learning, particularly online, has changed over time along with technology. To explore this idea, Zhao, Lei, Yan, Lai, & Tan (2005) reviewed 51 articles published between 1966 and 2002, utilizing a detailed selection process to avoid the questions faced by Russell. These steps included: (a) the study must have been published in a journal, (b) complete reference information for the article must be available, (c) include evaluation of distance learning, (d) must contain at least one study comparing face-to-face and distance education, (e) empirical data on student outcomes must be present, and (f) the article must contain sufficient statistical information to calculate an effect size. Through their analysis, Zhao et al. (2005) determined that the mean effect size between the two research groups did not significantly differ in outcomes when examined as a whole, with a weighted mean effect size of +0.10. However, upon examination of individual studies that illustrated significant differences contained a wide range of effect sizes, ranging from -1.43 to 1.48 were found. A test of homogeneity yielded the result  $Q(97)=484.58, p<.001$ , confirming the heterogeneity of the data utilized, further illustrating the variation among the effect sizes.

In examination of this observed variation Zhao et al. (2005) found that the year the study was published had a significant effect on the effect size. In particular, their findings indicated that though studies conducted prior to 1998 not reporting a statistically significant difference between distance and traditional instruction, research after 1998 reported that distance learning was producing more effective results than face-to-face (Zhao et al., 2005). These findings contrast with the work of Russell (1999) who had found no such comparability between distance and face-to-face instruction in his review of studies from 1928-1998. The researchers suggested that this increase in significance is due to the continued development of technology, especially with the spread of Internet technologies in the 1990s. In effect, as instructors and students have had increased exposure to technology in more aspects of their lives, both groups are becoming more proficient in using it to enhance learning (Zhao et al., 2005). However, it should be noted that the studies examined were drawn from elementary, secondary, and postsecondary education (Zhao et al., 2005) and may not be generalizable across all postsecondary populations.

The U.S. Department of Education (2009) added to this discussion with the release of its own meta-analysis comparing face-to-face and online learning in undergraduate colleges and universities. Through a review of 51 studies published between 1996 and 2008, the Department of Education found that undergraduate students performed better in online distance learning compared to students who took the same course through face-to-face deliver, with an average effect size of +0.20 favoring the online delivery, and “mean difference between online and face-to-face conditions... is statistically significant at the  $p < .001$  level (U.S. Department of Education, 2009, p. xiv).

As seen throughout the various studies, the effectiveness of distance education compared to face-to-face has evolved over time along with technology. The spread and adaptation of the



Internet into the daily life of society has allowed instructors and students to better utilize this medium to enhance learning. As more students who have grown up with this technology as an integral part of their lives arrive at state college campuses, this difference in delivery method may increase in significance (Zhao, Lei, Yan, Lai, & Tan, 2005).

In addition to the contrasting findings on the effectiveness of online learning in two-and-four-year colleges, little research exists examining the impact of this approach on veterans. In a study of two online-only series of courses, Downs and McAllen (2014) found that the GPA of veterans (3.765) was significantly higher than those of nonveterans in the same program (3.17). In controlling for age and gender, the researchers suggest that veteran status may be more than a correlative relationship to success. Bates (2012) posited that due to the asynchronous nature of military life, with wide deployments creating delays in the sending and receiving of information, that military personnel may be well equipped to succeed in an online environment. However, with the absence of a face-to-face version of these programs to examine and compare the results, there is no way to determine if the higher GPAs earned by veterans are also present in the traditional classroom or if they are limited to the online model. Further investigation and comparisons will aid in discerning the effectiveness of online education for veterans.

### Summary

This chapter reviewed the development of public, two-year colleges in America since their inception through their current stage of development. With the growth of American secondary and higher education throughout the 19<sup>th</sup> Century, new institutions were needed to handle the growing demand (Brubacher & Rudy, 2008; Hutt, 2012). Designed to provide postsecondary education to students prior to university work, the first attempt at two-year

colleges occurred at the University of Michigan in 1851, seeing growth throughout the remainder of the Century (Brubacher & Rudy, 2008).

During the first half of the 20<sup>th</sup> Century, the number of two-year colleges began to expand, with enrollment aided by economic downturns in the 1930s (El-Khawas, 2011). With the passing of the GI Bill, expansion of two-year colleges in America increased dramatically throughout the latter half of the Century (Serow, 2004). Two-year colleges continued to add and develop program offerings, such as career and technical education and later baccalaureate programs, to further enrich the offerings available (Cohen & Brawer, 2008). Veterans gained greater access to higher educational opportunities through this network of institutions and have demonstrated a preference for two-and-four-year colleges when pursuing an education after military service (Alvarez, 2008; Kasworm, 2005; McMurray, 2007).

As students, veterans exhibit characteristics of an at-risk population, including being primarily of nontraditional college age and delaying entry into college (Kasworm, 2005), and can experience difficulties in interacting with younger peers (Wheeler, 2012). Additionally, the academic performance of this population has been indicated by research to be below nonveterans in terms of GPA (Durdella & Kim, 2012; Teachman, 2005). Along with difficulties reported in forming social supports with younger peers, veterans may be at a greater risk from withdrawal and not persisting after their first year (Calcagno, Bailey, Jenkins, Kienzl, & Leinbach, 2008). These findings suggest that two-year college administrators must be aware of the challenges facing this population and seek solutions to best help them succeed.

An avenue that has proven increasingly popular among nontraditional students and veterans and four-year colleges alike is online distance learning programs (Field, 2008; Smith, 2016). Through the development of online distance learning, colleges are able to provide

instruction to students whose schedules may not be conducive with traditional face-to-face availabilities. Research has suggested that, due to the asynchronous nature of military service, veterans may enter these programs prepared for the self-regulation and goal setting required for program success (Artino, 2009; Downs & McAllen, 2014; Meyer, Bruwelheide, & Poulin, 2009).

However, despite the increased availability of online learning in two-year colleges, little agreement exists in the literature in regards to its overall effectiveness. Research has indicated that nontraditional students may achieve greater success in online courses while women may not compared to face-to-face instruction (Wladis, Conway, & Hachey, 2015).

However, these results for women are challenged by a study conducted on Gregory and Lampley (2016), who found women were more likely to earn higher grades in online courses, despite also being more likely to withdraw from an online course compared to a face-to-face. Additionally, the impact on veterans engaged in online learning has yet to be fully explored, as available literature on the subject contrasts on the effectiveness online results compared to comparable face-to-face instruction (Downs & McAllen, 2014). With this population demonstrating many characteristics of at-risk students, such as being of nontraditional age and delaying entry into higher education, further study is warranted.

Through a review of the literature on the subjects of veterans, online learning, and two-year colleges, this study was designed to address the gaps in the research. With the number of veterans enrolling at two-year colleges continuing to increase (Burnett & Segoria, 2009), along with the expansion of online distance learning opportunities (Carnevale, 2004; Picciano, Seaman, & Allen, 2010), further research into the effectiveness of this instructional delivery method on these students is necessary.

## **CHAPTER THREE: METHODOLOGY**

### Introduction

The purpose of this study was to examine the outcomes of veterans enrolled in a public, four-year state college taking the same course administered both online and through face-to-face instruction. The methodology utilized to conduct this study is detailed in this chapter. This chapter is divided into eight sections: (a) design of the study, (b) research questions, (c) selection of participants, (d) instrumentation, (e) data collection, (f) data analysis, (h) procedural fidelity, and (i) a final summary.

### Design of the Study

To address the research questions, this research utilized a quasi-experimental design, with the researcher seeking to identify cause-and-effect relationships among different groups in which the independent variable or independent variables were present (Amro, Mundy & Kupczynski, 2015; Gay, Mills & Airasian, 2012). The groups examined were students, both veterans and nonveterans, taking English I (ENC 1101) via online and face-to-face delivery during academic years 2012-2013, 2013-2014, and 2014-2015. As this course satisfies the General Education State Core Communications requirement for Associates of Arts degree seeking students (Seminole State College, 2016), a large number of students will have taken this course regardless of their major. This ensures that the population will include both veterans and nonveterans as both groups would require this course to satisfy graduation requirements. The final course grade outcomes of the participants were quantitatively examined to determine if there were any differences between those who took the ENC 1101 course through online and face-to-face methods.

For the purposes of this study, quantitative analyses were performed to examine final grade outcomes earned by all students enrolled in course ENC 1101 for the selected academic years. Differences between the groups were analyzed to compare the outcomes of the two methods of course instruction, online and face-to-face delivery, as well as to investigate the role that age and veteran status play related to the final grade outcomes.

### Research Questions

The three research questions listed directed the investigation of the outcomes of veterans and nonveterans enrolled in an online and face-to-face version of English I (ENC 1101) in a public, four-year state college.

1. How do the academic outcomes of veterans, as measured by final grades, of veterans enrolled in an online version of English I (ENC 1101), compare with veterans enrolled in a face-to-face version of the same course with and without consideration of gender?
2. How do the academic outcomes, as measured by final grades, of veterans compare to nonveterans in both online and face-to-face versions of the course English I (ENC 1101) with and without consideration of gender?
3. What ability, if any, do instructional modality, veteran status, and age have in predicting final grade outcomes in the course English I (ENC 1101)?

### Selection of Participants

The population examined for this study was drawn from veterans and nonveterans attending a public, four-year state college in Florida. Participants were selected based on their enrollment in English I (ENC 1101) at the state college. Census data were utilized for this study,

with all students being examined, regardless of veteran status. This was done to create comparison groups of veterans and nonveterans to address the three research questions detailed in the preceding section. To be included in the study, participants must have been enrolled in course ENC 1101 during academic years 2012-2013, 2013-2014, or 2014-2015 and have a final grade outcome. Any student who did not meet both of these criteria was eliminated from the analyses. Participants were identified as veterans or nonveterans and further categorized by their age groups to address the third research question.

### Population

The archival data set provided by the four-year public college contained a total of 21,140 records, consisting of both veterans and nonveterans who took the course English I (ENC 1101) through online and face-to-face instructional modalities. Of this group 1,645 had a final grade outcome other than A, B, C, D, or F and were removed prior to analysis. In the remaining 19,495 records, 54 percent were male, 45 percent were female, and approximately 1 percent did not have a gender reported. This distribution of genders is equivalent with the four-year college's overall percentage of men and women. Within this sample, 544 records were from veterans, representing 3 percent of the overall population, which is similar to the national distribution seen of veterans in public colleges (Snyder, Dillow, & National Center for Education Statistics, 2012).

### Instrumentation

This study employed quantitative instrumentation to address the three research questions. Data were collected via the enrollment and final grade outcome in the online and face-to-face

versions of course ENC 1101. Demographic data, including gender, age, and veteran-status were included in the examined data set to address the three research questions and create the comparison groups.

Student demographic and final grade outcome data were collected from the public, four-year college's database on enrollment in course ENC 1101 for academic years 2012-2013, 2013-2014, and 2014-2015. The data included the number of students enrolled in both course presentation methods, including the number of veterans and nonveterans, as well as the final grade outcomes for all participants. Additionally, data on the gender, age, and veteran-status were also collected. Both course presentation methods employ the same curricular standards and requirements for earning a passing final grade outcome of A, B, or C.

### Data Collection

The study employed quantitative methods to collect and analyze all data relevant to addressing the research questions.

### University Protocol

Prior to initiating data collection, the researcher submitted an application detailing the intent, methods, and parameters of the investigation to the Institutional Review Board of the University of Central Florida (UCF) on November 4, 2016. This application contained information sourced from chapter one of this document to provide the review board with an understanding of the intent and methodology employed by the study. In compliance with the guidelines of the review board, the researcher was required to have completed courses on ethics involved in human participants research offered through the Collaborative Institutional Research

Initiative (CITI). The required courses were completed September 15, 2012, and renewed on September 22, 2015. Approval from the Institutional Review Board was received on November 21, 2016 (see Appendix A).

### State College Protocol

To be allowed to gather data from the state college's database, an application was submitted by the researcher to the Institutional Review Board of the college. The application provided details sourced from chapter one of this document, outlining the purpose, population, significance, research questions, instrumentation, potential benefits, and the intended audience of the study. Additionally, the application contained the course number, academic years and desired variables of gender, age, veteran status, academic year, final grade outcome, and course delivery method to be included in the data set. The application was submitted by the researcher on November 4, 2016, with approval received on November 14, 2016 (see Appendix B). Data from the state college were provided on November 28, 2016.

### Quantitative

Historical data on the participants from the selected course and academic years were collected from the state college's Institutional Research department. The gathered data were de-identified prior to receipt by the researcher to ensure the anonymity of participants and contained enrollment and final grade outcome information for the selected ENC 1101 course during the identified academic years. Final grade outcomes for the course were presented in the form of letter grades of A, B, C, D, F, and Withdrawal (W). To be included in the analyses, participants needed to have earned a final grade of A, B, C, D or F. Those records without a final grade, such



as those with final outcomes indicating an incomplete or withdrawal from the course, were removed prior to analysis.

### Data Analysis

This study employed quantitative methods for collection and analysis of all data. This method was selected based on the research questions used to guide this study. The procedures involved are outlined in the following section.

#### Quantitative Data Analysis

Research question one data compared the outcomes of veterans enrolled in the course English I (ENC 1101) across two delivery models, online or face-to-face. To address this question, an independent samples *t*-test was selected. The independent samples *t*-test was selected to compare veterans enrolled in the online course delivery method compared to those in the face-to-face method (Gay, Mills & Airasian, 2012; Gratton-Lavoie & Stanley, 2009; Weber & Lennon, 2007). The independent samples *t*-tests were calculated through use of the Statistical Package for the Social Sciences (SPSS). In addition to comparing veterans as a whole, analyses were also run to evaluate the final grade outcomes of males and females across instructional modalities. The analyses were performed for all examined academic years and both course presentation methods to determine if any differences met or exceeded at  $\alpha = .05$ . Tables were constructed to display the results of these analyses and reported in chapter four of this document.

Addressing research question two, data were collected to compare participants enrolled in the same course delivery method, online and face-to-face. For this question data compared veterans enrolled in online and face-to-face versions of the same course to the final grade

outcomes of nonveterans enrolled in the same instructional modality. To conduct this analysis, an independent samples *t*-test was selected. This analysis was selected as a result of multiple academic years being examined in the study. An independent samples *t*-test allowed the researcher to compare the final grade outcomes of groups, veterans and nonveterans, in each instructional modality, online and face-to-face (Gay, Mills, & Airasian, 2012). In addition to comparing veterans to nonveterans, analyses were also run to evaluate the final grade outcomes of males and females within both instructional modalities. The independent samples *t*-test was completed utilizing SPSS as the analytical tool. Tables were constructed to outline the results of the analyses and reported in Chapter 4 of this document.

Research question three examined the relationship between age and final grade outcomes for veterans and nonveterans enrolled in online and face-to-face versions of the same course, English I (ENC 1101). To investigate the relationship of age to final grade outcome, a linear regression was selected (Cohen, Cohen, West, & Aiken, 2002). This analysis allowed for the examination of age as a factor in final grade outcomes for veterans in both instructional modalities groups of participants. The data were analyzed to construct a model of best fit for the relationship of age to final grade outcome for veterans and nonveterans in both course delivery groups. Additionally, analyses were also run to for males and females separately in both instructional modalities. The statistical procedures used in this study are outlined in Table 4.

Table 4

*Research Questions and Analyses*

Research Question	Data Source	Variables	Analyses
1. How do the academic outcomes of veterans, as measured by final grades, of veterans enrolled in an online version of English I (ENC 1101), compare with veterans enrolled in a face-to-face version of the same course with and without consideration of gender?	Public four-year state college provided data file including final grade data, demographic data, and veteran status	Independent variables: instructional modality and gender Dependent variable: final grade outcome	Independent samples <i>t</i> -test
2. How do the academic outcomes, as measured by final grades, of veterans compare to nonveterans in both online and face-to-face versions of the course English I (ENC 1101) with and without consideration of gender?	Public four-year state college provided data file including final grade data, demographic data, and veteran status	Independent variables: veteran status and gender Dependent variable: final grade outcome	Independent samples <i>t</i> -test
3. What ability, if any, do instructional modality, veteran status, and age have in predicting final grade outcomes in the course English I (ENC 1101)?	Public four-year state college provided data file including final grade data, demographic data, and veteran status	Independent variables: instructional modality, veteran status, and age Dependent variable: final grade outcome	Linear regression

Procedural Fidelity

The researcher incorporated steps to ensure procedural fidelity throughout this study. For the quantitative methodology and analysis, a thorough review of available literature was performed to identify a need for further investigation of the outcomes of veterans in online

courses at state colleges. Data were gathered from a public, four-year college and provided to the researcher without information included that would lead to individual identification.

Additionally, the data analysis plan was constructed to provide value-free and objective results capable of creating inferences and generalizability to larger populations. Statistical analyses were selected and performed the provided data to determine if veterans were demonstrating success in online and/or face-to-face versions of English I (ENC 1101) and compare their outcomes to those of nonveterans.

### Summary

This chapter reviewed the research questions guiding this study and the methodology selected to investigate these questions. The study employed a quasi-experimental, quantitative approach to answer the research questions. Data were collected from a public, four-year state college in Florida for academic years 2012-2013, 2013-2014, and 2014-2015 and analyzed using the non-parametric statistical tests (i.e., independent samples *t*-test) to address research questions 1 and 2 and the parametric statistic of linear regression to investigate research question 3. Descriptions of how participants were selected for inclusion as well as the data collection were also presented. Additionally, the analyses selected to address each research question were discussed. Finally, steps taken to ensure procedural fidelity were provided to ensure the objectivity and generalizability of the results through the use of statistical analyses. Demographics and the results of the selected analysis procedures are presented in chapter four.

## **CHAPTER FOUR: PRESENTATION AND ANALYSIS OF DATA**

### Introduction

The intent of this research was to examine the final grade outcomes of veterans and nonveterans enrolled in English I (ENC 1101) at a public, four-year state college in two instructional modalities: online and face-to-face. Participants in this study were students who were enrolled in course ENC 1101 during academic years 2012-2013, 2013-2014, and 2014-2015 at a public, four-year college in Florida. Final grade outcomes of veterans and nonveterans were evaluated to determine what differences, if any, exist between and within the two instructional modalities. This section will present the findings of the investigation. This chapter is divided into four parts: (a) research questions, (b) demographics, (c) testing the research questions, and (d) a summary.

### Research Questions

This study employed a quasi-experimental approach to investigate the impact of online and face-to-face instructional modalities on veterans taking course ENC 1101. De-identified final grades and demographic data were provided to the researcher by the four-year college. Quantitative analyses were used to address the three research questions:

1. How do the academic outcomes of veterans, as measured by final grade outcomes, earned in an online version of English I (ENC 1101), compare with veterans enrolled in a face-to-face version of the same course with and without consideration of gender?

2. How do the academic outcomes, as measured by final grades, of veterans compare to nonveterans in both online and face-to-face versions of the course English I (ENC 1101) with and without consideration of gender?
3. What ability, if any, do instructional modality, veteran status, and age have in predicting final grade outcomes in the course English I (ENC 1101)?

### Demographics

This section will provide descriptive statistics on the population examined in this study. Participants consisted of students enrolled in a public, four-year college in Florida during academic years 2012-2013, 2013-2014, and 2014-2015 and enrolled in the course English I (ENC 1101). An academic year is defined as progressing from fall into spring and ending in summer. Of the overall population ( $N = 21,140$ ), only those participants with final grade outcomes were included in analyses ( $n = 19,495$ ).

Participants examined for this study were veteran and nonveterans enrolled in the course English I (ENC 1101) in two instructional modalities: online ( $n = 2,080$ ) and face-to-face ( $n = 17,415$ ) in a public, four-year college in Florida during academic years 2012-2013, 2013-2014, and 2014-2015. Additionally, participants were examined as groups of veterans ( $n = 544$ ) and nonveterans ( $n = 18,951$ ). Table 5 presents the demographic variables among the population examined in course ENC 1101 during the surveyed academic years: (a) veteran status, (b) gender, (c) age group, and (d) instructional modality participation.

Table 5

*Participant Demographics for English I During Surveyed Academic Years (N= 19,495)*

Students	Total Participants		Military Veterans		Nonveterans	
	Number	Percent	Number	Percent	Number	Percent
Total	19,495		544		18,951	
Women	10,467	53.7	123	22.6	10,344	54.6
Men	8,825	45.3	416	76.5	8,409	44.4
Unreported	203	1.0	5	0.9	198	1
Under 18 years old	621	3.2	2	0.4	619	3.3
18-24 years old	14,539	74.6	246	45.2	14,293	75.4
25-29 years old	1,770	9.1	148	27.2	1,622	8.6
30-39 years old	1,598	8.2	107	19.7	1,491	7.9
40 years or older	967	5.0	41	7.5	926	4.9
Online	2,080	10.7	49	9.0	2,031	10.7
Face-to-face	17,415	89.3	495	91.0	16,920	89.3

### Testing the Research Questions

This section will present the results of analyses performed to address the three research questions in numeric order. Research questions one and two were evaluated through the use of independent samples *t*-tests (Gay, Mills & Airasian, 2012; Gratton-Lavoie & Stanley, 2009; Weber & Lennon, 2007). Research question three was addressed using linear regression analysis (Cohen, Cohen, West & Aiken, 2002).

## Research Question One

*How do the academic outcomes of veterans, as measured by final grade outcomes, earned in an online version of English I (ENC 1101), compare with veterans enrolled in a face-to-face version of the same course with and without consideration of gender?*

A quantitative approach was employed to address research question one, examining the differences between military veterans in two instructional modalities of course ENC 1101. Final grade outcome and demographic data were requested from a public, four-year college for academic years 2012-2013, 2013-2014, and 2014-2015 for all students enrolled in the selected course. Data were disaggregated into instructional modality, veteran status, and gender for analysis.

To address this question, three independent samples *t*-tests were performed to compare the final grade outcomes of: (a) veterans in both instructional modalities, (b) male veterans in both instructional modalities, and (c) female veterans in both instructional modalities. In all cases, the impact of the binary independent variable course modality (0 = online and 1 = face-to-face) was assessed on the dependent variable final course grade (converted as 0 = F, 1 = D, 2 = C, 3 = B, and 4 = A). Tests for normality revealed skewness and kurtosis values within the accepted range of -2 and 2 and no outliers were identified on boxplots. These results demonstrate that the assumption of normality did not appear to be violated for any independent *t*-test.

### Comparing Final Grade Outcomes of Veterans Across Instructional Modalities

The homogeneity of variance was examined through Levene's test, which demonstrated a significant result ( $F = 6.23, p = .01$ ). This shows that the variance was heterogeneous rather than



homogenous, resulting in the use of a corrected or Welch's  $t$ -test. Analysis revealed a significant difference between veterans in both instructional modalities,  $t(55.65) = 2.18, p = .03$ . Veterans enrolled in the face-to-face version of ENC 1101 performed significantly better ( $M = 2.44, SD = 1.48$ ) compared to veterans in the online version ( $M = 1.90, SD = 1.67$ ). An effect size of  $d = 0.58$  was yielded from the analysis, indicating a medium effect (Cohen, 1988). Table 6 displays the results of the analysis.

Table 6

*Descriptive Statistics and Independent  $t$ -Test Results, ENC 1101 Performance for Veterans by Modality ( $N = 544$ )*

Modality	$n$	$M$	$SD$	95% Confidence Interval	
				Lower Limit	Upper Limit
Face-to-Face	495	2.44	1.48	2.31	2.57
Online	49	1.90	1.67	1.42	2.38

*Note.*  $t(55.65) = 2.18, p = .03, d = 0.58$ .

#### Comparing Final Grade Outcomes of Male Veterans Across Instructional Modalities

A test for homogeneity of variance was performed for male veterans in both instructional modalities of course ENC 1101. For this sample, the result of Levene's test was significant ( $F = 6.64, p = 0.01$ ), demonstrating heterogeneous variance. As a result, a corrected  $t$ -test was used for analysis. Contrary to the comparison of veterans as a whole across the two instructional modalities, there was no significant difference between instructional modalities,  $t(38.63) = 1.58, p = 0.12$ . Though male veterans who took ENC 1101 in the face-to-face instructional modality did perform better ( $M = 2.48, SD = 1.47$ ) than male veterans in the online modality

( $M = 2.00$ ,  $SD = 1.73$ ), the difference was not statistically significant. However, this analysis did yield a medium effect size,  $d = 0.51$  (Cohen, 1988). Table 7 displays the results of the analysis.

Table 7

*Descriptive Statistics and Independent t-Test Results, ENC 1101 Performance for Male Veterans by Modality (N = 416)*

Modality	<i>n</i>	<i>M</i>	<i>SD</i>	95% Confidence Interval	
				Lower Limit	Upper Limit
Face-to-Face	381	2.48	1.47	2.33	2.63
Online	35	2.00	1.73	1.41	2.59

*Note.*  $t(38.63) = 1.58$ ,  $p = 0.12$ ,  $d = 0.51$ .

#### Comparing Final Grade Outcomes of Female Veterans Across Instructional Modalities

A test for homogeneity of variance for female veterans enrolled in both instructional modalities of course ENC 1101 was performed. The result of Levene's test was not significant ( $F = 0.28$ ,  $p = .60$ ), suggesting that homogeneity of variances had not been violated. Similar to male veterans, there was no statistically significant difference between female veterans in both instructional modalities,  $t(121) = 1.54$ ,  $p = .13$ . Though not statistically significant, female nonveterans enrolled in course ENC 1101 in the face-to-face instructional modality did perform better ( $M = 2.30$ ,  $SD = 1.50$ ) than female veterans in the online instructional modality ( $M = 1.64$ ,  $SD = 1.55$ ). Table 8 displays the results of the analysis.

Table 8

*Descriptive Statistics and Independent t-Test Results, ENC 1101 Performance for Female Veterans by Modality (N = 123)*

Modality	n	M	SD	95% Confidence Interval	
				Lower Limit	Upper Limit
Face-to-Face	109	2.30	1.50	2.02	2.59
Online	14	1.64	1.55	0.75	2.54

*Note.*  $t(121) = 1.54$ ,  $p = 0.13$ ,  $d = 0.28$ .

### Research Question Two

*How do the academic outcomes, as measured by final grades, of veterans compare to nonveterans in both online and face-to-face versions of the course English I (ENC 1101) with and without consideration of gender?*

To explore research question two, examining the differences between military veterans in two instructional modalities of course ENC 1101, a quantitative approach was employed. Final grade outcome and demographic data for academic years 2012-2013, 2013-2014, and 2014-2015 were requested from a public, four-year college for all students enrolled in the course ENC 1101. Data were disaggregated into instructional modality, veteran status, and gender for analysis.

To address this question, six independent samples *t*-tests were performed to compare the final grade outcomes of: (a) veterans to nonveterans in the face-to-face instructional modality, (b) veterans to nonveterans in the online instructional modality, (c) male veterans to male nonveterans in the face-to-face instructional modality, (d) female veterans to female nonveterans in the online instructional modality, (e) male veterans to male nonveterans in the face-to-face instructional modality, and (f) female veterans to female nonveterans in the face-to-face

instructional modality. In all cases, the impact of the binary independent variable of veteran status (0 = nonveteran and 1 = veteran) was assessed on the dependent variable final course grade (converted as 0 = F, 1 = D, 2 = C, 3 = B, and 4 = A). In assessing normality, tests for skewness and kurtosis yielded values within the accepted range of -2 and 2 and no outliers were identified on boxplots. The assumption of normality was not apparently violated.

#### Comparing Final Grade Outcomes of Veterans to Nonveterans: Face-to-Face

In testing for homogeneity of variances, Levene's test did not return a significant result ( $F = 0.32, p = .57$ ). This suggests that the homogeneity of variances was not violated in this case. In examination of both veterans and nonveterans in the face-to-face instructional modality, there were no statistically significant differences in final grade outcomes,  $t(17,413) = 0.25, p = 0.80$ . Nonveterans did perform better in the face-to-face instructional modality ( $M = 2.46, SD = 1.46$ ) than veterans ( $M = 2.44, SD = 1.48$ ), despite not having a statistically significant difference between the mean final grade outcomes of veterans and nonveterans in the face-to-face instructional modality. Table 9 displays the results of the analysis.

Table 9

*Descriptive Statistics and Independent t-Test Results, ENC 1101 Performance for Face-to-Face Students by Veteran Status (N = 17,415)*

Veteran Status	n	M	SD	95% Confidence Interval	
				Lower Limit	Upper Limit
Nonveteran	16,920	2.46	1.46	2.43	2.48
Veteran	495	2.44	1.48	2.31	2.57

*Note.*  $t(17,413) = 0.25, p = 0.80, d < .001$ .

### Comparing Final Grade Outcomes of Veterans to Nonveterans: Online

To begin the analysis of those students in the online instructional modality, a test for homogeneity of variances was conducted. Levene's test did not yield a significant result, ( $F = 2.67, p = .10$ ). This suggests that the assumption of homogeneity of variances was not violated. In examining the online instructional modality, there was no statistically significant difference between the final grade outcomes of veterans and nonveterans,  $t(2,078) = 0.94, p = 0.35$ . Similar to the face-to-face analysis, nonveterans did perform better in the online instructional modality ( $M = 2.11, SD = 1.56$ ) compared to veterans ( $M = 1.90, SD = 1.67$ ). This difference between final grade outcomes of veterans and nonveterans in the online instructional modality was not statistically significant. The effect size,  $d = .04$ , indicated no effect (Cohen, 1988). Table 10 displays the results of the analysis.

Table 10

*Descriptive Statistics and Independent t-Test Results, ENC 1101 Performance for Online Students by Veteran Status (N = 2,080)*

Veteran Status	<i>n</i>	<i>M</i>	<i>SD</i>	95% Confidence Interval	
				Lower Limit	Upper Limit
Nonveteran	2,031	2.11	1.56	2.04	2.18
Veteran	49	1.90	1.67	1.42	2.38

*Note.*  $t(2,078) = 0.94, p = 0.35, d = 0.04$ .

### Comparing Final Grade Outcomes of Male Veterans and Nonveterans: Face-to-Face

In examining male veterans and nonveterans in the face-to-face instructional modality, a test for homogeneity of variances was conducted. Levene's test did not return a significant result

( $F = 0.19, p = .66$ ). This suggests that the assumption of homogeneity of variances was not violated. Analysis revealed a statistically significant difference between veterans and nonveterans for final grade outcomes in the face-to-face instructional modality,  $t(8,086) = -2.56, p = .01$ . Male veterans in the face-to-face instructional modality had statistically significant higher final grade outcomes ( $M = 2.48, SD = 1.47$ ) compared to male nonveterans ( $M = 2.28, SD = 1.48$ ). However, no effect was determined from the effect size,  $d = 0.06$  (Cohen, 1988). Table 11 displays the results of the analysis.

Table 11

*Descriptive Statistics and Independent t-Test Results, ENC 1101 Performance for Male Face-to-Face Students by Veteran Status (N = 8,088)*

Veteran Status	<i>n</i>	<i>M</i>	<i>SD</i>	95% Confidence Interval	
				Lower Limit	Upper Limit
Nonveteran	7,707	2.28	1.48	2.25	2.31
Veteran	381	2.48	1.47	2.33	2.63

*Note.*  $t(8,086) = -2.56, p = 0.01, d = 0.06$ .

#### Comparing Final Grade Outcomes of Female Veterans and Nonveterans: Face-to-Face

To analyze the performance of female veterans and nonveterans in the face-to-face instructional modality, a test of homogeneity of variances was conducted. Levene's test did not reveal a significant result ( $F = 1.56, p = .21$ ). This suggests that the assumption of homogeneity of variances was not violated. There was a statistically significant difference in the performance among female students in the face-to-face instructional modality comparing veterans to nonveterans,  $t(9,138) = 2.16, p = .03$ . The final grade outcomes of female nonveterans were

significantly higher ( $M = 2.60$ ,  $SD = 1.46$ ) than those of female veterans ( $M = 2.30$ ,  $SD = 1.50$ ). However, no effect was indicated by the effect size,  $d = .05$  (Cohen, 1988). Table 12 displays the results of the analysis.

Table 12

*Descriptive Statistics and Independent t-Test Results, ENC 1101 Performance for Female Face-to-Face Students by Veteran Status (N = 9,140)*

Veteran Status	n	M	SD	95% Confidence Interval	
				Lower Limit	Upper Limit
Nonveteran	9,031	2.60	1.43	2.57	2.63
Veteran	109	2.30	1.50	2.02	2.59

Note.  $t(9,138) = 2.16$ ,  $p = 0.03$ ,  $d = 0.05$ .

#### Comparing Final Grade Outcomes of Male Veterans and Nonveterans: Online

To compare the final grade outcomes of male veterans and nonveterans in the online instructional modality, a test of homogeneity of variances was first conducted. No significant result was yielded from Levene's test ( $F = 2.79$ ,  $p = .10$ ). This suggested that the assumption of homogeneity of variances was not violated. Analysis revealed no statistically significant difference among male students of different veteran status in the online instructional modality,  $t(735) = 0.15$ ,  $p = .88$ . Through examination of the two veteran statuses, male nonveterans did perform better in the online instructional modality ( $M = 2.04$ ,  $SD = 1.57$ ) compared to male veterans ( $M = 2.00$ ,  $SD = 1.73$ ). However, this difference was not significant and the effect size,  $d = .01$ , indicated no effect (Cohen, 1988). Table 13 displays the results of the analysis.

Table 13

*Descriptive Statistics and Independent t-Test Results, ENC 1101 Performance for Male Online Students by Veteran Status (N = 737)*

Veteran Status	<i>n</i>	<i>M</i>	<i>SD</i>	95% Confidence Interval	
				Lower Limit	Upper Limit
Nonveteran	702	2.04	1.57	1.93	2.16
Veteran	35	2.00	1.73	1.41	2.59

*Note.*  $t(735) = 0.15$ ,  $p = 0.88$ ,  $d = 0.01$ .

#### Comparing Final Grade Outcomes of Female Veterans and Nonveterans: Online

In examination of female veterans and nonveterans in the online instructional modality, a test of the homogeneity of variances was conducted. Levene's test was not significant ( $F = 0.39$ ,  $p = .84$ ). This suggests that the assumption of homogeneity of variances has not been violated. Similar to male veterans and nonveterans, analysis revealed no statistically significant difference in the final grade outcomes of female veterans and nonveterans in the online instructional modality,  $t(1,325) = 1.20$ ,  $p = .23$ . Female nonveterans earn higher final grade outcomes in the online instructional modality ( $M = 2.14$ ,  $SD = 1.55$ ) compared to female veterans ( $M = 1.64$ ,  $SD = 1.55$ ), however the difference was not statistically significant. Additionally the effect size,  $d = .07$ , indicated no effect (Cohen, 1988). Table 14 displays the results of the analysis.



Table 14

*Descriptive Statistics and Independent t-Test Results, ENC 1101 Performance for Female Online Students by Veteran Status (N = 1,327)*

Veteran Status	<i>n</i>	<i>M</i>	<i>SD</i>	95% Confidence Interval	
				Lower Limit	Upper Limit
Nonveteran	1,313	2.14	1.55	2.06	2.23
Veteran	14	1.64	1.55	0.75	2.54

*Note.*  $t(1,325) = 1.20$ ,  $p = .23$ ,  $d = 0.07$ .

### Research Question Three

*What ability, if any, do instructional modality, veteran status, and age have in predicting final grade outcomes in the course English I (ENC 1101)?*

To assess research question three, an investigation of the ability of instructional modality, veteran status, and age, a quantitative approach was. Final grade outcome and demographic data were requested from a public, four-year college for academic years 2012-2013, 2013-2014, and 2014-2015 for all students enrolled in the selected course English I (ENC 1101). The analysis utilized the binary independent variables of instructional modality (0 = face-to-face and 1 = online) and veteran status (0 = nonveteran and 1 = veteran) as independent variables, with an additional continuous independent variable of age. Multiple regression analysis was used to examine these variables for their likelihood to predict the dependent variable of final grade outcomes (converted as 0 = F, 1 = D, 2 = C, 3 = B, and 4 = A). Prior to testing the regression model, six major assumptions were evaluated through: (a) checking for initial outliers, (b) linearity, (c) normality, (d) independence, (e) homogeneity of variance, and (f) noncollinearity. The data did not violate any of the six assumptions.

The model contained the dependent variable (final grade outcome) and the independent variables of veteran status (0 = nonveteran, 1 = veteran), instructional modality (0 = face-to-face, 1 = online), and age in continuous years. Analysis revealed the model was statistically significant in predicting final grade outcome,  $F(3, 19,491) = 85.07, p < .001$ . The individual predictors of instructional modality and age were statistically significant while veteran status was not statistically significant. The final model is: Final Grade Outcome =  $2.06 - 0.12*(\text{Veteran Status}) - 0.45*(\text{Instructional Modality}) + 0.02*(\text{Age})$ . This model predicts that older nonveterans will earn higher final grade outcomes compared to older veterans in the face-to-face instructional modality. Analysis revealed that both instructional modality and age were statistically significant in predicting final grade outcomes, however veteran status was not. Table 15 displays the results of the model.

Table 15

*Summary of Regression Analysis for Veteran Status, Modality, and Age Predicting ENC 1101*

*Performance (N = 19,495)*

Variable	<i>B</i>	<i>SE B</i>	$\beta$	<i>t</i>	<i>p</i>
Constant	2.06	0.03			
Veteran Status	-0.12	0.06	-.01	-1.90	.06
Modality	-0.45	0.04	-.09**	-12.77	< .001
Age	0.02	0.00	.09**	12.24	< .001
<i>R</i> <sup>2</sup>		.01			
<i>F</i>		85.07**			
<i>p</i>		< .001			

\* $p < .05$ . \*\* $p < .01$ .

Table 16 displays the descriptive statistics for the variables analyzed in the regression analysis: (a) course grade, (b) veteran status, (c) modality, and (d) age.

Table 16

*Descriptive Statistics for Variables Examined in Regression Analysis of Final Grade Outcomes in ENC 1101 (N = 19,495)*

Variable	<i>M</i>	<i>SD</i>	95% Confidence Interval	
			Lower Limit	Upper Limit
Course Grade	2.42	1.48	2.40	2.44
Veteran Status	0.03	0.17	0.03	0.03
Modality	0.11	0.31	0.10	0.11
Age	22.67	7.34	22.57	22.77

Finally, table 17 displays the correlations between each of the variables examined in the regression analysis: (a) course grade, (b) veteran status, (c) modality, and (d) age.

Table 17

*Correlation Matrix for Variables Examined in Regression Analysis of Final Grade Outcomes in ENC 1101 (N = 19,495)*

Variable	Metric	1	2	3	4
1. Course Grade	<i>r</i>	—	—	—	—
	<i>p</i>				
2. Veteran Status	<i>r</i>	-.003	—	—	—
	<i>p</i>	.66			
3. Modality	<i>r</i>	-.07	-.009	—	—
	<i>p</i>	< .001	.20		
4. Age	<i>r</i>	.07	.11	.23	—
	<i>p</i>	< .001	< .001	< .001	

*r*: Pearson correlation

### Summary

This chapter provided a review of the research questions and a brief description of the methodology employed in the study. Following this, descriptive statistics reviewing the demographics of the population were presented. Finally, analyses for each of the three research questions were offered.

Through use of independent samples *t*-tests to address research question one, analysis revealed a statistically significant difference between the final grade outcomes of veterans in the face-to-face instructional modality and online. Veterans in the face-to-face modality achieved higher final grade outcomes than their peers in the online modality. Additional analyses examining veterans by gender did not reveal any statistically significant differences between the two instructional modalities when comparing males-to-males and females-to-females. However, final grade outcomes were higher for male and female veterans in the face-to-face instructional modality, even if not statistically significant in their difference from those earned through by male and female veterans in the online modality.

Research question two, examining the differences in final grade outcomes of veterans and nonveterans within the same instructional modality, was evaluated using independent samples *t*-tests. Analysis revealed no statistically significant difference between veterans and nonveterans in either the face-to-face or online instructional modalities. Additional analysis examining this population by gender demonstrated male veterans earning statistically significant higher final grade outcomes compared to male nonveterans in the face-to-face instructional modality. Furthermore, female veterans achieved statistically significant lower final grade outcomes in the face-to-face instructional modality compared to female nonveterans. No other statistically

significant differences were found through analysis of final grade outcomes by gender and by instructional modality.

Research question three was designed to explore what ability, if any, instructional modality, veteran status, and age have in predicting final grade outcomes. A linear regression was performed to determine the impact of these independent variables. Analysis revealed that instructional modality and age were both statistically significant in predicting final grade outcomes, with veteran status not being statistically significant. As student age increased in both face-to-face and online instructional modalities, final grade outcome increased.

## **CHAPTER FIVE: SUMMARY, DISCUSSION, AND CONCLUSIONS**

### Introduction

In the preceding chapter, descriptive statistics and analysis of data related to the research undertaken by the investigator were presented. Chapter five will further explore the results of the analyses conducted to address the research questions guiding this study. This chapter is divided into five parts: (a) a summary of the study, (b) discussion of the findings, (c) implications for practice, (d) recommendations for further research, and (e) conclusions.

### Summary of the Study

This study was designed to address gaps in the research exploring online distance learning in colleges. Though the effectiveness of distance learning has been examined over time, a consensus has yet to be reached in the literature (Kummerow, Miller, & Reed, 2012; Means et al., 2010; Russell, 1999; Wladis, Conway, & Hachey, 2015). Additionally, the impact of this instructional modality on veterans remains a predominantly unexplored topic in the overall research literature.

As the number of military personnel transitioning out of active service is expected to increase during the 2010s, the number of veterans pursuing postsecondary education is projected to grow as well (Burnett & Segoria, 2009). Since the passing of the GI Bill in 1944, community colleges, and now four-year colleges, have been a primary destination for a majority of veterans seeking career and technical education as well as postsecondary education (Brubacher & Rudy, 2008; Serow, 2004). As these institutions have expanded their offerings to make use of new technology, online learning has become seen as a critical component of instruction for colleges during the 2000s and 2010s (Carnevale, 2004; Picciano et al., 2010).

This intent of this study was to examine how this instructional modality impacted veterans enrolled in a four-year college. As veterans display characteristics associated with at-risk students (Kasworm, 2005), and prior research has indicated that the academic performance of veterans is below that of nonveterans (Cate, 2014; Duredella & Kim, 2012), this population needs further exploration in order to help ensure success. Through examination of the final grade outcomes of students enrolled in a public, four-year college, this investigation was able to contribute to this field of study.

To address these gaps in the existing literature, the study was guided by the following three research questions:

1. How do the academic outcomes of veterans, as measured by final grades, of veterans enrolled in an online version of English I (ENC 1101), compare with veterans enrolled in a face-to-face version of the same course with and without consideration of gender?
2. How do the academic outcomes, as measured by final grades, of veterans compare to nonveterans in both online and face-to-face versions of the course English I (ENC 1101) with and without consideration of gender?
3. What ability, if any, do instructional modality, veteran status, and age have in predicting final grade outcomes in the course English I (ENC 1101)?

## Methodology

This research employed a quasi-experimental methodology to investigate these research questions. Data on final grade outcomes and demographics for students enrolled in the course English I (ENC 1101) at a public, four-year college in Florida were gathered for academic years

2012-2013, 2013-2014, and 2014-2015. Quantitative analysis was utilized to examine the final grade outcomes of veterans and nonveterans across and within the two instructional modalities: face-to-face and online. Additional analyses were performed to examine differences among gender and final grade outcomes. Finally, the relationship between age, veteran status, and instructional modality were examined to determine if any relationship existed between these independent variables and final grade outcomes.

### Discussion of Findings

The following sections will present the findings for the three research questions of this study. Connections to the theoretical framework outlined in chapter one and research literature discussed in chapter two will be explored.

#### Research Question One

*How do the academic outcomes of veterans, as measured by final grades of veterans enrolled in an online version of English I (ENC 1101), compare with veterans enrolled in a face-to-face version of the same course with and without consideration of gender?*

Analysis performed on the data obtained from the public, four-year college on the final grade outcomes of students enrolled in course ENC 1101 during academic years 2012-2013, 2013-2014, and 2014-2015 revealed a statistically significant difference in the performance of veterans in the two instructional modalities, with those in the face-to-face modality outperforming those in the online instructional modality. The observed effect size,  $d = 0.58$  indicated that there is a medium effect when comparing the differences in the means of the two



instructional modalities. These findings suggest that face-to-face instruction is more likely to produce higher final grade outcomes for veterans than the online modality.

Previous research has often presented contrasting findings on the effectiveness of online education compared to face-to-face. The results of this study align with prior investigations that have demonstrated lower overall academic outcomes for students electing to utilize the online version of a course compared to the face-to-face (Goomas & Clayton, 2013; Jaggars & Xu, 2010). As with the findings of Russell (1999), no statistically significant differences were found between instructional modalities, however the medium effect size ( $d = 0.58$ ) is consistent with the previous research into effect sizes (Zhao et al., 2005). This suggests that the differences between the two modalities may become more significant as future cohorts of veterans and nonveterans enter into college, resulting in one modality proving more effective than the other. Further study of final grade outcomes in both instructional modalities in the future may aid in understanding if these differences will become significantly different.

An earlier investigation into the changing effect size seen in distance learning over time suggested that the increased presence of technology in American society may contribute to greater success through online instruction (Zhao et al., 2005). However, the findings from the current study are unable to support this idea, as the face-to-face instructional modality achieved a medium effect size,  $d = 0.58$ . A potential explanation may be individual levels of expertise in utilizing technology for learning, which was not assessed within the population. This is due to the current study utilizing archival data for analysis. Further exploration of veteran familiarity with and use of technology for learning may aid in exploring the differences in final grade outcomes. Finally, a similar exploration of instructor familiarity and use of technology for learning may provide additional insights into the outcomes of veterans in online courses.

In addition to interacting with technology, asynchronous learning utilized by the online instructional modality requires students to demonstrate self-regulation and goal setting in order to achieve favorable outcomes (Zimmerman, 2008). Using the Theory of Student Integration (Tinto, 1975, 1993, 2005), background demographics of students will have an impact on their adaptation to the academic environment. Prior research suggested that previous military experience would result in veterans being better prepared to excel in the online instructional modality due to the asynchronous models often employed in military training and communication (Artino, 2009; Bates, 2012; Downs & McAllen, 2014; Starr-Glass, 2015). However, as the results demonstrated, the traditional face-to-face modality yielded higher final grade outcomes for veterans.

The higher final grade outcomes earned by veterans in the face-to-face instructional modality would suggest that the performance of this population was not negatively impacted by interaction with nonveteran and younger peers. Prior research demonstrated concerns for veterans in forming social support bonds with younger and nonmilitary peers (Persky & Oliver, 2011; Wheeler, 2012). This outcome may suggest that veterans are better equipped to create these relationships with nonmilitary peers of similar age, as well as younger peers, in this sample as compared to veterans from prior studies or that these interactions may not interfere with academic performance.

Having direct, face-to-face interactions with the instructor may contribute to the college student formation of support and the establishment of connections between veterans and their colleagues. Previous research into the interactions of students and instructors demonstrated lower rates of completion and lower final grades for students in online courses due to a lack of community building (Pigliapoco & Bogliolo, 2008; Sapp & Simon, 2005). As discussed in the

research literature, veterans have expressed difficulties in forming social connections with younger peers and those from nonmilitary backgrounds in their courses (Persky & Oliver, 2011; Wheeler, 2012), and the absence of direct access to instructors and peers may increase the sense of isolation and contribute to the lower final grade outcomes for those enrolled in the online instructional modality as a result.

In examination of the results by gender, no statistically significant difference was found in comparing the final grade outcomes between the two instructional modalities for either males or females. However, despite not achieving statistical significance, female veterans in the face-to-face instructional modality did achieve better performance than those in the online modality. These findings do align with the findings of prior research that demonstrated greater likelihood of successful final grade outcomes for female students in courses presented via the face-to-face modality compared to online (Gregory & Lampley, 2016; Wladis, Conway, & Hachey, 2015). This may suggest that female veterans experience greater benefit from direct interaction with peers and instructors, leading to higher outcomes.

### Research Question Two

*How do the academic outcomes, as measured by final grades, of veterans compare to nonveterans in both online and face-to-face versions of the course English I (ENC 1101) with and without consideration of gender?*

The final grade outcome data from course ENC 1101 obtained from a public, four-year college revealed no statistically significant differences between veterans and nonveterans in either instructional modality. Though nonveterans did outperform veterans in both the online and face-to-face instructional modalities, the differences were not significant and the effect size

indicated no effect. This finding suggests that the final grade outcomes of veterans are comparable to those of nonveterans within both instructional modalities for the same course.

Though demonstrating no statistically significant differences between veterans and nonveterans, the analysis contrasts with prior studies that have reviewed the academic performance of veterans. These previous investigations (Cate, 2014; Durdella & Kim, 2012; Teachman, 2005) reported that veterans earned lower grades and resulting in lower grade point averages compared to nonveterans. However, these studies were based on self-reported data gathered from surveys of veterans rather than from academic databases. This difference could be attributable to an error in self-reporting of data or that veterans are becoming better equipped to succeed in postsecondary education since the publication of earlier studies.

The lack of a statistically significant difference between veterans and nonveterans in the online instructional modality diverges from findings in previous research. In a study comparing veterans to nonveterans in an online program of study, veterans outperformed their nonveteran peers (Downs & McAllen, 2014). However, Downs and McAllen (2014) examined a series of courses aligned with a technology-focused program, where the current study examined the outcomes earned in a single English course. English I (ENC 1101) was selected for this study to survey the final grade outcomes of students in their first year, limiting the effects of college course and technology exposure. Given that grade data were accumulated from multiple courses, it is possible that veterans in the Downs and McAllen (2014) study demonstrated higher final grades over time through exposure and practice across various courses. Additionally, the current study did not follow a cohort of students, but rather examined unique student outcomes in a single course in each academic year.

Through further analysis into differences within instructional modality by veteran status and gender, two statistically significant findings were reported in the face-to-face instructional modality. Analysis revealed male veterans in the face-to-face modality outperformed nonveterans, and that female nonveterans outperformed female veterans. In the case of female veterans earning lower final grade outcomes than female nonveterans, these findings do support previously conducted research. Gregory and Lampley (2016) demonstrated that female students were more likely to earn higher final grade outcomes in online courses compared to face-to-face.

However, in the current study female veterans did not experience a statistically significant difference in final grade outcomes between the two modalities as discussed in research question one; they also performed below female peers within the online modality. However, it is important to note that in both cases where a statistically significant result was found, an examination of the effect sizes revealed that the difference between the means yielded no effect present for male veterans compared to male nonveterans in the face-to-face modality ( $d = 0.01$ ) or female nonveterans to female veterans in the face-to-face modality ( $d = 0.05$ ). Future studies should endeavor to utilize a larger sample of female veterans to further explore the academic outcomes of this population.

### Research Question Three

*What ability, if any, do instructional modality, veteran status, and age have in predicting final grade outcomes in the course English I (ENC 1101)?*

Linear regression of the final grade outcome and demographic data from the public, four-year college revealed that instructional modality and age were statistically significant in predicting final grade outcomes. Veteran status was not determined to be statistically significant

in the prediction of final grades. The model accounted for approximately 13% of the variance in the dependent variable: final grade outcomes.

As demonstrated by the model,  $\text{Final Grade Outcome} = 2.06 - 0.12 * (\text{Veteran Status}) - 0.45 * (\text{Instructional Modality}) + 0.02 * (\text{Age})$ , as student age increases in either instructional modality students are more likely to achieve higher final grades. This finding suggests that despite being of nontraditional age, which is considered a sign of being a student at-risk for dropping out of college (Kasworm, 2005), older students are experiencing greater success in both instructional modalities regardless of their background demographics, such as veteran status, compared to younger students.

These findings align with previous research into the academic outcomes of nontraditional students. Prior research has demonstrated that the academic performance of older students is comparable to and may potentially exceed that of younger students (Richardson & King, 1998). Being a veteran may not have an impact on the overall academic performance of a student, but rather more mature students may be more capable of succeeding in a collegiate classroom, demonstrating a greater seriousness of purpose, and goal-oriented behavior.

The lack of statistical significance for veteran status impacting final grade outcomes differentiates itself from previous comparisons of veterans to nonveterans in the research literature. Prior studies have suggested that veteran status itself may be significant in the grade outcomes of students, both positively (Downs & McAllen, 2014) and negatively (Cate, 2014; Durdella & Kim, 2012; Teachman, 2005). However, the findings of this study would suggest that this variable does not have a role in predicting grade outcomes, but rather it is the age of the student that has the greatest impact on grades regardless of veteran status.

### Implications for Practice

Since the drafting of the first GI Bill in 1944, postsecondary education has been seen as a way to help veterans “catch up with their peers whose lives had not been interrupted by wartime” (Altbach, Berdahl, & Gumport, 2005, p. 174). Through the expansion of the two-year college system and the passing of additional financial aid legislation (Brubacher & Rudy, 2008), greater access was established to higher education throughout the second half of the 20<sup>th</sup> Century. As the 21<sup>st</sup> Century began, two-year colleges began to expand to four-year offerings through the addition of new programs such as baccalaureate degrees (Cohen & Brawer, 2008; Floyd & Walker, 2009; Gonzalez, 2011). This growth coincided with the expansion of online distance learning, allowing four-year colleges to reach larger populations than before (Field, 2008; Smith, 2016). And while online learning has been lauded for its potential financial benefits (Ioakimidis, 2007; Konetes, 2011; Meyer, Bruwelheide, & Poulin, 2009; Parry, 2011), the research literature has yet to reach consensus on whether or not this type of instructional modality produces final grades comparable to those earned through traditional face-to-face instruction.

The findings of the current study present implications for four-year colleges as the number of veterans returning from service continue to increase. Additionally, college administrators can utilize these results to help provide open access and support services to all students, including veterans. Instructors who work to ensure that all students are able to succeed will find the results of this study important for designing courses that will support veterans in both modalities. Finally, for college personnel who work to support veterans to ensure academic success and ultimately persistence and program completion, the results of the current study offer an examination of a population requiring additional assistance.

For four-year college administrators interested in expanding the online offerings of their institution while ensuring the success of their veteran population, the results of this study suggest that there are no statistically significant differences between the final grade outcomes of students in the face-to-face or online instructional modality. This implies that online course offerings can continue to be recommended to veterans of varying age. However, despite not achieving statistical significance, the observed effect size between veterans in both instructional modalities was medium ( $d = 0.58$ ), suggesting that continued monitoring should be maintained as this may suggest that the differences may approach significance over time (Zhao, Lei, Yan, Lai, & Tan, 2005).

For both administrators and instructors, older students demonstrated greater success in both instructional modalities. This implies that greater emphasis on preparing students of traditional age may be of importance to ensure greater success for all students, veterans included. The findings of this study regarding older students outperforming younger students support previous research (Richardson & King, 1998), suggesting that older students, both veteran and nonveteran, arrive on college campuses with a greater readiness to succeed. This implies that administrators and instructors should examine in what ways additional academic support can be provided to students of traditional age.

Additional analyses conducted over the final grade outcomes by gender revealed that male veterans outperformed their male nonveteran classmates in the face-to-face instructional modality while female veterans earned lower final grade outcomes compared to female nonveterans in the same modality. Though the effect sizes for both groups indicated no effect for males ( $d = 0.01$ ) or females ( $d = 0.05$ ), the findings imply that female veterans may require additional attention from instructors and personnel who work to support veterans. As discussed



in prior research, females in online courses have demonstrated lower grades and greater propensity to withdraw from online courses (Gregory & Lampley, 2016; Wladis, Conway, & Hachey, 2015). Further research into the academic outcomes and needs of female veterans is required to explore this population. No statistically significant differences were found comparing male and female veterans and nonveterans in the online instructional modality.

The findings of this study suggest that the negative effects on final grades earned in online courses for female students as reported in previous research (Gregory & Lampley, 2016; Wladis, Conway, & Hachey, 2015) may be more profound for female veterans compared to female nonveterans. This implies that this population would benefit from greater involvement from instructors and support personnel, as female veterans performed at a level below their nonveteran peers in both instructional modalities. Though the population of female veterans enrolled in ENC 1101 through the online instructional modality ( $n = 14$ ) was sufficient for the purpose of conducting analysis, a larger sample may provide more robust results. As demonstrated by the findings, greater attention and support from instructors and support personnel may aid in increasing the academic success in the first year, contributing to a greater likelihood of persisting to completion (Allen, Robbins, Casillas, & Oh, 2007; Bean & Metzner, 1985; McGrath & Braunstein, 1997).

### Summary of Implications

Upon examination of the findings of the current study, the researcher suggests the following implications for four-year colleges in supporting veterans in online and face-to-face instructional modalities:

1. Veterans have a higher likelihood of achieving higher final grades in the face-to-face instructional modality of course ENC 1101.
2. Veteran status is not significant in the prediction of final grade outcomes, while both age and instructional modality are.
3. Older students, regardless of veteran status, are more likely to have higher final grade outcomes than younger students.
4. Difficulty in creating social support relationships with nonveteran and younger peers discussed in previous research (Wheeler, 2012) may not have an impact on the academic outcomes of veterans.
5. Female veterans have demonstrated a need for increased attention from instructors, support personnel, and researchers to determine how best to ensure academic success in their first year and increase their likelihood of persistence to the second year and ultimately program completion (Allen, Robbins, Casillas, & Oh, 2007; Bean & Metzner, 1985; McGrath & Braunstein, 1997).

### Recommendations for Further Research

There are demonstrated gaps in the existing body of research literature in the areas of online learning and veterans studies. To address these gaps, the current study examined a population of veterans at a public, four-year college enrolled in English I offered in both online and face-to-face instructional modalities. For the purposes of further exploring this field, the researcher recommends the following for future investigations:

1. Inclusion of multiple colleges in the study to create a larger population of veteran outcomes to analyze.

2. A longitudinal study comparing the final grade outcomes and grade point averages of veterans enrolled in online and face-to-face courses across multiple years through program completion.
3. A qualitative study of veterans entering into four-year colleges exploring their reasons for selecting online and face-to-face modalities and their establishment of academic and social support systems.
4. A quantitative analysis of pre-college background demographics, such as pre-college grade point average, SAT scores, and Armed Services Vocational Aptitude Battery (ASVAB) scores to further explore how background characteristics contribute to success in different instructional modalities.
5. A qualitative study on the academic and social support needs of female veterans and how they contrast with males.
6. An investigation of the differences in female veterans and nonveterans to ascertain contributing variables that may lead to greater success in college courses across both instructional modalities.
7. A comparison of final grade outcomes for full-time and part-time students to determine if enrollment-status impacts academic outcomes.
8. A comparison of the final grade outcomes of hybrid, asynchronous, and face-to-face instructional modalities of the same course.
9. An examination on whether the length of military service relates to final grade outcomes.
10. An exploration of the impact of other variables, such as parental-status, on final grade outcomes of veterans.

## Conclusions

The findings of the current study expanded upon previous research into the effectiveness of online distance learning and the study of veterans. A review of the literature demonstrated a deficit in the examination of the impact of online learning on veterans. To address these gaps, the current study investigated final grade outcomes of veterans in a public, four-year college in Florida for the course English I during academic years 2012-2013, 2013-2014, and 2014-2015. Examination of the data revealed no statistically significant differences between online and face-to-face instructional modalities for veterans. This suggests that veterans are likely to be successful in both modalities of ENC 1101.

Previous research into veterans has reported lower academic performance compared to nonveterans (Cate, 2014; Durdella & Kim, 2012; Teachman, 2005). However, the current study found no statistically significant differences between veterans and nonveterans in either instructional modality. Further analysis revealed that age was significant in predicting final grade outcomes, rather than veteran status. This suggests that both veterans and nonveterans have a greater likelihood of academic success in both face-to-face and online modalities compared to younger students (Richardson & King, 1998).

Further analysis of the data revealed that female veterans may experience lower final grade outcomes than their nonveteran peers in the face-to-face instructional modality. Though there are gaps related to the effect of online learning on veteran outcomes, there is an additional gap on female veterans in this modality specifically. As the number of females who serve in the armed forces continues to increase, the number of female veterans attending four-year colleges in the future will also grow. With the population of veterans continuing to evolve to include greater

female representation, future research into the needs of this population will be important for four-year college administrators and instructors to help ensure success for all students.

Historically, veterans had come from backgrounds that would not lend themselves to success in higher education. Through the GI Bill and the expansion of the four-year college system, access has increased for this population throughout the 20<sup>th</sup> and 21<sup>st</sup> centuries. With the development and expansion of online learning capabilities, colleges now have a greater ability to accommodate these nontraditional students who may have responsibilities which make attending a physical course challenging.

As veterans continue to return home from their service to America, college administrators and instructors must continue to assess how these new technologies impact this population and ensure that there are mechanisms and supports in place to help all veterans be successful. Universities must also examine the impact of online learning on veterans, as they too serve these students. This care and attention to success is necessary to ensure that colleges and universities continue to serve those who served.

**APPENDIX A**  
**UNIVERSITY INSTITUTIONAL REVIEW BOARD APPROVAL**



University of Central Florida Institutional Review Board  
Office of Research & Commercialization  
12201 Research Parkway, Suite 501  
Orlando, Florida 32826-3246  
Telephone: 407-823-2901, 407-882-2012 or 407-882-2276  
[www.research.ucf.edu/compliance/irb.html](http://www.research.ucf.edu/compliance/irb.html)

## NOT HUMAN RESEARCH DETERMINATION

From : UCF Institutional Review Board #1  
FWA00000351, IRB00001138

To : Thomas M. Hoke

Date : November 21, 2016

Dear Researcher:

On 11/21/2016 the IRB determined that the following proposed activity is not human research as defined by DHHS regulations at 45 CFR 46 or FDA regulations at 21 CFR 50/56:

Type of Review: Not Human Research Determination  
Project Title: FACTORS CONTRIBUTING TO THE SUCCESSFUL  
OUTCOMES OF MILITARY VETERANS ENROLLED  
IN ONLINE LEARNING AT ONE STATE COLLEGE  
Investigator: Thomas M Hoke  
IRB ID: SBE-16-12761  
Funding Agency:  
Grant Title:  
Research ID: N/A

University of Central Florida IRB review and approval is not required. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are to be made and there are questions about whether these activities are research involving human subjects, please contact the IRB office to discuss the proposed changes.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

A handwritten signature in black ink that reads "Kamille Chaparro".

Signature applied by Kamille Chaparro on 11/21/2016 12:16:34 PM EST

IRB Coordinator

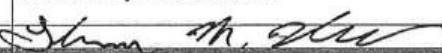
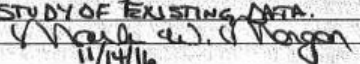
**APPENDIX B**  
**COLLEGE INSTITUTIONAL REVIEW BOARD APPROVAL**



Seminole State College of Florida  
Institutional Review Board  
Request for Research Review

<b>Title of Research Project</b>	Factors contributing to the successful outcomes of military veterans enrolled in online learning at one state college
<b>Name of Principal Investigator</b>	Thomas Hoke
<b>Phone number</b>	407-446-8654
<b>Email address</b>	<a href="mailto:Thomas_hoke@knights.ucf.edu">Thomas_hoke@knights.ucf.edu</a>
<b>Please describe the proposed study, including the research question, hypotheses, and methodology.</b>	<p>The proposed study intends to analyze the final grade outcomes of military veterans enrolled in the English I (ENC 1101) course over the span of three school years, 2013-2014, 2014-2015 and 2015-2016. Specifically, the final grade outcomes of veterans enrolled in the online and face-to-face modes of ENC 1101 will be compared.</p> <p>The research questions are as follows:</p> <ol style="list-style-type: none"> <li>1. How do the academic outcomes, as measured by final grades, of veterans and non-veterans compare within the same course delivery model of course ENC 1101 for school years 2012-2013, 2013-2014 and 2014-2015?</li> <li>2. How do the academic outcomes, as measured by final grades, of veterans and non-veterans enrolled in an online version compare with those enrolled in a traditional, face-to-face delivery models of course ENC 1101 for school years 2012-2013, 2013-2014 and 2014-2015?</li> <li>3. What is the relationship between age and final grade outcomes of military veterans in both the online and face-to-face delivery models of ENC 1101 for school years 2012-2013, 2013-2014 and 2014-2015?</li> </ol> <p>This research will utilize a quasi-experimental design, as the participants will be assigned to groups by the researcher, rather than allowing for random assignment. The groups will be students, veterans and non-veterans, taking English I (ENC) 1101 via online and face-to-face delivery during school years 2012-2013, 2013-2014 and 2014-2015. Within these groups, participants will be grouped into the following age groups: 18-24, 25-29, 30-34, 35-39 and 40 and older.</p> <p>Data for this study will be collected through the Department of Institutional Research of the state college. Upon approval from the SSC IRB, the Institutional Research Department will be contacted by the researcher to make a formal data request for data for school years 2012-2013, 2013-2014 and 2014-2015 for students enrolled in the online and face-to-face version of ENC 1101.</p> <p>All identifiable information will be removed from individual student records to ensure compliance with privacy requirements and an identification variable will be generated in order to separate records. Requested data will include the following demographic data: <b>course method of online or in-person, age, gender, final grade (letter and numeric if available), year and term of course and veteran status.</b> For this study, the dependent variable will be the final grade outcome earned for the examined course. The state college will provide data to the researcher by recordable media, external hard drive or via secure file transfer protocol (FTP) site. Files obtained from the public state</p>

Seminole State College of Florida  
Institutional Review Board  
Request for Research Review

	college will be maintained on a secure, password-protected computer accessible only by the researcher, with deletion of the data occurring as per UCF IRB guidelines.
Describe the target audience of participants, including the anticipated number of participants.	This study will utilize archival data and therefore not require any live participants.
Describe the location of participants and how you will acquire access.	This study will utilize archival data and therefore not require any access to locations on Seminole State College.
Describe if participants are subject to any risk or harm from the study.	N/A
Projected start date for study.	December 1, 2016
Projected end date for study.	February 1, 2017
Targeted audience of participants.	N/A
Provide details on how you will protect the rights of participants, particularly how you will ensure that subjects may elect NOT to participate without consequence.	All data will be deidentified prior to being sent to the principal investigator and will be kept on a password protected computer accessible only by the researcher.
Provide details on how you will verify informed consent and that participants are at least 18 years old (or provide attachments of consent forms).	N/A
Provide details on who will have access to research data and how you will protect the data.	Data will be kept stored on a password protected computer accessible only by the principal investigator.
Provide details on the questions or instruments used in your study (or provide attachments).	N/A
Provide information on any other organizations, agencies, or departments involved in the study.	This study is being undertaken in fulfillment of a dissertation through the University of Central Florida
Principal Investigator's signature.	
IRB Review	
Exempt from Review	EXEMPT ACCORDING TO ITEM #4 OF TITLE 45
Approved without Conditions	GUIDELINES RESEARCH INVOLVING THE
Approved with Conditions	STUDY OF EXISTING DATA.
IRB Chair Signature	
Date	11/14/16

**RESPONSIBILITIES OF THE PRINCIPAL INVESTIGATOR:**

- Any additions or changes in procedures in the protocol will be submitted to the IRB for written approval prior to changes being implemented.
- Any problems connected with the use of human subjects once the project has begun must be communicated to the IRB Chair.
- The principal investigator is responsible for retaining informed consent documents for a period of three years after the project.

**SAMPLE INFORMED CONSENT**

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